# Diverse Perspectives on Governance in Asia

# Diverse Perspectives on Governance in Asia

Edited by Ahmed Shafiqul Huque Aka Firowz Ahmad



**Diverse Perspectives on Governance in Asia** 

Ahmed Shafiqul Huque Aka Firowz Ahmad

ISBN: 978-984-91161-8-9

All rights reserved. No part of this book may be reproduced, copied, distributed or transmitted in any form or by any means or stored in a database or retrieval system without prior written permission of the Author or the publisher or in accordance with prevailing copyright, design and patent laws.

Cover Design Ahmad Fattah

Computer Makeup Md. Shahjahan Kazi

Published by **Osder Publications**, 24/2 Eskaton Garden, Dhaka-1000 Bangladesh. Printed by Osder Printers in Bangladesh, December 2017

Price : Tk. 650.00, US\$ 30

Dedicated to our teachers

### Preface

The book **'Diverse Perspectives on Governance in Asia'** is the compilation of selected research papers presented in the Insearch 2016: 3<sup>rd</sup> International Integrative Research Conference on Development, Governance and Transformation, held in Bangladesh Academy for Rural Development (BARD), Comilla on 27-28 December 2016. The conference was jointly organized by Netinsearch International -Network for Integrative Research, GAIN (Governance and Administration Innovation Network) International, Centre for Administrative Research and Innovation (CARI), University of Dhaka, Bangladesh Academy for Rural Development (BARD) and the Stamford University Bangladesh.

The term governance has various perspectives and focuses on numerous issues. Governance manages the functions and moves forward to solve the socio, economic and political issues of the society. It also recognizes the public choices and integrates them with the policies. There are substantial researches on governance issues. The research based papers included as the chapters of the book focus on political commitment, land reform, rural development, social entrepreneurship, remittance, productivity, global market, eco-tourism, forest conservation, climate change, climate change and farmers' responses. These researches were conducted on the various issues of Asian countries including Bangladesh, Korea and Nepal. We hope this book will be an added knowledge in the governance scholarship and will tremendously help to shape the knowledge of academician, practitioners and researchers.

We remember the significant contribution of Professor Dr. M. A. Hannan Feroz, Founder of Stamford University Bangladesh It is really very shocking for us that Professor Dr. M. A. Hannan Feroz suddenly left us forever on October 29, 2017. We pray to almight to grant peace for his departed soul.

A group of young teachers and researchers including Khandakar Al Farid Uddin, Md. Mamunur Rashid, Md. Al-Ifran Hossain Mollah, Abdur Rahman, Md. Jahidul Islam, Md. Mansur Hossen and Mohammad Joynul Abedin who worked hard in preparing, formatting and printing the manuscript in book form. We express our gratitude to them .Thanks are due to Osder Publications for publishing, distributing and marketing this book.

Since we could not devote sufficient time for editing and proofreading, there might be some inadvertent errors as well as scope for corrections and development. We admit our responsibility and limitations, and hope to overcome the shortcomings in future editions with feedback and advice from the readers.

Editors

# Contents

Pr	reface	vii
1.	<b>Development Strategies and Potentials in Asia</b> Ahmed Shafiqul Huque	13
2.	<b>Political Commitment, Land Reform and Transition in Nepal</b> <i>Niraj Acharya</i>	23
3.	<b>Rural Development in Bangladesh and Korea</b> Lee Misook Syed Salah Uddin Ibne	35
4.	<b>Contemporary Social Entrepreneurship</b> Iftekhar Ul Karim	49
5.	<b>Remittance and Productivity in Bangladesh</b> <i>Muhammad Mueen Uddin</i> <i>Mohammad Joynul Abedin</i>	63
6.	<b>Global Market and Management</b> <i>Abdullah Al Rana Farhad</i>	73
7.	<b>Eco-Tourism and Forest Conservation in Bangladesh</b> <i>M. Shahadat Hosen</i> <i>Abdul Mannan</i> <i>Zobayer Ahmed</i>	85
8.	<b>Climate Change and Stakeholders Adaptation in Bangladesh</b> <i>Muhammad Abdullah</i>	97
9.	<b>Climate Change and Farmers' Response in North-East India</b> <i>Utpal Kumar De</i>	111

# Contributors

*Niraj Acharya*, Research Scholar, Tata Institute of Social Science, Deonar, Mumbai, India. Email: nrj.acharya@gmail.com

*Lee Misook*, Assistant Professor, Park Chung Hee School of Policy and Saemaul Yeungnam, University, R.P Korea. Email: misook@yu.ac.kr

Syed Salah Uddin Ibne, Deputy Director, Bangladesh Academy for Rural Development (BARD) Comilla, Bangladesh. Email: syed\_bard@yahoo. com

Iftekhar Ul Karim, Lecturer, University of Liberal Arts Bangladesh, Dhaka, Bangladesh. Email: iftekhar.karim@ulab.edu.bd

*Muhammad Mueen Uddin*, Research Assistant, Centre for Administrative Research and Innovation (CARI), University of Dhaka, Dhaka, Bangladesh. Email : mueendu@gamil.com

*Mohammad Joynul Abedin*, Research Assistant, Centre for Administrative Research and Innovation (CARI), University of Dhaka, Dhaka, Bangladesh. Email: joynul.edu@gmail.com

Abdullah Al Rana Farhad, Senior Consultant Rajesh Bheda Consulting Pvt. Ltd, Dhaka, Bangladesh. Email: ranafrhd@gmail.com

*Md. Shahadat Hosen*, Project Coordinator, Society for Health Extension and Development Cox's Bazar, Bangladesh. Email: shahadat59@ gmail.com

Abdul Mannan, Program Officer, Arannayk Foundation, Dhaka, Bangladesh

**Zobayer Ahmed,** Faculty, Dept. of Economics & Banking, International Islamic University, Chittagong, Chittagong, Bangladesh. Email: <u>ecozobayer</u> @gmail.com

*Muhammad Abdullah*, Assistant Postmater General, Head Post office, Comilla, Bangladesh. Email: mabdullahapmg@yahoo.com

*Utpal Kumar De*, Professor and Head, Department of Economics, North-Eastern Hill University, Shillong, 793022, Meghalaya, India. utpalkde @gmail.com

#### **Editors**

#### **Ahmed Shafiqul Huque**

Professor and Chair., Department of Political Science McMaster University, Canada

#### Aka Firowz Ahmad

Professor, Department of Public Administration Chairman, Center for Administrative Research and Innovation (CARI) University of Dhaka, Bangladesh.

# 1

# Development Strategies and Potentials in Asia

#### **Ahmed Shafiqul Huque**

#### **Concept and Strategies of Development**

Development has been the subject of research for over half a century, but there has been no success in defining the concept and determining strategies for attaining it. There are debates regarding the methodology for classifying countries into developed, undeveloped or developing, although the points of distinction remain unclear. As the literature is dominated by contributors from the Western world, the process of development appears to be a transition from a country's current state to that of developed countries. In other words, development is presented as the combination of efforts that will change a country into high income, industrialized, democratic and capitalist political units. This idea may not be acceptable as it implies the destruction of indigenous practices and traditions that have served communities in the developing world for centuries.

However, advancement of knowledge and understanding of the consequences of moving to a state similar to political, social and economic arrangements in the West have persuaded analysts to reconsider this approach. The creation of the human development index by the United Nations reflect acknowledgement of the fact that traditional indicators such as per capita income, gross national product, rate of literacy, favourable balance of trade and industrialization do not contribute to the ends that development is expected to facilitate. Instead, attention shifted toward human health, social security, peace and potentials for self-realization of citizens in societies free of inequality, discrimination, exploitation, and injustice instead of concentrating on an affluent lifestyle with access to all the amenities of modern society. Therefore, it is necessary to rethink about the goals of development, and the strategies that can be applied to that end.

Whether the goal involves a transition to the Western model or designing a new system to strengthen the positive indigenous lifestyle, it is important to devise a set of strategies for arriving to the desired state. The discussion draws upon the various models of development that have had considerable impact on thinking on the topic. The origin of development can be traced back to the competition between capitalist and socialist states to persuade poor countries to join their camps by offering assistance with development. While financial and technical aid was needed by the developing countries, the ideological aspect remained prominent and fuelled much of the competition during the Cold War.

Apart from the ideological divide, the debate on strategies of development touched upon the issue of comprehensive and sectoral efforts to achieve this end. Many countries have performed remarkably well in certain sectors such as industry, agriculture, communication and particularly in economic development. However, sector based development can be criticized for concentrating efforts in designated areas while putting other important areas at risk. The Newly Industrializing Economies of Asia (Hong Kong, Republic of Korea, Singapore and Taiwan) received commendation for their remarkable performance in developing the economy at the cost of lagging behind in the sectors of political and social development (See Huque 1996).

The counter argument would be that developing countries do not have the capacity to attempt comprehensive development. It would involve massive investments in infrastructure, development and distribution of social services, advanced technological facilities and, more importantly, a stable political system with leadership to guide the transformation. Faced with the dilemma of selecting strategies for development, most countries opted for to emulate policies by imitating the political and institutional arrangements that operate in developing countries.

A brief recapitulation of the impetus to development and its interpretations will facilitate a discussion of relevant strategies and potentials for success. After the conclusion of the Second World War, the "colonial powers began to accept the need for social and economic development and even the reality of political independence in their territories, and this acceptance was partly the result the result of growing pressures for development and independence from the citizens of those countries" (Conyers and Hill 1984, 24). Thus, there was a demand among the citizens of the developing world and an intent to reciprocate from colonial powers that could have arisen from the guild of long periods of exploitation and oppression or an acceptance of the realities of the new world order.

Around that time, development was considered largely synonymous with industrialization and its ultimate goal was to raise income and give poor people access to a range of goods and services that was widespread in developed societies (Rapley 2007, 1). Apparently, it was believed that only industrialization could lead to development, regardless of the degree of affluence a country attained through agricultural productivity. Diverse perspectives can be detected in the literature on the concept and process of development. Berger (1976) described development as a process by which poor countries become rich, and this appeared to be the key point of distinction between developed and developed countries. Esman presented a narrow view of development as "the rational process of organizing and carrying out prudently conceived and staffed programs or projects" (1966, 95), and Riggs described it in terms of "rising gross national product or increasing per capita income" (1966,230).

As the process of development progressed, other aspects of development began to be noticed. Siffin (1966) emphasized economic development that would facilitate goal-setting and allocation of resources. Diamant (1966) pointed to the need for focusing on the political aspect of development for enhancing the capacity to sustain new types of social goals. Midgley and Hall (2004) highlighted the social aspect and argued for development in terms of dynamic and change-oriented inclusive approach for promoting redistribution and wider dissemination of benefits. "Development denotes a major social transformation, a change in system states, along the continuum from peasant to pastoral to industrial organization. The assimilation and institutionalization of modern physical and social technology are critical ingredients. These qualitative changes affect values, behavior, social structure, economic organization and political process" (Esman 1966, 59). This view demonstrates the vast scope of development that continues to influence thinking on development.

Later, the United Nations Development Program (UNDP) elaborated on the objectives of development that helps understand the concept. "The basic objective of human development is to enlarge the range of people's choices to make development more democratic and participatory. These choices should include access to income and employment opportunities, education and health, and a clean and safe physical environment. Each individual should also have the opportunity to participate fully in community decisions and to enjoy human, economic and political freedoms" (UNDP 1991, 1).

Thus, a formidable section of development analysts subscribe to the idea that enhancing economic capability is an essential element of development. The chapters in this volume seek to present cases and arguments for improving economic conditions through land reform and redistribution, rural development and participation, social entrepreneurship, remittance governance, and efficient management techniques in Bangladesh, India and Nepal. They also offer ideas on promoting eco-tourism and strategies for dealing with the challenges of climate change. The objectives are to include the landless and poor farmers in the political mainstream, encourage villagers to become selfreliant, allow opportunities to the poor to initiate social enterprises, utilize resources through remittance efficiently, enhance competitiveness of garments exporters in the global market, increase revenue from tourism, and assist farmers to cope with climate change. The following section provides an overview of the chapters and their main points.

#### **Organization of the Book**

Poverty in most developing societies emanate from the inequitable ownership of land where a tiny powerful section retains control over vast tracts while the majority remains landless. Naturally, land reform has been highlighted as an essential first step for promoting development to replace the traditional pattern of distribution of this valuable resource in society. Niraj Acharya identifies landlessness of a large number of the population as one of the principal reasons for poverty in Nepal. Redistribution of land can have other beneficial effects including increased agricultural productivity and tenancy rights for farmers. The author finds linkages between land reform and politics because one influences the other. It is, therefore, not surprising that the degree of political commitment is influenced by several factors including the result of power struggle between the elites and peasants and this can be attributed to the lack of success of reform policies.

Drawing upon the history of the land tenure system in Nepal under monarchical rule, Niraj Acharya reviews the performance of several regimes and finds that political movements did help change the political structure, but commitment by the new republican regime will be critical for implementing substantial changes in the land tenure system to facilitate the process of development in Nepal. He notes that power in Nepal resides with elites who have close relationships with the palace, military and bureaucracy. Successive governments failed to implement land reform policies, mainly because incoming governments did not ensure continuation of policies initiated by previous regimes. Land reform in Nepal will be able to usher in changes in the status of the poor and power relationships. It also has the potential to eliminate the domination of one class over another. This presents a major challenge for the country and requires full political commitment from a stable and democratic government.

Some countries opted to promote development through introducing changes in the rural society where most of the population lives and supports an economy based on agriculture. Lee Misook and Syed Salah Uddin Ibne use two cases from the People's Republic of Bangladesh and Republic of Korea to illustrate this point. The *Comilla* and *Saemaul Undong* models were introduced with the objective of transforming rural communities into modern villages through creation of infrastructure and provision of inputs for agriculture in Bangladesh and Korea respectively. Both programs were participatory in nature and intended to create the basis for development by reducing poverty initiating income generating projects to improve living conditions in the rural societies.

A comparative analysis of the two cases reveals interesting points on their institutional frameworks as well as relative success and failure. The authors find that the Comilla model has been beneficial as a learning experience and strongly influenced the rural development process in Bangladesh. A decentralized approach has helped address problems of low productivity and unemployment in the rural areas. A prominent feature of this model is the organization of villagers and their participation in development programmes. In South Korea, the Saemaul Undong has been successful in transforming villages and changing the mindset of rural inhabitants. The authors conclude that the success of the two models suggest that different strategies can succeed in promoting rural development.

Poverty is a major obstacle on the path to development, and analysts continued their search for strategies to address this problem for decades. Iftekhar Ul Karim highlights the potential of social entrepreneurship as a tool that could contribute to reducing the gap between the rich and poor by helping the latter to improve their economic standing. The author draws upon the extensive literature on social entrepreneurship and relates the classical perspectives to contemporary ventures and uses empirical research to contribute to theoretical knowledge.

The chapter contributes a typology for helping understand the core concept of social entrepreneurship through a wide variety of perspectives. They include perspectives related to knowledge-base and resource-base, social capital, social learning, planned behaviour perspective and cultural dimensions. Iftekhar Ul Karim recommends use of this typology in future research on social entrepreneurship and adopting a cross-disciplinary approach.

In recent decades, some developing countries have adopted a strategy of developing human resources for export to affluent parts of the world. This group would be able to earn valuable foreign currency to strengthen the economy. At the same time, there is concern over the utilization of the money that is remitted to the country by the large number of overseas employees. Muhammad Mueen Uddin and Mohammad Joynul Abedin acknowledge the benefits of remittance as it helps in building foreign currency reserve, stabilizing exchange rates and facilitating balance of payments for trade. Moreover, it serves another important purpose of reducing poverty, increasing the purchasing power of families receiving remittance, and encouraging entrepreneurship among them.

Based on primary data collected from a village in Bangladesh, the authors present an analysis of the use of remittance by the families of overseas workers and note that the expenditures are made mostly for household needs and consumption. They argue that remittance income has not contributed to economic growth as expected and attribute the problem to the lack of specific policies for putting remittance to productive use. The problem is exacerbated because there is no coordination among the various agencies of the government that are responsible for streamlining the process of sending workers overseas to earn remittance and utilizing it for contributing to social and economic development.

The steady growth of the economy of Bangladesh is attributed to the readymade garment industry as one of the main drivers. Over the years, Bangladesh has emerged as the second major exporter and dominates the readymade garment markets across the globe. Abdullah Al Rana Farhad reviews the style of management in the readymade garment industry and finds substantial discrepancies between the various levels. He expresses particular concern over the lack of modern techniques and considers this weakness to be a major drawback for competing at the global level.

The chapter discusses various issues related to planning and evaluation of performance, and recommends placing emphasis on the core idea of 'productivity' instead of 'production'. The author demonstrates the distinction between the two ideas by considering the flow of work, methods of calculating production and output, and other efficiency measures. Abdullah al Rana Farhad recommends adoption of a globally practiced system and using productivity as a key performance indicator. He calls for reviewing the goals of business, ensuring effective performance evaluation and determining the capacity of factories before marketing products. These steps are expected to result in a higher volume of export and profit and eventually contribute to development of the country.

Development can also be promoted by earning revenue through programs of tourism that attracts visitors to a country. In most cases, an excessive number of tourists results in depletion of natural resources and degradation of the environment. Md. Shahadat Hosen, Abdul Mannan and Zobayer Ahmed argue that it should be possible to promote tourism in an environmentally friendly manner, and discuss the prospect of ecotourism in the Inani natural forest in Bangladesh. They present a plan for inviting tourists to enjoy the natural splendour of the forest along with an opportunity to experience the lifestyle of the indigenous Chakma people. Participation in local festivals, observation of the creation of local arts and crafts, and experiencing life in the hills will contribute to the development of eco-tourism in Bangladesh in an environment-friendly manner.

The authors make another important point on the potential role of ecotourism in diverting the local population from the layered method of cultivation. The *jhum* method of agriculture has devastating impact on nature because it involves slashing and burning of the hills after a few years of cultivation. This practice affects the environment and diminishes fertility of the soil. Hosen, Mannan and Zobayer believe that promotion of eco-tourism will strengthen the local economy by opening up opportunities for the community. Increase in income will encourage the indigenous people to adopt a non-forest based alternative source of livelihood. Development will be sustainable and bio-diversity protected while providing economic benefits to the community and the country.

Climate change has affected life in many ways in the contemporary world. Bangladesh is identified as a highly vulnerable country in this regard. Muhammad Abdullah discusses the potential impact of climate change on the life of citizens in the face of severe damage to crops, flora, fauna, ground and surface water and the environment in general. Agricultural productivity declined due to salinity in the soil, and is a major threat to food security for the nation. In addition, climate change turns people into refugees as river erosion and destruction by tornadoes force people to leave their home, in addition to incidences of economic hardship as they are unable to earn a livelihood from their land.

The author makes a strong case for raising awareness among the people at risk in order to inform and prepare them to deal with this major threat. He argues that addressing the challenge of climate change entails the development of a set of infrastructure consisting of transportation facilities and cyclone shelters and also recommends for the establishment of effective warning systems and facilities for relief (cash and/or kind) for the affected people. Muhammad Abdullah recognizes that substantial financial and technological support from the international community is extremely important for dealing with climate change. He reviews the policies for adaptation to climate change and argues that this global challenge requires close attention from governments, policy makers and the international community.

Development has to proceed in spite of the challenges presented by climate change. Utpal Kumar De considers the impact of climate change and responses by farmers in Northeast India. He studies the pattern of climate change, its impact on agricultural productivity and the response of farmers towards changing climatic conditions in the state of Assam. Agriculture suffers the most from climate change as the incidence of flash floods and draughts increase and present hindrances to agricultural activities and productivity. This underlines the importance of adaptive behaviour on the part of farmers who are affected by loss of crop with their livelihood at risk. Farming activities are impeded by too much water or draught, crop is lost and often marketing becomes untenable due to damaged infrastructure and communication facilities.

The most common pattern of adaptation is the practice of mixed farming and crop diversity. Other options, such as use of flood and draught resistant seeds and insurance for crop, are not available to the poor framers who are the worst affected by climate change consequences. The author finds that education is a useful tool for enhancing the capacity to adopt new technology and help them deal more efficiently with this challenge. He suggests that fertility of the soil can be increased by rotating and restructuring the existing sequence of crops and staggering the harvesting time. The extent of devastation of climate change can be reduced through irrigation management and improved crop varieties to prevent economic loss. Finally, Utpal Kumar De recommends state support to farmers for generating long-term and location-specific adaptation strategies and emphasizes attention to social, economic and technical dimensions to facilitate development in the face of challenges from climate change.

It is not surprising that several chapters in this book analyse issues that have the potential to contribute to the economy. The authors propose strategies for promoting development and allowing the marginal population to benefit along with the country. This is consistent with the

#### **Concluding Observations**

Development was considered as economic growth, evolution of political institutions, or the mobilization of the masses for modernization. The concept of development has undergone repeated revision and redefinition and has become much more complex. It is no longer restricted to the growth of the economy and enhancement of purchasing power of the people. Instead, the focus has shifted to the process of people-building. Earlier, development was principally concerned with the construction of infrastructure which involved the allocation of public funds to particular localities and could open up scope for corruption. Eventually, it was realized that concentrating on the financial aspect of development provides an incomplete picture and human resources are the most important component in this process (Huque 1995, p. 282).

A number of other areas have also bene recognized over the decades. The literature on development has been enriched with inclusion of analyses of its relations to ethics, gender, human rights, environmental concern, migration, security and similar issues that have captured the imagination of analysts. This calls for a multidimensional approach and "development is now an aggregation of multiple goals and functions that go beyond economic considerations" (Zafarullah and Huque 2012, p. 45). Goulet argues that "ethical judgments regarding the good life, the just society, and the quality of relations among people and with nature always serve, explicitly or implicitly, as operational criteria for development planners and researchers" (1997, p. 1161). These are important points, but governments need to establish priorities with reference to their current state of development, capacity to plan and implement programs, and perform routine tasks of governance along with promoting development. Therefore, the contributions to this volume should help identify potentials for development and formulate strategies to improve living conditions in both urban and rural areas in the countries.

#### References

Berger, P. (1976). Pyramids of Sacrifice, New York: Anchor Books.

- Conyers, D. and P. Hills (1984). An INtriduction to Development Planning in the *Third World*, Chichester: John Wiley and Sons.
- Diamant, A. (1966). "Political Development: Approaches to Theory and Strategy," in J. D. Montgomery and W. J. Siffin, eds., Approaches to Development: Politics, Administration and Change, New York: Mc-Graw-Hill, pp. 15-47.
- Esman, M. J. (1966). "The Politics of Development Administration," in J. D. Montgomery and W. J. Siffin, eds., *Approaches to Development: Politics, Administration and Change*, New York: Mc-Graw-Hill, pp. 59-112.
- Huque, A.S. (1996). "Administering the Dragons: Challenges and Issues," in A.S. Huque, J.T.M. Lam and Jane C.Y. Lee, eds., *Public Administration in the NICs: Challenges and Accomplishments*, New York: St. Martin's Press, pp. 1-32.
- Huque, A.S. (1995). "Development Programs in Bangladesh: Hardware versus Software," Governance, An International Journal of Policy and Administration, Vol. 8, No. 2, pp. 281-292.
- Midgley, J. and A. Hall (2004). *Social Policy for Development*, Thousand Oaks, CA: SAGE.
- Rapley, J. (2007). Understanding Development: Theory and Practice in the Third World, 3<sup>rd</sup> edition, Boulder, CO: Lynne Rienner Publisher.
- Riggs, F.W. (1966). "Administrative Development: An Elusive Concept," in J. D. Montgomery and W. J. Siffin, eds., *Approaches to Development: Politics, Administration and Change*, New York: Mc-Graw-Hill
- Siffin, W.J. (1966). "Introduction," in J. D. Montgomery and W. J. Siffin, eds., *Approaches to Development: Politics, Administration and Change*, New York: Mc-Graw-Hill, pp. 1-13.
- UNDP (1991). Human Development Report, 1991, Oxford: Oxford University Press.

# Political Commitment, Land Reform and Transition in Nepal

#### Niraj Acharya

#### Introduction

Landlessness among a large segment of the population is one of the principal reasons for poverty in most developing countries. Thus, one of the most important political-economic issue these poor countries must confront is perhaps the agrarian question (Byres, 1986) arising from the landlessness of majority of the population. In countries where technological advancement and industrial development are still at a primary stage, agricultural production helps to contribute to the nation's GDP, although unequal distribution of land lowers agricultural productivity considerably and remains far from the desired level. One strategy of reducing poverty in countries where a large number of the population is dependent on agriculture could be through substantial increase in the proportion of farm land controlled by the poor (Lipton, 2009).

There are various theoretical frameworks through which scholars have examined land reform. In the 1960s, land reform was inspired by Marxian economic analysis where it was regarded only as redistribution of land from those who have excess holding to those who have none. However, along with the development of the neo liberal economic theory in the 1980s, land reform began to be seen as not only the redistribution of land but inclusion of the approach of market or technology towards the agriculture as well. Tai (1974) defines land reform as the redistribution of land holdings, but he excluded measures such as agricultural research, extension, credit, marketing and the like. According to him, land reform should primarily be seen as the means of redistribution of asset, i.e., land from those who have large holdings to those who have none or almost nothing required for basic survival. The introduction of policies and measures for advancement in agriculture would be targeted for increasing agricultural production, but land reform should primarily focus on the redistribution of land or securing tenancy rights to address the key problems of land less people. Raup (1963), however, defined land reform as the full range of measures that may or should be taken to improve the structure or relations among men with respect to their rights in land.

Therefore, some of the major characteristics of land reform should be ensuring ownership to the cultivators and reduction of absentee landlordism, provision of secure tenancy rights, fragmentation or parceling of the large land holdings, cooperative/collective agriculture for small pockets of land, and improving land registration and documentation practices. Raup argued that land reform should be initiated as a process and while the redistribution of land to the landless is primary goal, a complementary act should include advancement of the agriculture by introducing new measures and innovations such as technology, credit facility, and cooperative farming.

#### Land Tenure in Nepal

Agriculture has always been the backbone of the economy of Nepal. At present, agriculture contributes to 33% of GDP and over 70% of the people are employed in this sector (UNDP, 2014). However, Nepal has always lagged behind in formulating policies on agricultural reform. With strong roots in the feudal structure, agrarian reform in Nepal is being affected by ineffective implementation of policies, unstable political dynamics, complex geographical structure and lack of capital. Although more than 65% of labor force are engaged in agriculture (UNDP, 2014), Nepal is highly vulnerable to food insecurity and remains dependent on India and other donor agencies for food. Land in Nepal is a basis of survival, means of identity, source of culture and foundation of social recognition (Upreti et. al, 2008). However, the pattern of land distribution reflects its feudal nature with the major share held by the monarchy and their selected elites. Out of the total land area, only 18% is arable (Shrestha, 2008) among which 37% are owned by just 5% of population (Sharma et.al, 2014). According to an UNDP report (2004), the land ownership among dalits (so called untouchable caste in Nepalese society) is minimal. 15% of hill and 44% of Terai dalits are landless making them vulnerable to food scarcity and economic deprivation. Beside the uneven distribution of land, agriculture in Nepal is also characterized by a high level of absentee landlordism, large areas of underutilized farmland and poor economic condition of tillers (Willy et.al, 2009).

In the early days, Nepal was settled by migrants and hill tribes sharing different culture and socio economic structure. By the middle of the 18th century, it was already divided into about sixty principalities (Regmi, 2014). They were primarily Baise and Chaubise Rajya in the western part, Makwanpur in the south, Vijaypur in the east, Kathmandu principalities consisting of Kantipur, Badgao and Patan and Gorkha. Although these principalities had different tribal and cultural groups, they shared the same type of socio-economic structure and land was the major economic resource for them. They followed the similar structure of land

holding and the state was the primary owner of land in all principalities. Although it was not the primary source for accumulation of power, land was the instrument through which rulers would hold exercise control over powerful people. The land was than distributed to the close relatives of the royal family, military elite, and people who held important religious positions in the society in the form of different land grants. This pattern of land distribution resulted in the development of a certain structure of land holding in that period, and it still determines the agrarian condition of Nepal. The ownership of land was within the states or, more specifically, within the palace in all principalities before unification. In fact, the major form of land tenure that started in the 5<sup>th</sup> century was followed until the 20<sup>th</sup> century, and these tenures were practiced to retain control by the palace or the rulers.

Economic structures and relationships are strongly influenced by the political and social setting of a country. In Nepal, the economy has been structured through prolonged periods of kinship based rule, i.e., mainly through links to the palace and for a century by Ranas, and the social structure based on caste hierarchy which is highly stratified even at present. Land is generally the basis of the economy in developing countries like Nepal. It has also been the major source of power for the ruling class. Hence the ruling class have always used land to promote their own interests, and this has shaped the economy of the country which into semi-feudal, non-agrarian and non-industrialist and backward system. The land tenure structure which was formed according to the will of monarchy continued to have an impact on Nepal's agriculture until the 20th century. Only after the abolishment of Rana regime in 1950, the political commitment towards restructuring land tenure could be noticed, although several hurdles were faced in implementing the change.

#### **Political Transitions and Land Reform**

Land and politics are interdependent and along with the political system, the land structure or the tenure has played a role in the history of Nepal. For example, during the monarchial rule or the Rana rule, land was treated as the property of the ruler who had the right to distribute it as they wished. After the installation of democracy in Nepal, private distribution of land was abolished and all land belonged to the state. The more radical governments in subsequent years tried to implement more radical land reform, but it was not implemented.

Since land reform is more of a political issue that has the potential to disturb the establishment, several preconditions are required for accomplishing land reform. Revolution, rural unrest, intention to deter communism, ideological commitment, mood of the international community, and pressure from the population are some factors that could encourage or force the state to adopt revolutionary land reform (Tai, 1974). Some of these preconditions were present in Nepal during this time period. There were various revolutionary acts from time to time that had changed the establishment. In 1951, the Nepali Congress led revolution overthrew the Rana regime. In 1990, the all party coalition revolted against the autocratic rule of the King and installed a democratic system with an elected parliament. The Communist Party of Nepal under the influence of Maoist ideology conducted an insurgency for twelve years, and succeeded in overthrowing the monarchy in 2006. Although these phases of political transition did not succeed in institutionalizing the achievements by implementing effective policies, the approach towards land and its reform by democratic governments has been different and more revolutionary than that of the monarchy or Rana regime.

#### The Abolishment of Rana Regime

Following a prolonged struggle by the Nepali Congress, King Tribhuwan initiated a move to end the Rana regime in 1951 and the three parties (Monarchy, Congress and Ranas) formed an interim government. The period 1951-64 witnessed various reforms, such as, a transition to coalition government, a Congress majority government, and the King's panchayat regime which was enforced in 1960. As Nepal had not had any kind of census or surveys, and land was occupied by the ruling elites, reforming the agriculture in which most of the population was engaged, was the priority for every government.

	Areas (%)
Mountains, Hills and Barren areas	33.2
Forest	31
Roads and Rivers	7.8
Cultivable Land	28
Cultivated Land	13.1
Uncultivated or reclaimable	14.9

Table 1. Physical Distribution of Nepal in 1960s	3
--------------------------------------------------	---

Source: UNDP country report, 1972

Table 1 shows the physical distribution of geography on Nepal in the 1960s. More than 70 percent of area is non-agricultural land and, of the remaining 28 percent, more than half was left fallow in the 1950s and 1960s. One of the main reasons for the huge portion of land left uncultivated was absentee landlordism which was a consequence of the decisions by the rulers. Nepal was ruled by the monarchy and Ranas and, as discussed above, land was distributed to those who were close to the rulers. After the abolishment of the Rana regime, the democratic government led by B. P. Koirala tried to break the complex ruler-centric agrarian structure by introducing various acts and abolishing the land

grant systems. However, these acts were short lived, mostly because of the power held by the ruling elite even under the democratic system. When King Mahindra introduced the Panchayat system through an army supported coup in 1960, the agrarian reform was again back to the agenda of monarchy which was always using the land to hold its power. Until the general elections of 1959 (2016 B.S.), the collective government included the King and Ranas and there was not much change in the policies in spite of efforts by the government led by M. P. Koirala to introduce different acts.

#### **Panchayat Regime**

After King Mahendra seized power and the introduced "Panchayat" system in 1960 to legitimize the move and show the sincerity towards peasants, the royal government introduced the detailed land act in 1964. It was in some way a revolutionary step by the King as for the first time in Nepal's lands history, a land ceiling was imposed and credit rights of tenants were recognized. The key objectives of the land act were to lawfully distribute the land, improve living standards of peasants by introducing modern techniques, increase agricultural production and transfer inactive capital from agriculture into other economic sectors (Badal, 1994). The major provisions made in the land act were to:

- 1. Impose a ceiling on land ownership, and acquire land in excess of ceiling for distribution to others;
- 2. abolish the Jimidary system;
- 3. Provide security to tenant farmers; and
- 4. Provide for agricultural credit (Zaman, 1973).

The land act of 1964 tried to address the issues of feudalism and landlessness, but the act introduced by the monarchy appeared to have intentional loopholes through which powerful people could retain their land.

Size of holding	Households	Total Area	Avg. size	Household %	Area %
>1 ha	1651	502.17	0.30	65.12	9.66
1-3 ha	452	758.42	1.68	17.83	14.59
3-5 ha	171	581.38	3.40	6.74	11.19
5-10 ha	148	1123.81	7.59	5.83	21.63
10-15 ha	56	615.15	10.98	2.20	11.84
15-20 ha	26	432.64	16.64	1.02	8.32
20-30 ha	13	314.12	24.16	0.51	6.04
<30 ha	18	867.82	48.21	0.71	16.70
Total	2535	5195.47	2.05	100	100

Table 2. Land holding in 1970 (after 6 years of land act) \*

Source: Zaman, 1973

\*Note: the data is self-computed on the basis of data available from Zaman, 1973. Original data was based on taking the sample size of 12 districts out of 75 districts in 1972 and was segregated into different regions such as Kathmandu, eastern Terai, western Terai, eastern hill and western hill however the above date shows the total number of land holding by combining the regions.

Even in the 1970s, 19 years after the abolishment of Kinship based rule, the landholding structure did not change much. Table 2 shows the uneven distribution of land where 0.71% held almost 16.70% of land at an average of almost 50 hectares per families. However major portion of the population which consisted of 65.12% held only 9.66% of land with an average of less than 1 hectare of land. The vast variation of unevenness in land holding structure was the result of more than 3 centuries of kinship rule which had used the land for their personal gains. When the Rana regime was overthrown and a general election was held in 1959, peasants had expectation from the "people's government" to introduce revolutionary land reform measures to amend the uneven trend of land distribution. The expectation was short lived as in 1960, the then monarch overthrew the democratically elected government through a coup and introduced the Panchayat regime.

#### **Return to Democracy, 1990**

More than 30 years after the coup by King Mahendra, Nepal's development including the agrarian reforms remained stalled. Although there were various development priorities and the five-year plan was initiated in the 1960, the ruling monarch did not interfere much with the land holdings of the large feudal landlords as they held important positions in the palace and bureaucracy. After a civil movement in 1990, Panchayat was abolished and a new constitution was adopted to impose checks on the power of the monarch. However, it was unable to overthrow the monarchy, and the King continued to remain above the constitution which may have contributed to another coup at the beginning of the 21<sup>st</sup> century.

Size of Holdings	Hold	lings	Total Area		
Size of Holdings	Number	%	Hectares	%	
No land	32,109	1.2	1571	0.1	
<1 ha	18,77,702	68.6	791883	30.5	
1-2 ha	529467	19.4	716533	27.6	
2-3 ha	168449	6.2	400,227	15.4	
3-5 ha	88,165	3.2	328089	12.6	
>5 ha	40158	1.5	360669	13.9	

Table 3. Land Distribution by farm size in Nepal, 1991

Source: CBS, 1994

A prominent feature of agriculture in Nepal is the unequal distribution of land among the people. As seen in the above table, almost 68.6% of population owns less than 1 hectare of land and 1.5% of population own more than 5 ha of land which constituted 13.9% of total land. These lands were all the land granted by the palace and rulers and even after the democratic government came to power in 1990. Although the monarch was made a constitutional head, the government could not make meaningful changes in the landholding size. As only 1% of the population was composed of Ranas, Shahs, bureaucrats and other influential people, the people's representatives shied away from reducing their power as it could lead to loss of their positions, as was seen later.

There were several changes of governments after 1990 and some announced radical measures for land reform. However, due to rapid changes in government, these measures were not implemented. The government formed under Man Mohan Adhikary tried to address the agrarian issue and formed a commission under Keshab Badal in 1995. This commission is still regarded as the most radical, and it had proposed some measures to redistribute the land to the landless, but sudden change in government halted the implementation of this commission's report.

The period from 1990- 2006 was crucial in Nepal for various reasons. While the country was settling down in the much-awaited new democratic environment, the political parties were in confrontation with each other. For most of the time, the situation was unstable and no government could complete its five year tenure. The UML government formed in 1994 took the first major step in revolutionary land reform and formed the High Level Land Reform Commission under the chairmanship of Keshab Badal. However, immediately after the completion of report, the government was removed from power, and the incoming Congress government did not give much importance to the report. Moreover, the Agricultural Development Strategy was formulated with the help of donor agencies which designed the 20-year agricultural plan that emphasized increasing production, managing irrigation and fertilizers and similar other growth based innovations, but disregarded the landholding issue. In 1996, one section of the Communist Party submitted a 40-point demand to the government and launched a "people's war". One of the major demands in those 40-point was that "land should be owned by those who cultivate it". Over the next 12 years, Nepal faced a crisis which was mainly located in the rural areas, but the unrest halted many development projects including the land reform.

Landholding	1961		1971		1981		1991		2001	
categories	holding	Area								
<0.1 ha							6.4	0.4	7.8	0.5
0.1 to 0.2 ha	56.2	11.9	62.7	13.8	50.3	6.6	9.8	1.5	10.4	1.9
0.2 to 0.5 ha							27	9.4	39.1	12.3
0.5 to 1 ha	18.8	12.2	14.9	12.1	16.3	10.8	26.3	19.2	27.4	24.2
1 to 2 ha	11.9	15.4	11.1	17.4	17.3	19.9	19.6	27.6	17.6	29.8
2 to 3 ha	5.2	11.7	5	13.4	7.2	15.4	6.2	15.4	4.7	14
3 to 4 ha	2.7	8.6	2.3	8.6	3.5	10.8	2.2	7.8	1.5	6.6
4 to 5 ha	1.5	6.2	1.2	5.7	1.9	7.7	1.1	4.8	0.6	3.4
5 to 10 ha	2.6	16.4	2.1	15.5	2.7	15.8	1.2	8.1	0.6	5.3
>10 ha	1	17.7	0.7	13.7	0.7	13.1	0.3	5.8	0.1	2

Table 4. Percentage of total household and holding from 1961-2001

#### Source: CBS, 2006

In the year 1961, ten years after the abolishment of Rana Regime, 2.6% of population had occupied 16.4% of land more than 5 ha, whereas 75 % of population had less than 1 ha of land. After 40 years of abolishment of Rana regime too, the land structure has not changed much as 0.6% of population hold more 5.3% of total land with more than 5 ha holding 84.7% of population hold 38.9% of land less than 1 ha. Over thirty years of governing the panchayat regime introduced the land act, but this could not significantly improve the landholding structure due to many loopholes in the ceilings it had imposed. Similarly, the land reform commission formed post democracy had also suggested various efforts to reduce the uneven distribution of land, but the commission's report was not implemented. In this way, the quest for an appropriate answer to the agrarian question in Nepal continues to be frustrated by the political fragileness since the advent of the democratic regime.

#### Post 2006

Nepal was paralyzed by a vibrant civil movement termed as JanaAandolan II for 19 days in April 2006. The mass movement all over the country was a demonstration against the King's direct rule, and demand to end the ten year long armed conflict as well as inclusion of the socially oppressed ethnic groups into mainstream and the economy. The result of such mass uprising was that Nepal, after more than 240 years of Shah Dynasty rule, became a republic and achieved a new constitution in 2016 which is considered to be participatory and inclusive than before, and gave overall sovereignty to the people.

Although the period after the reinstatement of the parliament in 2006 raised new hope, the political parties of Nepal were unable to institutionalize this historic achievement successfully. Over the next ten years, Nepal had two constituent assembly elections, 9 prime ministers

and several movements by the people exerting pressure on the political parties to institutionalize the change that was promised in 2006. Thus, political instability has sidelined the development issues, and most of the youth population has migrated abroad for employment making remittance one of the largest contributors to the economy.

The elections of 2008 gave the then Unified Communist Party of Nepal (Maoist) majority in the constituent assembly and the Chairman of the party Pushpa Kamal Dahal (Prachanda) became the first elected prime minister of Nepal. Following the commitment made during the insurgency, the prime minister formed the High Level Scientific Land Reform Commission under the chairmanship of Haribol Gajurel. As it was a communist government, people expected that the regime would sincerely examine the agrarian condition and implement the revolutionary land reform policies which would benefit the peasants. This commission, too, proposed a land ceiling like the Badal Commission, but again the government fell before the commission could submit the report. The new government under CPN-UML did not take into account, but formed a new commission under Ghanendra Basnet. Ironically, before the commission could submit its report, the government changed and new government shelved it.

	Holdings				
	Number (HH)	Areas (ha)			
Holding without land	115538	3119.3			
<0.1 ha	355549	20,076.5			
0.1 ha-0.2 ha	461,957	68,161.8			
0.2 ha-0.5 ha	1169503	396720.9			
0.5 ha-1 ha	984022	695060.1			
1 ha-2 ha	548974	749810			
2 ha-3 ha	129364	308568.5			
3 ha-4 ha	39,507	134353.1			
4 ha-5 ha	14881	65364.7			
5 ha-10 ha	10744	69177.1			
Above 10 ha	1054	15227.2			
Total	3831093	2525639.2			

**Table 5** Number and Area of holding 2011

Source: Statistical Information on Nepalese Agriculture, 2011

Table 5 presents the land holding structure in 2011, five years after Nepal became a federal republic. The land structure was highly affected by the long kinship based rule where only a few people close to the palace or ruler held the maximum portion of land. After abolishing the monarchy, there was an expectation that the government formed under the new republic system would introduce revolutionary land reform measures that could bring an end to the unequal distribution of land. Two successive governments formed land reform commissions in four years, but the lack

of political stability and political commitment prevented the implementation of any form of land reform policies. By 2011, 0.06% of households still owned 5% of land with an average of 4-10 ha of land each, whereas 80% of people own less than 1 ha of land or no land at all. This highly uneven distribution of land has now been further aggravated by the fragmentation of land mainly by large land holders. Therefore, the proposal by the three commissions to impose a land ceiling may not be effective anymore as these lands are now further divided into smaller landholdings, mainly because the time lag helped the large land owners to evade the limit on the amount of land that can be held.

#### Conclusion

Land reform and politics cannot be separated as they have a major impact of one another. While political decisions influence the nature and outcome of reform to a large extent, appropriate land reform also helps to balance political power in the country. In a democracy, political influence over the electorate and state of the economy are important factors for the success of political parties. While the influence is assessed by the support from the mass, the economy or finance is powered by the support from business elites and landlords. The elites are powerful people who have retained their position through linkages with the palace, military and bureaucracy, belonging to a high caste or being religiously influential people. Hence the degree of commitment from political parties hinges on the struggle between the elites and peasants and due most of the reform policies did not succeed.

Land reform is intimately related to restructuring economic and political influence. Although it has the potential to benefit a large segment of population who support political parties to win elections or initiate, elected leaders are unwilling and unable to disregard the wishes and interest of the elite class whose financial support was critical for winning seats in the parliament. The political connections of landlords to the establishment are very strong and can easily thwart new land reform policies from implementation. Every attempt by various governments at implementing land reform policies in Nepal was frustrated, apparently because next governments did not care to continue with measures initiated by the previous government. The Badal Commission, Gajurel Commission, and the communist government tried to address the issue in successive governments, but they were out of power before implementing any of the recommendation and the reports are lost somewhere in the ministry stacks.

In an agricultural society, land is at once the principal source of wealth, the foundation of political power and the symbol of social prestige (Tai, 1974). Hence the major feature of land reform would alter the socio-economic structure that is impossible to accomplish without strong political commitment. Transferring land from landed elites to landless peasants would not only shift ownership of a factor of production, it would also result in major changes in the status, economy and power. In short, it could eliminate the domination of one class over another. It can be said that land reform will not succeed without full commitment from the government or the political party in power. The powerful people would not give up their power, economic strength and prestige voluntarily. While other countries have made significant progress in industrialization, Nepal is still struggling to find an appropriate method to solve the agrarian question it has faced since the 5<sup>th</sup> century. Only a strong political commitment from a stable government in a genuine democratic setting can help Nepal move towards progress in this aspect.

#### References

- Byres, T. J. (1986). *The Agrarian Question, forms of capitalist agrarian transition and the state: An essay with reference to Asia.* Social Scientist, vol. 14, no.11/12
- Lipton, M. (2009). Land Reform in Developing Countries: Property Rights and Property Wrong. Routledge Publication
- Raup, P. (1963). The contribution of Land reforms to agricultural Development: An analytical framework, Vol: 12, No. 1, Economic and Cultural Change, University of Chicago
- Regmi, M. C. (2014). Land Ownership in Nepal. Adroit Publisher: Delhi
- Sharma SR (Et. al.) (2014). *Negotiating Access to land in Nepal.* Journal of contemporary Asia, Vol. 44, No. 3 PP-521-539
- Tai, H. J. (1974). Land Reform and Politics: A Comparative analysis. University of California Press
- Upreti, B.R. and Sharma, S. R. (eds.). (2008). Land Politics And Conflict In Nepal. Kathmandu Community Self Reliance Centre
- Wiley. L. E (Et. al.). (2008). Land Reform in Nepal: Where is it Coming from and where is it going. DFID
- Zaman, M. A. (1973). *Evaluation of Land Reform in Nepal*. Ministry of Land Reform, His Majesty Government of Nepal

#### Reports

UNDP country report, 1972 cited in Regmi (ibid.)

CBS 1994 cited in Badal Commission report

High level Land Reform (Badal) Commission report (Keshab Badal), 1995

CBS Agriculture Monograph 2006

- High Level Scientific Land Reform Commission report (Ghanendra Basnet), 2010
- Statistical Information on Nepalese Agriculture. 2011/12. Ministry of Agricultural development. Kathmandu
- High Level Scientific Land Reform Commission report (Haribol Gajurel), 2011

Agricultural Development Strategy. 2014. Ministry of Agricultural Development. Kathmandu

UNDP annual report 2014

### **Rural Development in Bangladesh and Korea**

#### LEE Misook Syed Salah Uddin Ibne

#### Introduction

Many countries in Asia and Africa became independent in the twentieth century after the conclusion of the Second World War. Most of these newly independent countries had a large population who lived in the rural areas and were engaged in agricultural activities without modern facilities and support. Rural development initiatives were considered necessary for the improvement of rural communities. The Republic of Korea became independent from Japanese rule and Bangladesh was liberated from Pakistani and British colonial after the end of Second World War. Both the countries are located in Asia but have different socio cultural and geographical context. The countries were also similar in terms of lack of resources with a large population groups living in the rural areas. The *Comilla* model and *Saemaul Undong* were initiated in the People's Republic of Bangladesh and the Republic of Korea respectively to transform the rural communities into modern villages by developing infrastructure and supplying modern inputs. Both the programmes were participatory in nature.

Rural development is a critical element for comprehensive development of a country. It refers to the process of improving the quality of life and economic well-being of people living in relatively isolated and sparsely populated areas (Malcolm. 2003).Rural development signifies a distinct approach to interventions by the state in the economics of underdeveloped countries, and one which is at once broader and more specific than simple agricultural development. The scope is broader because rural development entails much more than enhancement of agricultural production and is, in fact, a distinct approach to the development of economy as a whole. Rural development is more specific in the sense that it focuses (in its rhetoric and in principle) on poverty and inequality (Harris, 1982.pp.14-15).It is a process of governing, rather than a programme or agency and represents an attempt to restructure the government's relationship with its non-urban population (Tepper, 1971).

The Comilla model of rural development was initiated by the Pakistan Academy for Rural development (at present Bangladesh Academy for Rural development) in the district of Comilla. Another model of rural development known as *Saemaul Undong* was initiated in the Republic of Korea in the early 1970s. The chief objective of both programs was to reduce poverty in the rural areas, generate income and make real changes in the life and livelihood of the rural society in Korea and Bangladesh. This chapter presents a comparative study of these two models of rural development and their features. It intends to compare the socio-economic context of the two states of Korea and Bangladesh where the models of rural development were implemented, the institutional framework and area of implementation, and highlights the extent of success and failure.

#### The Context of Rural Development

From one point of view, the term development implies economic growth that can be measured in a quantitative manner. However, it is distinct from growth and should not be considered only in quantitative terms. Development also aims at qualitative changes in various aspects, like organization, institution, culture and society (Hayami & Buller, 1987), and it is a continuous process.

Rural development generally refers to a broad range of technical, economic, political and social change related to private and governmental effort to enhance the wellbeing of rural citizens (Stevens, 1971). The World Bank defines rural development as "A strategy designed to improve economic and social life of a special group of people. It involves extending benefits of development to the groups who seek a livelihood in the rural area" (Deb. k, 1986). The World Bank emphasizes the livelihood of the poor including marginal farmers, sharecroppers, tenants, traders and other occupational groups who live at subsistence level. It should be pointed out that comprehensive rural development entails the effort of several agencies across the government.

Rural development can be described more specifically as community development because it focuses on rural communities. In the Republic of Korea Saemaul Undong is widely considered as a successful community development model. It is described as a "pure Korean way of community development which was initiated by the political will of the top national leadership in order to escape from poverty"(Chang,2005).

A study reviewed the Saemaul Undong in the 1970s as a rural modernization movement from a perspective of populism, and found it to be a combination of the governing strategy of the regime in power and the socioeconomic needs of villagers (Ha, 2014). It was pointed out that Park achieved it by holding several rural events and providing economic rewards by encouraging comradely connection with the people. The author added that the regime developed solidarity between the nation and rural areas by applying the cooperative traditions to the organization and system of Saemaul Undong. The administration attained success by developing group identity through large-scale Saemaul education and eventually disseminated the governing ideology of modernization throughout the country effectively (Ha, 2014).

The first significant experiment for rural development was undertaken in the 1960s (Khan 1989). Tepper(1971) pointed that East Bengal after being renamed as East Pakistan remained domestically a quasi-colonial state. As a result, cultural development in the region fostered an anti-Pakistan sentiment. Poor performance of the Village Aid program contributed to the development of the Comilla Model of rural development to overcome its deficiencies. It was engineered by the Pakistan Academy of Rural Development (renamed subsequently as Bangladesh Academy for Rural Development (BARD). Raper(1970) pointed out that the Comilla Model piloted a methodology for stimulating agricultural and rural development based on the principle of grassroots cooperative participation by the people.

#### The Context of Korea and Bangladesh

The Republic of South Korea is situated in East Asia at the southern part of Korean Peninsula. This area has a rich history of mostly village based human settlement from the Palaeolithic period. The Korean society is traditionally agricultural in nature. Massive exploitation under colonial rule compelled large numbers of poor tenants and farm labourers to leave their homes. The war between North and South Korea waged from 1950 to 1953. It resulted in food shortage and destruction of infrastructure.

Korea has a tradition of century old village cooperation system. In bad climate or during the harvesting period, village communities helped one another. The system of exchanging labour with other communities is known as *pumassi*. During the Song dynasty in the 15<sup>th</sup> century, another system of community driven activity took place under the influence of neo-Confucianism.

Between 1962 and 1994, the South Korean economy grew at an average of 10% annually, fuelled by annual export growth of 20%. This period is known as the Miracle on the Han River. The Korean economy experienced extraordinary success, combining economic growth with significant reduction of poverty. This happened over a period of three decades in the twentieth century. Korea has set an example in sustainable development for developing countries. It has advanced infrastructure and sophisticated policies to contribute to the improvement of the country. Eventually, Korea has transformed into a dynamic knowledge economy.

Bangladesh is situated in South Asia between 20.5N and 26.5N latitude and 88.5E and 92.5E longitude. The total land area of the country

is about 156000 square kilometre with a population of more160 million. Hundreds of rivers flow through the country into the Bay of Bengal. The country experiences heavy rainfall during the rainy season and the season is dry in the winter.

Bangladesh has a large number of peasants and small farmers, and agriculture has been the main source of livelihood of the rural population. In 1965, more than 65 percent gross Domestic product in East Pakistan originated from agriculture. Paddy was the major crop, while jute and sugarcane were cultivated during the rainy season. Pulses, oilseeds, tobacco and vegetables were grown in the winter time.

#### The Comilla Model of Rural Development

Two major events in East Pakistan in the 1950s and 1960s initiated a transition. A land reform law abolished the colonial Zamindari (landlord) system in 1950. At that time, Muslim tenants in the rural society were mostly marginal and small farmers. Following political uncertainties and power struggle in Pakistan, General Ayub Khan emerged as the leader of the country through a military takeover, and introduced the basic democracy system. He tried to develop a support base both in rural and urban areas through this system, and tried to accomplish this by providing support to large landowning farmers. The V-Aid Academy in Comilla was unable to address the issue of landlessness and offer direct support to the landless class in this complex political context. Therefore, it prepared a different package for the poor farmers of East Pakistan through a two-tier cooperative rural works programme, thana training and development center, and improved irrigation system.

The Academy did not adopt a radical approach that could come into conflict with the existing system. From the beginning, it developed a number of "value premises and ideological commitments'. These were:

- a. The condition of rural life is worthwhile and the living conditions in the rural areas must be improved;
- b. The solution of these problems should come from the local level;
- c. The working style in the village will be Gandhian;
- d. Labour intensive programme to utilize mass employed;
- e. Co-operative movement for peasants' protection and production;
- f. Islam as a modernization force; and
- g. Mechanization of agriculture (Choldin, H.M. op. cit., p-675).

The Academy obtained permission from the central government to make Comilla thana as its laboratory that covered an area of 100 square miles with 300 villages. The thana was considered as social laboratory area for research and demonstration and the title of Comilla model became recognized. The first stage of study on Comilla area was observational and analytical in nature to find about the real situation. These tasks were done by both instructors of the Academy and researchers from Michigan State University in the United States of America. Efforts on identification of problems were based a series of conferences and camps with various groups from the villages, and opinions of the villagers were meticulously recorded. The process was aimed at mere fact finding rather than research, and helped understand the social and economic structures of the villages. The Academy took the policy of "Let begin by doing small thing, and slowly it may become better; it may become more sophisticated" (Khan, 1983).

#### The Comilla Model

The Comilla was based on six steps to fulfill its goals of developing a comprehensive and effective rural development initiative.

First Step ───→	Make use of the existent Training- cum- research Institution. BARD.
Second Step ───→	Affiliation of a laboratory area i.e. Comilla Kotwali Thana.
Third Step ───→	Intensive study and Consultation with Community People. Understanding the problem from Below.
Forth Step ───→	Close collaboration with planning Commission with national Level.
Fifth Step ───→	Continuous evaluation and documentation of the pilot project. Determining the strength and Weakness of the project for further improvement.
Sixth Step ───→	To assist the government agencies in the multiplication of the model.

Source: MA Quddus, 1993

**Features of the Comilla Model** 

#### **Two Tier Cooperatives**

The principles and philosophy of the Academy cooperative movement had to be introduced to the rural area. The Academy recognized the history of cooperative movements and their pitfalls in East Pakistan, and used the Raiffeisen cooperative model. The main aim was to neutralise the conflicting forces, rather than using the harmonious forces within the village.

The major objective of such cooperatives is primarily to develop villagers own capital through savings, although the impact would take a

long time. The new form of cooperative movement helped to develop trust among the villagers, enhance their capacity, build harmony among villagers, improve the capacity of planning and implementation, and provide a platform that would help them link the village with service providing institutions for activities in family planning, health, adult education, women's education and home development. Above all, it would help villagers attain self-confidence and believe in their capacities.

The village cooperatives in Comilla Sadar thana formed their federation known as Thana Central Co-operative Association (TCCA) in 1962. It assisted with the allocation of responsibilities, and the village societies were to perform specific functions and the central association was to deal with business, management, economic development, training, supervision and linking the village with other relative departments. (Hart, 1971, p. 57).

# Thana Training and Development Center (TTDC)

Lack of effective administration was a major problem in the V-AID program. During the 1960s, there was a gap between the subdivision (Thana) and village levels. Although there were Union Boards situated between them, the administrative linkage between these institutions was absent. The sub division/thana was basically a police station. Therefore, nation building departments like agriculture, health, cooperative, education, etc. were there but no systematic economic development activities in villages were undertaken.

# Rural works Programme (RWP)

The Academy identified major areas of weaknesses of the rural setting of Comilla in the early 1960s. Reconstruction of physical infrastructure for drainage, embankments and roads was the first priority. It was felt that the existing departments lacked the ability to perform the job of developing infrastructure in the rural area. The rural works program is a labour-intensive programme that aimed to develop infrastructure in the rural areas through local government institutions. It was observed that during dry moths of the year (January-May) the landless labours remained jobless, and the rural works program provided them with support for livelihood.

# The Thana Irrigation Programme (TIP)

Irrigation is an important part of crop production and is needed in the dry season. The Thana irrigation Programme (TIP)was an extended work program of the Comilla model and it was introduced to help with dry season paddy production. The Academy started experimenting with the programme in early 1962, and it was fully operational by 1965. The programme was so successful that by 1970-71 it was extended to 352

thanas of the country. The reason of success is increase in the production of HYV rice and possibility of producing rice in the flood free season.

# **Effectiveness of the Comilla Model**

The Comilla rural development model was the first comprehensive and participatory approach for rural development in Bangladesh. The potentials, viability and effectiveness of the model have been subjected to critical examination over several years. They demonstrate that the program had effectively helped to improve the livelihood of all sections of rural people including peasants, artisans, women, youth and children. The project also helped to identify the main causes of rural poverty and backwardness.

The foundations of the model of rural development (TTDC, RWP, TIP, Two-tier Cooperatives) evolved through the experiments undertaken in Comilla, and made significant contributions towards national development in Bangladesh. The experiments generated many new ideas and methods that provided a basis for formulating other national programme. For example, the family planning program was completely redesigned in the sixties following the results of a pilot experimentation by the Academy. The national program in women's development introduced by the BRDB (Bangladesh Rural Development Board) is based on the model developed through the Comilla experiment.

The Comilla model has ushered in a new era of rural development in Bangladesh by replacing the old colonial approach to "development through officers". The model has pioneered the method for replacing the three characteristics of the colonial era, namely elitism, centralism and paternalism by a system of decentralized administration and participatory rural development.

The model helped establish a wide range of innovative methods that are essential for promotion of rural development in the country. It contributed to the development of organizations for small farmers and peasants to facilitate production and protection, and the accumulation and investment of capital in rural areas. The Comilla model placed people's participation at the heart of the development process and the nurturing of leadership in the rural areas. In addition to the incorporation of a bottomup planning process, the model demonstrated that large scale adaptations of technological innovations can take place in backward rural communities, and the rural people and government officials can work as partners in development.

# The Saemaul Undong

Saemaul Undong started its journey as a new village movement in 1970-71. At the beginning, the government provided some material support to more than 3300 villages of Korea for the project. This was a primary support to encourage villagers to plan for developing the infrastructure, and more than half of the village mobilized their resources for community development. In the next stage, government support was devoted to the transformation to self-reliance villages. Inspired by the success of the experiment, the villages began to receive package of projects. These packages were much more comprehensive in nature and included larger government support with a focus on income generation. Participating villagers were receiving payments for their labour. Village cooperatives were initiated and encouragement was provided by allowing them to retain half of the income generated from Saemaul Undong. That fund could be used for joint investments for the village.

Saemaul Undong has four goals based on the need and aspiration of the community. They include increasing of production from a limited area of arable land, earning higher income, obtaining better security for community life, and looking for opportunities in off-farm activities to improve social and financial status. The goals are comprehensive and detailed. As result, there were integrated efforts by government officials, community leaders and villagers/community members to work for the success of this effort. Integrated participation was the key strategy for running the movement. Community members had the opportunity and implementation access run programme. to plan and to the The Saemaul spirit had to be instilled in the hearts of the people and practiced in their everyday life. Finally, all activities were to be undertaken for the interest and benefit of the community and participants, and should be directly or indirectly linked to an increase in production and income. Spiritual development is the key force for attitudinal change in the mindset of the people of Korea. Diligence, self-reliance and cooperation constituted the foundation of Saemaul values.

#### **Features of Saemaul Undong**

The key to the success of Saemul Undong was an appropriate institutional framework and synchronization of different organization for planning and implementation of at the community level. The administrative structure represented a pyramid that comprise from the top, ministries of central government, level of lower government administration including that of province, city-county, town-myun, and at the lower level, at village-ri.

The involvement of local government bodies helps to reduce conflict among the stockholders within the community. Studies have found thana significant strategy of the Saemaul Undong was pooling of resources from the delivery organization to provide efficient services in the wide range of activities undertaken in the communities (Choe, 2005). There was a system of monitoring the activities and performance of officials of local governments, who had to meet frequently with the community to ensure the efficiency and effectiveness of various projects.

## **Government Administration Saemaul Organization**

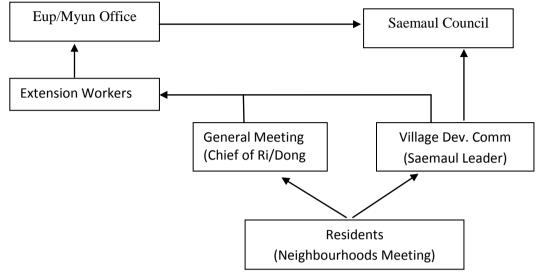


Fig: The Saemaul Undong Implementation at Community Level

# Achievement of Saemaul Undong

The Asian Development Bank pointed out that the Saemaul Undong movement improved both individual and community well-being by reducing poverty through increased household income and access to infrastructure modern and services with mechanized farming. electrification, improvement in the quality of housing and health services, and child care provided by Saemaul nurseries during the planting, cultivation, and harvesting seasons. Moreover, it empowered local communities to accumulate social capital, and revitalized the community leadership by permitting younger people to assume leadership roles traditionally held by senior members of society. Finally, it helped create a status free social context within the traditional rural village setting, and facilitated acceptance of modern roles for women in terms of overall social participation, management of household budgets, and part time employment as wage earning(ADB,2012).

The Saemaul Undong has successfully transformed the layout of rural areas of Korea from backwardness to modern physical form. It also helped to improve the economic condition of rural mass by creating income generating activities. The projects contributed to sharp increases in the income of households in the 1970s.Saemual Undong helped develop the will power and cooperation within the village and provided support for developing alternative income source for the villagers. The following table has shown the increasing trend of household income during the period of 1970s.

Year Household Income		Agricultural Income		Non-Agricultural Income	
	Income	Amount	Ratio (%)	Amount	Ratio (%)
1970	255,800	194,000	75.9	61,800	24.1
1973	489,700	390.300	81.2	90,400	18.8
1976	1,156,300	921,200	79.7	235,100	20.3
1979	1,531,300	1,531,000	68.7	696,200	31.3

 Table 2: Increase trend of Farming Household Income in 1970s

*Source*: National Council of Saemaul Undong(1999). Saemaul Undong in Korea. *P.* 25.

# A Comparison of the Comilla Model and Saemaul Undong

# Common Socio-Political Context

Saemaul Undong and the Comilla model were implemented around the same time period in two different areas of Asia. There were similarities in the economic and social situation in the two countries. The timing of implementation should be noted with reference to the political contexts as they were similar. The Comilla model was introduced in the 1960s and Saemaul Undong in the 1970s. Both countries had leaders with military backgrounds, and the rural areas were more progressive economically and politically compared to the urban areas, and the villages needed assistance to move forward. In the case of Comilla model, experimentation by the government with both strategies of development and political structure of East Pakistan facilitated the process. In Korea, Saemaul Undong contributed to the creation of a strong political support base among the rural population, and to develop a new power structure in the rural areas.

The case of the Comilla model developed in a more complex social context than Korea. The land reform in 1950abolished the Zamindari system, but the law did not effectively help the middle and poor peasants escape the poverty trap. Seasonal flood, shortage of food several months in a year, and different sizes of land held by the farmers made the task complicated, and there was deep social stratification in the rural society. Korea faced a different problem as the entire infrastructure had broken down during the Korean War. Seasonal joblessness and food shortage were common issues, but a successful land reform helped reduce resource inequality among the farmers. At the village level, the society was not so complex and there was a positive environment for initiating a major rural development program.

# Diverse Implementation Need

The Comilla model of rural development and Saemaul Undong were implemented for different causes and needs. The Comilla model was a response to failure of a much wider program of V-AID which was implemented throughout the country. The government officials were the main mobilizers and catalysts for the program. However, due to the colonial attitude of the officials, lack of understanding of the real situation in the rural area and lack of coordination and participation of rural people, the program failed to achieve its goals and objectives.

The Rural Development Academy was established to train V-AID officials. After the V-AID Academy failed to deliver, the focus shifted to people's participation and experiment of projects on a smaller scale. Only the Kotwali Thana (Sub-district) was selected as the social laboratory area for experimenting with projects of the Academy. In this period of experimentation, problems were identified by the villagers and solutions, too, came from the village. So, the development approach was more home grown and indigenous, although professionals from the Academy helped to develop the ideas.

In the case of Saemaul Undong the need of implementation was different. Korean cities were developing rapidly in the 1960s due to industrial revolution in the country and income disparities between the urban and rural population were increasing rapidly. As a result, the social and economic conditions in the rural areas were worse than the city, and there was raid migration from villages to the city. Thus, a massive development initiative was needed to restore the socio-economic stability in the villages.

Saemaul Undong can be translated as "new village", and it was a massive movement to modernize the rural society. As the characteristics and nature of the program were formidable, all agencies and institutions of the government related to welfare and development were involved in different phases and sections in creating the policy and its implementation. The lead was given from the top where leadership was provided by President Park Chung-Hee.

#### Small vs Large Scale Implementation

The Comilla model did not seek to implement the projects in large scale, and the number of projects in Comilla Kotwali thana was restricted to 500 hundred village. These projects were designated as action research. After several years of experimentation, the Academy recommended the Planning Commission to implement all over the country. For Saemaul Undong, the situation required large scale implementation of the projects. The first projects were introduced in about 33,000 villages all over the country. The extremely large scale required involvement of all government bodies from the central to local levels. The central government made the policy and decision of engaging various service giving bodies while the local government played the role of implementation.

# Support and Input Services

The government provided subsidy to the projects under the Comilla model of rural development. It was not in the form of goods or inputs, and the Academy gave cooperative backup and technical support. Saemaul Undong received subsidy in the form of goods as well as services. Developing infrastructure was a major goal for both projects. In the Comilla model, the rural works programme played a vital role in developing the physical infrastructure in the village, as roads and embankments helped to deal with seasonal flooding and crop damage. The roads helped to develop linkages between urban markets and rural societies. Saemaul Undong helped to transform rural infrastructure into modern facilities that contributed to better living condition as well as a good network for marketing agriculture produce.

# Generating Income and Savings

Both models have unique characteristics of generating income and accumulating savings by the villagers. Under the Comilla model, projects were taken to introduce high yielding varieties of seeds and new irrigation facilities through the farmers' cooperatives for improving agricultural production. The (*Krishak Somobay Samitis* (Farmers Cooperative Societies) had created a savings base for the rural people, and it helped to increase income as well as savings through cooperatives. In the case of Saemaul Undong, some of the projects were directly related with growth of production and diversified farm activities. The village owned society had enough income to save, and growth of income and savings helped to transform the rural society into a modern one. It is notable that there was a dramatic increase of income in the Korean model. In the Comilla model, the large and medium farmers benefitted more compared to small and landless peasants.

# **Conclusion and Recommendation**

The Comilla model experiment had established a number of learning experiences, which have been instrumental in shaping the rural development process in Bangladesh. The model offered an alternative to the top down model with the introduction of a decentralized administrative structure for organizing participatory rural development. The model has shown an effective way of tackling critical and chronic problems of low productivity, food deficit, unemployment and growing poverty in rural areas. The model also demonstrated a viable method of organizing villagers, self-mobilization of resources and ensuring and implementation of participation in planning development programmes. All these learning experience led the government to adopt the four major programmes, the TTDC (Thana Training and development Center), RWP (Rural Works Programme, TIP (Thana Irrigation Programme), and TCCA (Thana Central Cooperative Association), for replication throughout the country.

After the independence of Bangladesh, the Comilla model has undergone transformations to suit the needs of the changing times. The two-tier cooperatives were being replicated by the BRDB (Bangladesh Rural Development Board) all over Bangladesh. The Thana Training and Development Centers (TTDC) have changed with the establishment of the upazila, one of the strongest local government units in the country. The Rural Works Program has been absorbed by the Local Government Engineering Department (LGED). The Thana Irrigation Program has been placed under the Bangladesh Agriculture Development Board. Thus, the Comilla model of rural development has provided a strong ground for initiating rural development out of the control of bureaucratic and administrative officials with an effective bottom up approach, where participation of rural people were ensured under a framework developed by academicians from home and abroad. It also identified some ground rules for dealing with development programs, opened up the scope for several development institutions from the centre to the local level.

Saemaul Undong has not only transformed the villages into a modern form, and also changed the mindset of rural people in Korea. The spirit and slogans have provided an impetus for enhancing community development. The approach was a mixture of top-down and bottom up approaches, but the learning from the projects has transformed into a new stage of development. The projects helped developed the will power and elevated the spirit of the rural people. After the initial planning and implementation processes, the movement spread to the cities and industrial as well as the private sector.

Saemaul Undong has become a model for developing countries, especially Africa and Southeast Asia. The Korean government is pleased with the results, views it as an effective tool for reducing poverty as well as changing the mindset of rural people. Lessons from the Comilla model of rural development and Saemaul Undong represent different strategies for reducing poverty, generating income and developing rural institutions for transforming rural society.

#### References

Azhar, A. (1975). Rural Development in Bangladesh. BARD, Comilla.

- Tanvir, A. K. (1989). "The Implementation of Rural Poor Programmes in Bangladesh - A Study of the Initiatives of the Government and Non-Government Organizations". University of Sheffield.
- Raper, A. F. (1970). Rural Development in Action: The Comprehensive Experiment at Comilla, East Pakistan. *Cornell University Press: Ithaca*.

- Choe, C.S. (2005). Key factors to successful community development. The Korean experience
- Choldin, H.M. (1972). An Organizational Analysis of Rural Development Projects at Comilla, East Pakistan. Economic Development and Cultural Change, 20(4), 671-690.
- Chung, K. (2009). Experiences and lessons from Korea's Saemaul Undong in the 1970s). Seoul: Korea Development Institute.
- Douglass, M. (2013). The Saemaul Undong: South Korea's rural development miracle in historical perspective. Asia Research Institute, National University of Singapore,
- Ha, J.H. (2014). Park Chung-Hee Regime's SaemaulUndongan the Populist Political Strategy-Focusing on Rural Saemaul Undong in the 1970s. *Asian Journal of Humanities and Social Studies*, 2(5).
- Hart, H. C. (1971), 'The Village and Development Administration', Durham, North Carolina.
- Hayami, Y., & Godo, Y. (2005). *Development economics: From the poverty to the wealth of nations*. Oxford University Press.
- Hoggart, K., & Buller, H. (Eds.). (1987). *Rural development: a geographical perspective*. Routledge.<u>http://assignmentbasket.blogspot.kr/2011/06/rural-development.html</u>
- Khan, A.H. (2005). Orangi Pilot Project: Reminiscences and Reflections. Oxford University Press, USA.
- Khan, A.H. (1983). The Works of Akterhameed Khan, Vol II. ABCO Press Ltd, Dhaka.
- Khan, A.H. (1973). 'The Comilla Project A Personal Account', a paper prepared foe Development fromBelow Field Trip/ Workshop, October 12-20,1973, Addis Ababa, Ethopia.
- National Council of Saemaul Undong (1999). Saemaul Undong in Korea.
- Park, S. (2009). Analysis of Saemaul Undong: a Korean rural development programme in the 1970s. *Asia-Pacific Development Journal*, *16*(2), 113.
- Quddus, M. A. (1993). Rural development in Bangladesh: strategies and experiences. Bangladesh Academy for Rural Development.
- The Works of Akhter Hameed Khan. (n.d.) Volume I-III. *Compiled by the Bangladesh Academy for Rural Development, Kotbari, Comilla.*

Deb,K.(1986). Rural Development in India since Independence. *Sterling Publishers Pvt. Ltd*;New Delhi,

The Saemaul Undong Movement in the Republic Of Korea (2012). Asian Development Bank, Philippines.

# **Contemporary Social Entrepreneurship**

# Iftekhar Ul Karim

#### Introduction

Social entrepreneurship is grounded in an array of theoretical perspectives and antecedents (see Santos, 2012; Jain, 2009; and Bula, 2012) that have contributed to the conception of social entrepreneurship and social innovation (Ebrashi, 2013; Abu-Saifan, 2012). Studies have examined in the concept and evolution of social entrepreneurship from different points of view (Welsh and Krueger, 2012; McDougall and Oviatt, 2000), and their findings have shaped and moulded contemporary views of social entrepreneurship (see Shaw and Carter, 2007; Spear, 2006; and Roper and Cheney, 2005).

Pless (2012) argued that the field of social entrepreneurship has grown in relation to social, economic and cultural phenomenon and not as a disjointed development. A widening gap between rich and poor in many developed countries has given rise to visionary entrepreneurs who design solutions for unmet social needs with primary intention to solely help other sand thus have created different patterns in markets over the period of time (Pless, 2012). Needless to say, this has not been an unplanned initiative, and rather has been developed on a fundamental sets of conceptions and perspectives in a broader societal manner taking into account of the same elements of society, culture, and economy as put forth by Pless (2012), Welsh and Krueger (2012) and Spear (2006).

Jain (2009) investigated the origins of pro-social behaviours constructing the formation of social entrepreneurship and related it to the idea of "volunteering" or "volunteerism" by looking at a number of individual traits, and characteristics including empathy and altruistic personality. Pless (2012) elaborated ideas on similar elements of society, culture and economy that form the structure of social entrepreneurship. His study complemented Jain's views that limit the notions of social entrepreneurship with the age-old spirits of volunteerism as a fundamental linchpin of pro-social behaviour of a social entrepreneur.

This chapter identifies the classical theoretical perspectives related to contemporary social entrepreneurship through a literature review as well as empirical research to contribute to the theoretical knowledge on the building blocks of social entrepreneurship.

# **Social Entrepreneurship Research**

Social entrepreneurship, in its network perspective, can be demonstrated with the aid of leadership theories and contributed to further development of the field. Depicting the broader instrumental approach of leadership and focusing on the influences and interactions among social entrepreneurs as leaders and their stakeholders in their dyadic relationships, Northouse (2013) developed the Leader-member exchange (LMX) theory. It relates to the context of in-group and out-group stakeholders of the organization or project that signifies the context of the social venture of the social entrepreneur (Cobb 2012). This naturally entails a higher amount of intimacy with the closer stakeholder group and lower amount of engagement with the outer stakeholder group, resulting in a challenge to social entrepreneurship. In this context, stakeholders of the in-group receive more information, influence and confidence from the social entrepreneur than the out-group stakeholders. Ensuring high quality leader-member exchanges (Northouse, 2013) will help avoid stakeholder conflicts and build effective dyads and network partnerships throughout the social entrepreneurship phases in small project life-cycles (Cobb, 2012; Tolbert and Hall, 2009). Northhouse reported that studies by Graen and Uhl-Bien are quite relevant for social entrepreneurs, and suggests forging leadership in three progressive stages:

- a. The stranger phase, with lower quality LMX exchanges and selfinterested actions/performances by stakeholders;
- b. The acquaintance phase, with medium quality LMX exchanges and room for more roles, responsibilities and challenges for stakeholders; and
- c. The mature partnership phase, with high quality LMX exchanges and effective dependencies with the stakeholders of the social venture in order to understand the progressive stages amongst the social entrepreneurs as well.

Likewise, the leadership factors are common to social enterprises and ventures of the social entrepreneurs and consistent with the leadership theories.

# **Organizational Factors in Social Entrepreneurship**

Social entrepreneurship in its organizational perspective can be demonstrated through theories and factors that have led to further development of the field. In this context, the case of Grameen Bank (GB) can be mentioned which started locally at a much smaller size in a small village of Bangladesh, and has grown into 43,000 villages with 22,149 employees across Bangladesh (Yunus, 2004). The monetary goal of GB is to make social profits (profits through social welfare) by offering microcredit to poor and its non-monetary goal is to make borrowers (also shareholders) independent in a poverty free climate. In doing so, GB allocates roles to bank officials and loan collection officers under an authority system of GB's board of directors (Tolbert and Hall, 2009; Yunus, 2004).

Considering the organization structure of GB, it seems to be based on a closed system approach where size, technology and culture play a crucial role in determining the formal structure. The size of GB has expanded with the its growth and continues to be on the increase with greater specialization and complexity, the technology in terms of microfinance banking software, accounts/booths/ accounting systems for GB in large numbers in the rural communities and finally, with pooled interdependence of banking activities which is relatively independent but share pool of common banking resources such as microcredit banking systems) (Tolbert and Hall, 2009). Moreover, its closed system offers the artifacts of GB being a non-traditional bank, espoused values for community development and underlying assumptions of anv microfinance project for poverty mitigation solely - all forming the internal culture of GB. Such a structure advocates for it being both a function-based organization (in a local context), and at the same time because of running organizational microfinance projects globally it also presents a global matrix together with a modern form of project-based organization (Tolbert and Hall, 2009). This structure is common in social enterprises and ventures of the social entrepreneurs.

# Corporate Social Responsibility

Elements of responsibility and sustainability of social entrepreneurship can be understood through the concept of Corporate Social Responsibility (CSR) that influenced further development in this area. In this context, social entrepreneurs are community developers for whom making profits is not the main goal but only a steppingstone. This refers to the Corporate Social Responsibility (CSR) Pyramid, where being profitable and getting a fair financial return on investments is merely a basis of the whole model with a further hierarchy of goals (Werther and Chandler, 2011). This hierarchical system consists of four main cores for social entrepreneurs: economic responsibilities, legal responsibilities, ethical responsibilities and discretionary responsibilities (Werther and Chandler, 2011). As to legal responsibility, social entrepreneurs are aware of the importance of gaining social trust to act according to the legal framework established by the government for their social ventures and ethical responsibility is discharged for the society that is served by social entrepreneurs. Discretionary responsibility requires social entrepreneurs do more for the society in general whereas their vision of the society's welfare evolves from their greater mission of combating social issues and problems (Werther and Chandler, 2011). Likewise, the CSR factors are common in social enterprises and ventures of the social entrepreneurs.

# Ethical Factors

The ethical perspective of social entrepreneurship can be demonstrated by theories that led to further developments in this field. Generally, social entrepreneurs relate to a broader teleological approach comprising of three specific approaches of decision making on moral conduct: ethical egoism, utilitarianism and altruism (Northouse, 2013). Among these three, social entrepreneurs coincide most commonly with the utilitarianism approach. It justifies their social actions for the greatest good for the greatest number of social communities across the globe based on consequences with a clear indication toward the utilitarian approach with medium concern for people and medium concern for selfinterest, thus ultimately justifying for maximizing the greater social benefits broadly through their social innovation. This approach of social entrepreneurs is not fully ethical egoism (high self-interest) and also not fully altruism (high generosity), and also to some extent supports the value-based ethical perspective in terms of building social/rural communities through social and rural/grassroots innovation (Northouse, 2013). Likewise, the ethical perspectives are common to social enterprises and ventures of social entrepreneurs as well with the same ethical theories.

# **Project Management**

The project perspective of social entrepreneurship can also be found in relevant theories (Silvius et al., 2012). Engwall found that the interior processes of a project are influenced by historical and organizational contexts, similar to lessons to be learnt for social entrepreneurs from the experiences of past and previous ventures and the risks and crises faced in the past. Therefore, future projects of social entrepreneurs need to be conceptualized as interconnected with their history and future, as well as embedded in their surrounding societal and organizational contexts, and treating social enterprises in isolation poses an obvious risk (Engwall, 2003). Furthermore, Silvius et al. (2012) developed a maturity model to assess, monitor and improve the incorporation of the principles and concepts of sustainability in projects depending on the economic, environmental and social sustainability in the project management where stakeholders are placed in a separate category. The role of social entrepreneurs for ensuring the sustainability of the social venture is very important to specify the topics of consumer health, safety, and right to information.

#### **Research on Social Entrepreneurship**

Discussion of social entrepreneurship from several perspectives has clarified and laid the foundation of its exploration with critical insight to identify gaps in research on the phenomenon. Bula (2012) critically analyzed the sociological aspects of entrepreneurship using ideas of classical theorists like Richard Cantillon who typifies the entrepreneur as one who equilibrates supply and demand in the economy. He also found that Jean Baptiste Saydepicts the entrepreneur as a manager rather than a risk-taker, and Alfred Marshall introduced an innovative function of an entrepreneur who continuously seeks opportunities to minimize costs perfect competition. Bula (2012) also discussed through the Schumpeterian approach as a creative destroyer of equilibrium through introducing new products or new processes. These ideas help in understanding the foundations of social entrepreneurship by drawing upon classical theories.

Social entrepreneurship has been a topic of academic research for nearly twenty years with relatively little theoretical underpinning of this interesting field of study. Short et al. (2009)suggest that social entrepreneurship is informed by familiar areas of interest to management scholars like entrepreneurship, public/non profit management, and community issues, all of which symbolize productive venues for future research efforts and recommend that scholars should devise interesting themes and outline their research using recognized theories, such as contingency theory, creation theory, innovation diffusion theory, resource dependence theory, and other theoretical bases pertinent to social entrepreneurship study.

Abu-Saifan reports that while individuals may be publicly recognized as social entrepreneurs for their contributions to improve the wellbeing of communities, the concept continues to struggle to achieve scholarly legitimacy, identifying social entrepreneurship as a term in search of a good definition and devoid of a basis of theoretical foundations (2012). It is further pointed out that the current use of the term of social entrepreneurship is vague and requires clear-cut boundaries to demarcate its function and theoretical basis. The lack of a theoretical ground of social entrepreneurship hinders research and raises questions about which social activities fall within the gamut of social entrepreneurship and it lacks a theoretical framework that links it to the theory of entrepreneurship (Abu-Saifan, 2012). He goes on to argue that the study of social entrepreneurship requires theoretical direction, framework and foundation.

Jain considers social entrepreneurship as a factor of risk and reward and clearly indicated that it should be a branch of entrepreneurship for social cause, and social well-being must take priority over profit motive with due entrepreneurial significance. He proposes a model which shows the growth and direction of social organizations that do not differ from an entrepreneurship venture in a social context with commitment (Jain, 2009). This proposition of to examine social entrepreneurship through the lens of modified classical entrepreneurship paves the path for the further research in this field.

Chell (2007) notes that throughout the 20th century multiple discourses of enterprise and the entrepreneur have developed and they can be used as a backdrop to understand both social and economic entrepreneurship focusing on social enterprise. Welsh and Krueger (2012) pointed out the need for further maturation of the field of social entrepreneurship indicating suggesting more research on its theoretical ground and thus acknowledging a research gap. An exploratory citation analysis of social entrepreneurship research conducted by Kraus et al. shows that a wide range of social entrepreneurship sub-domains have been explored, and authors are in agreement that social entrepreneurship research is still at an early stage and not enough information has been gathered to construct a strong theoretical base (2014). This view points to the need for additional research on social entrepreneurship to build a data base through additional research on the motivation and creation of social enterprises and incorporation of social capital into the social entrepreneurship literature.

#### **Research Methodology**

Depending on the relative context of the foundational knowledge on entrepreneurship from different perspectives, social the social constructionist standpoint in terms of both ontology (view of reality) and epistemology (view of knowledge) has been adopted in this research(6 & Bellamy, 2012). The role of theory in this research is considered inductive as it starts without a clear theory, but presented available theoretical ideas. It takes a theory building inductive approach and offers theoretical understanding in the form of a basic typology at the end. The inference of this study is descriptive as it demonstrates the theoretical understanding of social entrepreneurship by identifying and describing its relevance to classical thought in a descriptive manner. The relation of the theory to the concept is not regarded as an explanatory inference since to the focus is on relevance and not on relationship.

The data is mainly qualitative, and analysis is based on the grounded theory approach. The type of data and analysis of this study is mainly literature based and qualitative from a theoretical standpoint to arrive at concrete conclusions for further research based on the developed typology. Secondly, with an empirical research design, secondary qualitative data have been extracted from Ashoka's directory of social entrepreneurship faculty where he identified 87 professors and researchers in 15 countries who teach courses or conduct research in the field of social entrepreneurship. The study was limited to core articles relevant to the subject matter in terms of "article title" only; therefore, many scholarly articles may have been excluded for not having a relevant title.

Adopting a systematic overview of the literature, this chapter critically examines a number of relevant papers extracted from the scientific and scholarly databases on social entrepreneurship. In the process, the systematic literature review underwent two probing phases to underpin the correct relevant literature on the topic. In the first phase of literature fundamental review. the search focused upon keywords "entrepreneurship/entrepreneur" and/or "social" in the context of "theoretical perspectives" to pinpoint the thematic setting. The search was restricted to the literature in the contemporary Social Science field only, to avoid irrelevant and outlying concepts, and also to identify the strongest relevancies and relations and looked for contents directly under article titles.

Concomitantly, research outputs of faculty members were reviewed to capture the meaning of core concepts of social entrepreneurship from Ashoka's directory of social entrepreneurship faculty. After closely observing the robustly cited and theoretically used perspectives in the contemporary domain of "entrepreneurship/entrepreneur" and/or "social" in the context of "theoretical perspectives", a number of key relevant theoretical perspectives were used to prioritize them, from the most palpable (e.g. "knowledge", "resources") to the most pioneering categories (e.g. "social capital").Next, the second probing phase of the literature search dug deeper to identify and highlight related works of the underpinned perspectives. After an initial review of some general studies for delineation purpose irrespective of regions and keeping the search restricted to articles that appeared recently in the contemporary social science domain (i.e. 2010 onwards), the identified perspectives were then filtered out on the basis of more specific aspects such as knowledge, resource, trust, learning, behaviour and culture.

# **Perspectives on Social Entrepreneurship**

# Knowledge-based and Resource-based perspectives

A knowledge-based view (KBV) of the firm underlines knowledge as its most advantageously important resource (Grant, 1996); this makes multifaceted knowledge foundations and polymathic competences across firms its sustained competitive advantage in the long run. Given the fact that, knowledge itself is too complex to imitate or reproduce, it penetrates through the organizational context and culture, firm's identity and idealism beset with the people surrounding the organization or social enterprise. This perspective is based on the resource-based view (RBV) of the firm primarily proposed by Penrose (1959) and later elaborated by others (Wernerfelt, 1984; Barney, 1991), and they distinguish the vital role of knowledge in and around the firm or social enterprise. On this note, RBV underlines the competitive advantage and superior long-term performance of the firm based on its accumulated or valuable resources, or even rarity in resources as far as the firm masters the art of preserving resource imitation, transfer, or substitution. Needless to say, social entrepreneurship is founded on the strong grounds of knowledgeexpertise along with resources to revamp the social ventures and enterprises.

#### Social Capital Perspective

Social capital is primarily related to the significance of social networks and institutional affiliations that link similar people and provide bridges between dissimilar people formulating how these people and entities interact with and benefit from each other. Securing payback by virtue of attachment to social networks or other social structures, social capital is considered a collective good that results in augmented sharing and solidarity among actors in the network that would be otherwise inaccessible(Gedajlovicet al., 2013).Considering the goodwill that others have toward us as a resourceful asset, social capital represents the value embedded in social relationships of individuals or collectives (Gedajlovicet al., 2013) and this is convertible into economic capital, profitable returns and win-win deals affecting economic growth and valued in the market place. After the growing delineation of social relationships underlying entrepreneurship (Estrin et al., 2013; Light and Dana, 2013; Audretsch and Aldridge, 2012), social capital could be regarded as a foundational theory of social entrepreneurship (see Gedajlovicet et al. 2013). As social entrepreneurs are socially situated, social capital establishes relationships deliberately and utilizes them to produce intangible and tangible mutual benefits in short or long runs. In this context, social entrepreneurs have to be networked and interactive with several stakeholders to achieve their goals. It can be therefore theorized that a strong element of social capital underlines the major function or factor of social entrepreneurship.

# Social Learning Perspective

The social capital perspective gives rise to the underlying social learning that is augmented in the course of social/entrepreneurial networking and social affiliations. Social learning is firmed by a three-way relationship between cognitive factors, environmental influences, and behaviour; and transpired through four main stages: close contact, imitation of superiors, understanding of concepts and role model behaviour (Bandura, 1968). Urban(2011) has strongly argued that people learn more from people like themselves than from other groups or experts, given the fact that they tend to learn best from those that are at the same level as themselves.

Apart from that learning about entrepreneurial networking has also become crucial in the social entrepreneurial learning process in and of itself. Collaborative learning as proposed by Dodgson (2011) in new products, production processes, organizational practices, approaches to marketing, and sources of supply can be effective for the social entrepreneurial success. On this note, it can eventually synergize the social entrepreneurship success right from the start-up phase of the social venture. It can be therefore theorized that social entrepreneurs can better learn in an environment comprised of fellow social entrepreneurs and thus can share their own learning process and disseminate their expertise in a participatory and shared approach.

# Planned Behaviour Perspective

The planned behaviour perspective is intended to serve as a mediating factor that connects the antecedents of actual behaviour like attitude towards the behaviour (positive or negative feelings about performing a behaviour), subjective norm (surrounding the performance of the behaviour), and perceived behavioural control (perception of the ease with which the behaviour can be performed) with the actual behaviour (Ajzen, 1985). In short, behaviour is driven by intentions those are a function of antecedents of actual behaviour. Furthermore, Tipu and Arain (2011) termed entrepreneurial behaviour as a set of activities performed by an entrepreneur or entrepreneurial actions in brief. This portrays a social entrepreneur who exhibits opportunistic behaviour of identifying prospective opportunities beset with the social and exploiting entrepreneur's dealings with the external setting and response to existing conditions. Additionally, they set entrepreneurial behaviour as cognition stipulating how entrepreneurs think and actions underpinning what entrepreneurs in reality do. Entrepreneurs act to manage success factors and hence the thinking-doing nexus of entrepreneurship seems to underline strong entrepreneurial intentions for (Tipu and Arain 2011). Social entrepreneurs are likewise supposed to be holding these strong entrepreneurial intentions, especially in developing countries and leading toward formation of their social ventures.

# Perspective on Cultural Dimensions

Hofstede's cultural dimension theory states that the characteristics of the people of a particular region are determined by their customary value systems, and he added that we can gain insights about people's motivation and expectation by understanding these values (cited in Holt, 1997). Holt applied this idea to the domain of entrepreneurship exploring the value orientation of the entrepreneurs. He found that entrepreneurs in the East (e.g. China) behave differently than the entrepreneurs in the West (e.g. US) depending on their crucial value dimensions (Holt, 1997). Interestingly, Judge et al. argue that entrepreneurial ventures require a "leap of faith"- where the entrepreneur's faith orientation may influence

the start-up process for some entrepreneurs (2013). It is therefore interesting to identify and theorize what factors play vital roles for social entrepreneurs in their cultural contexts focusing on locally popular and traditionally/culturally/religiously inspired social ventures.

## **Conclusions and Recommendations**

Depending on the perspectives discussed above, the following combined typology can be presented for the theoretical understanding of the social entrepreneurship field without disassociating it from the basic field of entrepreneurship.

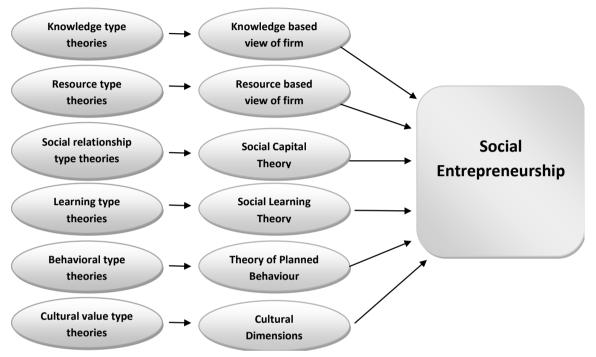


Figure: 1: Classical Theoretical Perspectives of Contemporary Social Entrepreneurship

This typology depicts the core theoretical understanding underpinning the field of social entrepreneurship comprising of the Knowledge-based and Resource-based perspectives, Social Capital perspective, Social Learning perspective, Planned Behaviour perspective and Perspective on Cultural Dimensions. On the basis of these classical theoretical perspectives of contemporary social entrepreneurship, it is recommended to compare the future publications on social entrepreneurship with the aforementioned typology to undertake research on the sub-categories of this typology and extend the domain of social entrepreneurship by conducting crossdisciplinary research in identifying the expanded elements of this paramount importance typology. It is of to establish social entrepreneurship as an extension of entrepreneurship for recognizing this theoretical transformation.

#### References

- Abu-Saifan, S. (2012). Social entrepreneurship: Definition and boundaries. *Technology Innovation Management Review*, 22-27.
- Ajzen, I. (1985). From intentions to actions: A theory of planned behaviour. Springer series in social Psychology, 11-39. Berlin: Springer.
- Audretsch, D. (2012). Entrepreneurship research. Management Decision, 50(5), 755-764. doi:10.1108/00251741211227384
- Audretsch, D. and T. Aldridge (2012)."Transnational social capital and scientist entrepreneurship." *Journal of Management and Governance 16(3):* 369-376.
- Bahmani, S., M.A. Galindo, et al. (2012). "Non-profit organizations, entrepreneurship, social capital and economic growth."*Small Business Economics* 38(3): 271-281.
- Bandura, A. (1968). A social learning interpretation of psychological dysfunctions. New York: Holt, Rinehart & Winston, pp. 293–344.
- Barney, J. B. (1991). "Firm resources and sustained competitive advantage." Journal of Management 17: 99-120.
- Bauernschuster, S., O. Falck, et al. (2010). Social capital access and entrepreneurship. *Journal of Economic Behaviour and Organization* 76(3): 821-833.
- Bula, H.O. (2012). Evolution and Theories of Entrepreneurship: A Critical Review on the Kenyan Perspective. International Journal of Business and Commerce, 1 (11): 81-96
- Chell, E. (2007). Social enterprise and entrepreneurship. *International Small Business Journal*, 25(1), 5.
- Chell, E. (2007). Social enterprise and entrepreneurship: Towards a convergent theory of the entrepreneurial process. *International Small Business Journal*, 25(1), 5-26. doi:10.1177/0266242607071779
- Chell, E., Nicolopoulou, K. & Karataş- Özkan, M. (2010). Social entrepreneurship and enterprise: International and innovation perspectives. *Entrepreneurship* & *Regional Development*, 22(6), 485-493. doi:10.1080/08985626.2010. 488396
- Cobb, A. T. (2012). Leading Project Teams. (2nd ed.). Los Angeles: Sage Publications
- CostanzaTorri, M. (2012). "Community gender entrepreneurship and self-help groups: A way forward to foster social capital and truly effective forms of participation among rural poor women?" Community *Development Journal* 47(1): 58-76.
- Dodgson, M. (2011)."Exploring new combinations in innovation and entrepreneurship: Social networks, schumpeter, and the case of Josiah Wedgwood (1730-1795)."*Industrial and Corporate Change 20(4):* 1119-1151.
- Ebrashi, R. E. (2013). Social entrepreneurship theory and sustainable social impact. *Social Responsibility Journal*, 9(2), 188-209. doi:10.1108/SRJ-07-2011-0013
- Engwall, M. (2003). No project is an island: linking projects to history and context. *Research Policy*, *32*, 789–808

- Estrin, S., T. Mickiewicz, et al. (2013). "Entrepreneurship, Social Capital, and Institutions: Social and Commercial Entrepreneurship Across Nations." *Entrepreneurship: Theory and Practice37(3):* 479-504.
- Gedajlovic, E., B. Honig, et al. (2013). "Social Capital and Entrepreneurship: A Schema and Research Agenda." *Entrepreneurship: Theory and Practice37(3):* 455-478.
- Grant, R.M. (1996). "Toward a Knowledge-Based Theory of the Firm," *Strategic Management Journal 17 (Winter Special Issue):* 109-122.
- Holt, D. H. (1997). "A comparative study of values among Chinese and U.S. entrepreneurs: Pragmatic convergence between contrasting cultures." *Journal of Business Venturing12(6):* 483-505.
- Jain, T. K. (2009). Discovering social entrepreneurship. Asia-Pacific Business Review, 5(1), 21.
- Judge, W. Q. and T. J. Douglas (2013)."Entrepreneurship as a leap of faith." Journal of Management, Spirituality and Religion10(1): 37-65.
- Kraus, S., Filser, M., O'Dwyer, M., & Shaw, E. (2014; 2013). Social entrepreneurship: An exploratory citation analysis. *Review of Managerial Science*, 8(2), 275-292. doi:10.1007/s11846-013-0104-6
- Light, I. and L. P. Dana (2013)."Boundaries of Social Capital in Entrepreneurship." *Entrepreneurship: Theory and Practice37(3):* 603-624.
- McDougall, P. P., & Oviatt, B. M. (2000). International entrepreneurship: The intersection of two research paths. *The Academy of Management Journal*, 43(5), 902-906.
- Montgomery, A. W., Dacin, P. A., &Dacin, M. T. (2012). Collective social entrepreneurship: Collaboratively shaping social good. *Journal of Business Ethics*, 111(3), 375-388. doi:10.1007/s10551-012-1501-5
- Nicolopoulou, K. (2014). Social entrepreneurship between Cross- Currents: Toward a framework for theoretical restructuring of the field. *Journal of Small Business Management*, 52(4), 678-702. doi:10.1111/jsbm.12130
- Northouse, P. (2013). Leadership Theory and practice. (6th ed). Thousand Oaks: Sage publications.
- P. and Bellamy, C. (2012). Principles of Methodology Research Design in Social Science. Thousand Oaks: Sage Publication.
- Penrose, E. T. (1959). The Theory of the Growth of the Firm. Wiley, New York.
- Percoco, M. (2012). "Entrepreneurship, Social Capital and Institutions: Evidence from Italy." *Spatial Economic Analysis7(3):* 339-355.
- Pirolo, L. and M. Presutti (2010)."The impact of social capital on the start-ups' performance growth."*Journal of Small Business Management48*(2): 197-227.
- Pless, N. M. (2012). Social entrepreneurship in theory and practice: An introduction. *Journal of Business Ethics*, 111(3), 317-320. doi:10.1007/s10551-012-1533-x
- Poon, J.P.H., D.T. Thai, et al. (2012). "Social capital and female entrepreneurship in rural regions: Evidence from Vietnam." *Applied Geography35(1-2):* 308-315.
- Roper, J., & Cheney, G. (2005). The meanings of social entrepreneurship today. Corporate Governance: The International Journal of Business in Society, 5(3), 95-104. doi:10.1108/14720700510604733
- Santos, F. M. (2012). A positive theory of social entrepreneurship. *Journal of Business Ethics*, 111(3), 335-351. doi:10.1007/s10551-012-1413-4

- Shaw, E., & Carter, S. (2007). Social entrepreneurship. Journal of Small Business and Enterprise Development, 14(3), 418-434. doi:10.1108/ 14626000710773529
- Shaw, E., & Carter, S. (2007). Social entrepreneurship: Theoretical antecedents and empirical analysis of entrepreneurial processes and outcomes. *Journal* of Small Business and Enterprise Development, 14(3), 418-434. doi:10.1108/14626000710773529
- Short, J.C., Moss, T.W. & Lumpkin G.T. (2009). Research in Social Entrepreneurship: Past Contributions and Future Opportunities. *Strategic Entrepreneurship Journal*, *3*, 161–194. doi:10.1002/sej.69
- Silvius.G., Schipper, R., Planko, J., Van Den Brink, J. & Kohler, A. (2012). Sustainability in Project Management. Surrey: Ashgate Publishing Limited
- Spear, R. (2006). Social entrepreneurship: A different model? International Journal of Social Economics, 33(5/6), 399-410. doi:10.1108/03068290610660670
- Sud, M., VanSandt, C. V., & Baugous, A. M. (2009). Social entrepreneurship: The role of institutions. *Journal of Business Ethics*, 85(S1), 201-216. doi:10.1007/s10551-008-9939-1
- Swanson, L. A., & Zhang, D. D. (2010). The social entrepreneurship zone. Journal of Nonprofit& Public Sector Marketing, 22(2), 71-88. doi:10.1080/ 10495140903550726
- Tipu, S.A.A. and F.M. Arain (2011). "Managing success factors in entrepreneurial ventures: A behavioural approach." *International Journal of Entrepreneurial Behaviour and Research17(5):* 534-560.
- Tolbert, P.S., & Hall, R. H. (2009). Organizations: Structures, Processes and Outcomes (10th ed). Upper Saddle River: International Pearson Education
- Urban, B. (2011). "Entrepreneurial networking differences: An ethnic in-group and out-group analysis." *SA Journal of Industrial Psychology37(1)*.
- Wahba, J. and Y. Zenou (2012)."Out of sight, out of mind: Migration, entrepreneurship and social capital."*Regional Science and Urban Economics*42(5): 890-903.
- Welsh, D. H. B., & Krueger, N. (2012). The evolution of social entrepreneurship: What have we learned? *Journal of Technology Management in China*, 7(3), 270-290. doi:10.1108/17468771311325176
- Wernerfelt, B. (1984). "A resource-based view of the firm." *Strategic Management Journal 5*: 171-180.
- WertherW.B. Jr., & Chandler, D. (2011).Strategic Corporate Social Responsibility
  Stakeholders in a Global Environment. (2nd ed). Thousand Oaks: Sage publications
- Westlund, H. and M. Gawell (2012). "Building Social Capital For Social Entrepreneurship." Annals of Public and Cooperative Economics83(1): 101-116.
- Yunus, M. (2004).Grameen bank, microcredit and millennium development goals. Economic and Political Weekly, 39(36), 4077-4080

ι

# Remittance and Productivity in Bangladesh

#### Muhammad Mueen Uddin Mohammad Joynul Abedin

#### Introduction

Remittance plays a significant role in strengthening the economy of developing countries. It helps to ease foreign exchange constraint, stabilize exchange rate movement and improve the balance of payments at the macro level. At the micro level, remittance has a positive impact on household consumption, alleviation of poverty and entrepreneurship. There is keen global competition for exporting manpower and the demand for skilled and educated personnel, and Bangladesh lags behind in these areas compared to some other remittance earning countries. A number of public and private agencies, Ministries, non-governmental organizations and banking institutions are engaged in the remittance process. Individually, they have plans, visions and missions but most of them do not implement or achieve them effectively. Besides, the government has no specific policy for remittance governance and there is no co-ordination among the various agencies and institutions engaged in the process. Under the circumstances, it is important to develop a planned remittance governance system for contributing to social and economic development.

As a developing nation, remittance inflow is one of the vital indicators for the economic growth in Bangladesh which exports about 0.5 million human resources to the world labour market every year. Unless this sector is efficiently governed, the rate of remittance will continue to be in negative territory. Higher remittance inflow helps increase the purchasing capacity of the households especially in the rural areas, and decrease the government expenditure for the safety net programs. Besides, the government can reduce trade deficit by exporting more skilled workers to the world labour market. Since the percentage of import is higher than that of export, there is a large deficit in the balance of foreign trade in Bangladesh. Therefore, it can be argued that an effective policy for remittance is critical for micro and macro economy of the country.

Remittance is the lifeline of the economy of Bangladesh as it is a major contributor to the foreign reserve of the country. Bangladesh is the 7th highest remittance earner country in the world (Bangladesh Economic Review 2016). Unfortunately, this earning cannot make much

contribution to productive economic growth because of mismanagement. Among the low-income countries, the Bangladeshi diaspora has the largest savings of approximately US\$9.5billion as bank deposits in destination countries. These savings provide a strong case for issuance of diaspora bonds, that can be issued by the Bangladeshi government like other countries—India, Philippines, Sri Lanka, Kenya, Ghana, Nepal and Ethiopia (Sohel, 2015). Remittances have not contributed much to economic growth in remittance-receiving economies, and success stories are rare. It will be difficult to find any country that can truly claim to have funded significant economic development from remittance earnings (The Economist, 2014).

This chapter examines the state of remittance governance in Bangladesh. It is based on primary data collected through questionnaire surveys and interviews with fifty selected respondents from Pashapur village in Laksam upazila of Comilla district. Secondary data were gathered from journals, books, reports, public documents, relevant websites and newspapers. The chapter analyzes the issues related to remittance from Bangladeshis employed overseas and proposes a number of recommendations for the government of Bangladesh for developing a globally adaptive mechanism for increasing and sustaining the flow of remittance that will contribute to the development of the country.

#### **Remittance to Bangladesh**

Remittance can be transferred through both formal and informal channels. In recent times, the remittance transfers through formal channels are higher than informal channels. A survey by the International Organization of Migration revealed that 82 percent remittance receives through banks and formal money transfer agencies and only 18 percent are sent through informal channels (BHRS, 2009). Another survey (BD Bank, 2009) reported that 54 percent was received through informal channels in 2006 and 24 percent in 2008. Thus, remittance transfer through informal channels has gradually declined. If more remittance could be sent through formal arrangements, it would benefit the financial system and accelerate the economic development. Although most of the remittances are sent through legal means, illegal channels are also active in these transactions. According to an International Labour Organization report, although the annual flow of remittance through legal routes now accounts for \$14 to \$15 billion, a huge amount worth between \$4.3 and \$5.7 billion are remitted by migrant Bangladeshis using illegal routes (Zahid, 2015).

Bangladesh experienced a decline in remittance for the first time in 2013 (Bangladesh Economic Review, 2016). Four factors can be identified for this consequence and they are a drop in the number of

Bangladeshi migrants who send money home as well as earnings per migrant worker. Moreover, there has been a decline in the capacity for saving and amount of money remitted to home. The main reason for decline in remittance is directly related to the rate of migrants. Two factors are responsible for this situation. Bangladesh failed to send more workers abroad and the state was unable to explore new markets. Only 450,000 migrants were able to find overseas jobs in 2013 where as 680,000 were recruited in 2012. Additionally, the government's diplomatic efforts were insufficient to solve problems related to the legal status of Bangladeshi migrant labours in the Middle East (Hussain, 2014).

# Status of Remittance Inflow in Bangladesh

Although the remittance inflow in Fiscal Year 2015-2016 was 12,225 million US dollar in Bangladesh (8% of GDP), the growth rate was negative at -1.82%. The country has experienced negative growth rate in remittance since 2013 after loss of labour market in Saudi Arabia, United Arab Emirates and Malaysia.

Fiscal Year	Growth rate (%)	Percentage (%) rate of GDP			
2011-2012	10.24	9.6			
2012-2013	12.60	9.6			
2013-2014	-1.61	8.2			
2014-2015	7.70	7.9			
2015-2016	-1.82	8			

**Table 1:** Remittance inflow to Bangladesh

Source: Bangladesh Economic Review, 2016

The prevailing perception is that remittance governance simply involves exporting human resources and receiving money from them. In reality, it is a long and complete process that begins with preparing human resources for overseas employment and ends with the proper utilization of remittance received. It covers a wide range of activities including training of workers, education and job knowledge, identification of new markets, provision of support abroad, reception of remittance, and ensuring appropriate utilization of the funds.

The present situation of remittance governance can be explained at three stages; namely- initial, intermediate and final stages where proper smooth operation of one stage is completely depends on others. The present condition of remittance governance is less congenial to bring socio-economic development of the country.

# **Problems of Remittance Governance**

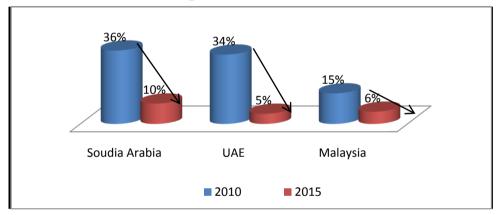
# Initial Stage: Exporting Human Resources

Market research is essential for determining the need of labour markets. Neither the government of Bangladesh nor private manpower exporting agencies undertook research about the world labor market. Consequently, the agencies do not have knowledge about the world labour market and cannot determine the types of skills in demand in overseas job markets.

The potential labor force has poor knowledge about market demand and they have to maintain brokers for managing passport and visa due to complex procedures of migration. In this complex process, brokers charge a large amount of money from them and sometimes they cheat with the migrants as well. Complex and unclear procedures, rules and regulations make it difficult for the employment seekers to navigate through bureaucratic demands.

Creating and identifying new labour markets is a challenging task and requires wholehearted efforts by the government, particularly its diplomatic offices abroad. The scope for employment of Bangladeshi migrants overseas is declining due to inefficiency of diplomatic officials. The labour market in Saudi Arabia fell from 36% to 10% and Malaysia from 15% to 6% in recent years.

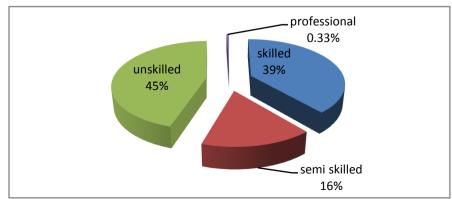
Figure 1: Decline in Human Export, 2010-2015



Source : Bangladesh Economic Review 2016

Most of the migrants from Bangladesh are unskilled workers with little education, job experience and no training. The lack of skills makes it very difficult for them to compete in the world job market.

Figure 2: Skilled and Unskilled Migrants from Bangladesh, 2015



Source : Bangladesh Economic Review, 2016

# Intermediate Stage: Overseas Employment and Transferring Remittance

Migrants often go abroad after prolonged efforts and frustrating experience, and face problems at the destination. These vary from one country to another, and the migrants need support from local Bangladeshi missions. The problems are often related to Akama (work permit), visa, salary, accidents on the job and death. At times of crises, they are unable to obtain support from the foreign missions of Bangladesh. Although helping migrants is one of the main tasks of the missions, they do not serve migrants in difficult situations. Lack of support from Bangladesh missions is a major issue.

One of the reasons for the inability or disinterest of Bangladesh missions to help migrants is the absence of a labour welfare wing in the agency. This section is essential in order to assist migrants who are confronted with various problems in unknown circumstances. This facility is not available to them.

The migrants encounter several roadblocks and obstacles in remitting funds to their families in Bangladesh. This is caused by information asymmetry about the market as well as an active hundi or non-formal channel for remitting money. The problem is made complicated by low literacy rate that does not allow migrants to search and locate the best medium for remitting money. Poor infrastructure makes the transfer to rural and remote areas difficult, and private commercial banks do not have large enough network to participate in the process.

# Final Stage: Utilization of Remittance

The actual benefits of remittance money will be reflected through its proper utilization at both the macro and micro economic level. In reality, remittance money seldom goes toward productive investment. Most of the income is used for household consumptions like food, clothing, and entertainment, as well as education, health and other essential needs. Although a small portion of remittance is invested, there is no organized arrangement by the government and non-governmental agencies to educate migrants on investment strategies and savings.

# **Migration and Utilization of Remittance**

A comprehensive study was conducted on fifty households of migrants' families from Pashapur, a village of Laksam upazilla in Comilla district to understand the current remittance process and its utilization. Information was collected on problems faced by migrants before going abroad, training received for overseas employment, channel for transmitting remittance, changes in income and expenditure of their families before and after migration, use of remittance at household level, help and advice offered by public and private financial institutions, changes in economic role of family members/wives due to migration, and

the level of concern about the future of migrants after they return to the country.

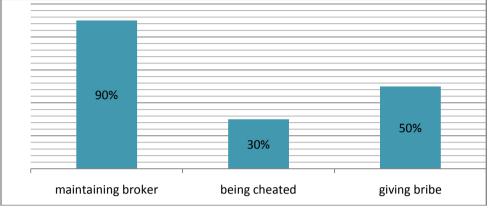


Figure 3: Problems Faced Before Migration

Figure 3 illustrates that about 90% migrants of Bangladesh have to use the services of agents to go abroad because they have no knowledge about the opportunities abroad as well as the process of migration. Therefore, they have to pay the agents huge sums of money to acquire passports, visa and work permits for migration, and it is estimated that about 30% of the migrants were cheated by the agents. Generally, Bangladeshi migrants are expected to arrange visa themselves, through relatives or acquaintances, and a negligible number go abroad through government agencies. About 50% of migrants, who go through the government agencies, are subject to extortion, and this eventually discourages the people from being migrated.

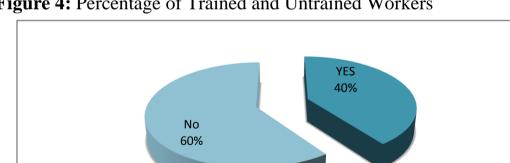


Figure 4: Percentage of Trained and Untrained Workers

Even a decade ago, generally 2% - 4% migrants would receive training programs before going abroad. At present, about 40% workers are trained to obtain skills in driving, electrical work or construction jobs, but this is not enough for them to compete with the globally competitive labour market. On the other hand, about 60% of the migrants have little knowledge, experience and skills to be used on the job. For these reasons, Bangladesh has been losing its potential labour markets over the years.

#### Figure 5: Channels of Remittance

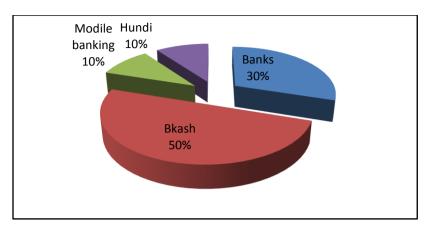
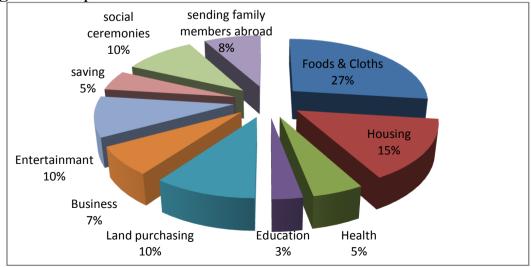


Figure 5 illustrates that at present time about 50% of remittance money is transferred through BKASH, a mobile financial service in Bangladesh operating under the authority of Bangladesh Bank as a subsidiary of BRAC Bank Limited, and it helps to send and receive money easily in a short time. Though any amount of money can be transferred through bkash, it charges about 2% as service charge and the cost is quite high. The role of banks in remitting money has been decreasing due to the lengthy process adopted by them. Hundi, an illegal channel, is still in operation because large amounts of cash can be transferred in a short period, although the government does not receive any benefit from this process.

It was found that the income of migrants' families increased by 400-500 percent after migration, and this enhanced their purchasing capacity. At the same time, their household expenditure has increased by 200-300 percent compared to the period before migration. Thus, the living standard of the families has been elevated, although most of the households do not appear to be interested in utilizing the remittance for investment to earn high returns.

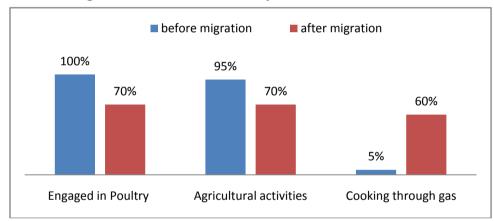


#### Figure 6: Expenditure Pattern of Remittance

After a worker migrates abroad, members of the families try to increase their social status by spending more money on food and clothing which amounts to 27 percent of the remittance. They spend 15 percent on housing, and 20 percent on entertainment and other events. Apparently, the families are not that concerned about health and education of the children who often become rebellious as the heads of the households are not around to discipline them. A small percentage of remittance is used to buy gold, lease a shop, save money in banks and purchase land.

BRAC as a private financial institution provides loan for migration to the vulnerable people to be repaid by instalments. Grameen Disa, a nongovernmental organization, offers loan to poor people to be used for meeting the cost of migration. The Probashi Kayllan Bank has the mandate to provide give loan to migrants and advise them on investments, but their network is limited and unable to reach the village level. In fact, there is no designated institution for performing these important tasks.

Figure 7: Change in Economic Activity



Remittance money influences not only the living standard of households but also economic activities of family members who remain in the country. As the family income is increased through remittance, the family members use the benefit of this new source of income and make less contribution to the family.

Figure 7 illustrates that before a member of the family migrated, all the households were engaged in raising poultry and 95 percent in agricultural activities, but the percentage dropped to 70 percent in both areas after migration. Before migration, only 5 percent of households used natural gas for cooking and other families used firewood collected from the surroundings. After migration, the usage of natural gas as fuel increased as 60 percent of households started using it.

It appears that the family members at home enjoy the benefits of income from migrants, but are not concerned about the future. Conspicuous consumption and a lack of foresight often render the efforts of hard-working migrants useless. There are no productive investments or savings for the migrants and it gives rise to various problems after they return to the home country.

#### **Policy Issues**

Bangladesh earns a considerable amount of money through remittance from migrant workers. However, there is no clear policy and guidelines for preparing employees for working overseas or using the remittance in a productive manner for strengthening the economy. There are some superficial efforts by the government of Bangladesh through the Ministry of Expatriate Welfare and Overseas Employment, financial institutions and agencies including Probashi Kayllan Bank to govern remittance, but it is not conducted in a coordinated way. Although the Ministry and Probashi Kayllan Bank appear to have plans to develop in this area, no clear national remittance policy has been formulated. This chapter offers a number of recommendations, taking into account the practical problems discussed in this study.

Diplomatic efforts to plan and migration need to be developed and continued for helping to sustain the current overseas labour market and explore the new markets as well. Bangladesh missions overseas need to establish user-friendly labor welfare wings with the capacity to respond quickly and effectively to assist migrants in need.

The process for migration should be simplified to encourage migrants to go abroad. Smooth and secured transfer of remittance through different financial agencies should be ensured to encourage the formal channel. There should be an expansion of training and other institutional facilities for assisting potential migrants to become skilled. Continuous market research needs to be conducted for understanding market demands and bridging the gap between demand and supply human resources. Families of migrants in Bangladesh could be assisted with counselling, and advice on effective utilization of remittance.

Institutional mechanisms must be developed to reduce the cost of migrating for employment overseas and transferring remittance. This will be made easier with proper coordination among Bangladesh Overseas Employment and Services Limited (BOESL), non-governmental recruitment agencies, Bangladesh Bank, Ministry of Expatriate Welfare and Overseas Employment, foreign missions and Probashi Kayllan Bank.

# Conclusion

Bangladesh with a population of approximately 16 million people faces the challenge of developing and using human resources effectively. Labour migration has been identified as a potential tool for contributing to the socio-economic development of the country. Efforts to manage migration and remittance should be strengthened, and digital technology can be introduced in order to maximize benefits from migration. In spite of being mostly automated and partially manual, the remittance process is still far from satisfactory in terms of service quality, cost structure and transaction risk. The biggest impediment is the risk and cost of the transaction of remittance. If the government intends to retain market share of the highest remittance source countries such as Saudi Arabia, United Arab Emirates, United States of America and Malaysia, the government of Bangladesh has to develop globally adaptive strategies by reviewing plans and policies of the top most remittance earning countries such as India, China, the Philippines and Mexico.

#### References

- Hussain, Z. (2014, December 1). Explaining the Recent Decline in Remittances in Bangladesh. *World Bank Blog*. Retrieved from http://blogs.worldbank.org/endpovertyinsouthasia/explaining-recentdecline-remittances-bangladesh
- Sohel, H. (2014, August 1). Remittances and Growth Gone Missing. The *Economist.*
- Sohel, K. (2015, April 20). Remittance inflow to see record high in 2015. *Dhaka Tribune*. Retrieved from http://archive.dhakatribune.com/business/2015/apr/20/remittance-inflow-see-record-high-2015
- Zahid, S. H. (2015, January 7). Looking at inflow and outflow of remittance. *The Financial Express*. Retrieved from http://www.nmta.us/index.php?option=com\_lyftenbloggie&view=entry&c ategory=bangladesh&id=2698:looking-at-inflow-and-outflow-ofremittance on 01/12/2016

#### Reports

- Bangladesh Economic Review' 2016 (2016, November). Finance Division, Ministry of Finance, GoB.
- The Bangladesh Household Remittance Survey (BHRS)' 2009 (2010). International Organization for Migration (IOM).

# 6

## **Global Market and Management**

#### Abdullah Al Rana Farhad

#### Introduction

The readymade garment industry has been a major economic force in post-independence Bangladesh and continues to flourish. It is the second largest player in the world export market without adopting the principles and practices of modern manufacturing systems. In the management of readymade garment industry in Bangladesh, there is a huge gap between the ground level line of management to the top level management in synchronizing, understanding and adopting modern terms of manufacturing methods. The garment industry is engaged at competing at the global level on the strength of their past experience instead of adopting management for future.

One of the basic tasks in the garment industry is costing, i.e., to plan and evaluate performance with reference to *production* instead of *productivity*. In fact, many factories appear to unaware of the term *productivity*. Work study was introduced in this sector in the 1990s to implement time-based management. The primary initiative was to convert the base of calculation from overall performance to individual performance. The output of a worker per hour is used to evaluate the performance of different sewing line in a factory, and the daily output number was used for measuring production. Productivity was introduced as a simple tool for understanding the expense to earn ratio. Later, SMV (Standard Minute Value), efficiency and others tools were introduced for this purpose. However, even in 2016, many factories and their top and front line management are not interested in and/or aware about this management. To grow in global platform, RMG sector must adopt the globally practiced system.

In Readymade Garment (RMG) industry, the manufacturing process runs in a line according to product layout, and line wise performance evaluation is essential for assessing the performance of an industry. A sewing line starts at input area and ends at the output area and includes proper quality inspection. Therefore, it is important to evaluate each and every part of performance based on Key Performance Indicators (KPI), and productivity is one of the most important KPI. Since the inception of RMG industry in 1978, people in this sector know production as the produced garment pieces from a sewing line. It is the common practice to ask about the performance of a sewing line or an industry with the question "How much is the production". Although production is important, it is not a KPI. Typically, in an industry, comparison in performance in two lines is also measured by the daily output (usually called Production).

#### **Production and Productivity**

Production is a process that combines inputs (both material and immaterial) to yield outputs which will be a good or service with value. In the RMG sector, the output is the garment that had passed quality test, and there are several inputs like manpower, machine, raw material (fabric, thread, buttons), power, time, and money. There are so many factories that consider the output from sewing line as production even if it had not passed the quality test.

Productivity is a KPI of a production process. It is the ratio of input and output of the process.

Productivity = Output/Input

Productivity can be measured partially or totally. Partial productivity reflects a comparison with a partial input such as only manpower or machine. Three types of partial productivity are easily applicable and viable for RMG industry.

- 1. Labor Productivity= Total Output/Total Number of Labor
- 2. Machine Productivity = Total Output/Total Number of Machine
- 3. Energy Productivity = Total Output/Energy Input

Total productivity is determined by calculating the total input, and capital productivity is used in this process.

Total Productivity = Total Output/Total Money Input

The monetary input includes the total direct and indirect cost. Both partial and total productivity can be calculated for a sewing line and/or for full industry. But as the RMG is a labor oriented industry, labor productivity plays a key role there.

#### **Performance Comparison Based on Productivity**

Daily output is not a scientific or even proper tool for comparison, but it helps to compare the production lines producing same product. For example, two sewing lines (Line A and Line B) in an industry are running for 8 hours shift and producing 900 pieces and 950 pieces respectively. Judging by the output number, Line B is performing better. If the number of workers is 50 and 54 respectively, then the unit of labour productivity is 18 and 17.59. In this case, Line A is the better performer and the evaluation becomes scientific. However, only the daily output is considered in most of the industry. The industries have an Hourly Output Board where only hour wise outputs are recorded and labor wise hourly output reports are maintained.

#### Standard Minute Value (SMV) the Time based Management

Standard Minute Value (SMV) is the time required for a qualified worker working at "Standard Performance" to perform a given task. The SMV includes additional allowances for Rest and Relaxation, Machine Delay and anticipated Contingencies.

In modern business paradigm, every industry manufactures a product or service but they sell time. They are paying the employees based on time and also calculating the cost of manufacturing based on time. All the products or services are transformed into a standard time value. In RMG sector in Bangladesh, many factories calculate the SMV of their product, but few of them rely on their system.

SMV helps the organization to use time based management. Product turn-in time needs a proper match with lead time. Cost of manufacturing (for Garment Industry Cut Make Price) can be calculated based on SMV and factory capacity can be expressed in available minute so that marketing can be done more precisely.

#### Efficiency

Efficiency of a sewing lineis generally measured by the ratio of input tooutput. Generally, input minutes are taken as input and produced minutes are taken as output to calculate the efficiency of a sewing line.

Input Minute= Labor worker in a sewing line \* Working Minute

Output Minute = Output Garment Quantity \* SMV

Efficiency = Output Minute / Input Minute %

Efficiency is usually calculated by comparing consumed and produced resources. Comparison can be done among any type of product manufacturing sewing line or industry.

#### Per Minute Labor Cost

Though SMV is necessary to calculate the efficiency, it also used to calculate the per minute labor cost in an industry. The per minute labor cost is the key for calculating the cost of manufacturing.

Per minute labor cost = (Wages and Fringe or Social Benefits + Manufacturing Overhead Expenses) of month/(Total Directly Working Minute per month including efficiency)

Wages and Fringe or Social Benefits = Average actual labor monthly wages (direct and indirect without fringe and social benefit) + Average actual monthly Overtime wages + Monthly fringe or social benefits

Manufacturing Overhead Expenses = Variable Overhead costs + Fixed Overhead costs

Total Directly Working Minute per month including efficiency= Working hours per day (expressed per direct labor employee) \* Working days per month (expressed per direct labor employee) \* Number of Direct Labor Employees \* Average production efficiency (expressed as %)

## **Managing Daily Production**

Life of a sewing supervisor or line chief in a Bangladeshi RMG factory is full of challenges. There is severe bull whip effect in fixing the daily targets. Most of the factory marketing departments calculate the cut make price based on Man-Machine-Hourly Production, and line target is set on the forecasting data. When the product enters a sewing line, the available manpower and machine or space becomes minor issues. The prime issue is the achievement of the forecasted target. There is also a huge communication gap between the manufacturing and the marketing department. The marketing does the costing based on their forecast and then the planning department addsallowance for uncertainty in setting the target, and this becomes difficult to achieve. Then the management instructs the production department to achieve the forecasted target in any way. The process of setting targets is important for smooth production management, and every concerned employee should know the expectations from the beginning.

## Setting of a Target and Marketing Strategy

A sewing line is the ultimate place where the core activities take place. Every industry should align their marketing with the sewing line. The average monthly forecasting system should be based on Total Directly Working Minute per month including efficiency.

Monthly forecast for a line = Total Directly Working Minute per month including efficiency / average SMV of the product

#### Effect on Line Human Resource Management

In quantity based allocation, the output target remains nearly fixed and the input factors vary. The line chief needs to increase or decrease the number of workers in sewing line to ensure the target is achieved. Budgeting of manpower becomes very difficult for him or production manager as well as the Human Resource Management department. Theproduction manager needs to switch workers frequently from line to line, and this has two major effects:

- a. Worker Migration: Workers are usually comfortable with their assigned line supervisor or line chief and they develop a good working relationship with them. Frequent moves make the workers uncomfortable and they often leave.
- b. Effect on Production Incentive Plan: It is a common practice to implement a group incentive plan to enhance productivity. Frequent switching makes it difficult to implement group incentive plan.

## Effect on Compliance

Each line has a fixed amount of space and each workstation has a specified area. When a line management needs to achieve a fixed target, they need to increase the input. The increase in input is either the worker and machine or working hours. Increase in worker or machine requires more space but it is already occupied. But space is required for the additional machines or workers. However, if the number of workers or machinescannot be changed, theworking hour needs to be increased. This bears the risk of violating the working hour limit as the planning is done on the basis of maximum allowable working hour.

## Target of a Sewing line

Target of a sewing line should have the below criteriashould be achievable. The line management and workers should have confidence in the specific and visible targets. They should be announced early in the process and remain valid for a specific period and not be changed without advanced notice and preparation.

The number of machines and workers must remain fixed. The target may vary based on available manpower. T available working minute including efficiency has been considered in marketing.

Target of a sewing line = Number of Worker \* Working Minute \* Expected Efficiency / SMV

## Tracking the Daily Improvement

The line chief or supervisor should track not only the hourly output of the sewing line, but also calculate the hourly productivity and efficiency along with it. The production management should compare the performance of the line chiefs or supervisors against these two KPIs. Achieving the daily targeted quantity is very important to meet the shipment timeline, but it is also important to know the amount of resources being consumed to achieve it. It is important to note that only the quantity is not the ultimate factor for the organization to survive.

## Distribution of Work in the Sewing Line

There is no prescribed method for distributing work in a sewing line. The layout was based on the principle of one worker for one process. Later, machines, operators or helpers were added to balance the line or resolve the bottleneck. This adds value but the target was not revised in view of the added manpower. SMV based work analysis helps to distribute work based on time of the process. For example, a 20 minutes product is completed by 50 workers and thus, 0.4 minutes work is allocated for each worker. There may a single or multiple tasks. This creates an impression in the line that every process is important to achieve an optimum output.

Based on Man

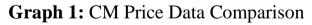
## The CM price

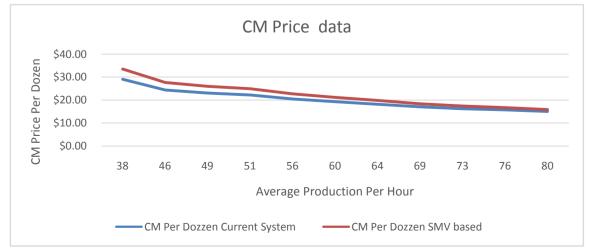
The CM price represents cut and make price. Currently, it is calculated by the ratio of man-machine-production per hour. In time based management, CM price is calculated based on SMV of the product. Table 1 shows the difference of CM price in both systems.

Table 1. CM Price Data Comparison

						Machine and Hourly Output	Based on SMV
Si	Man	Machine	Production/Hour	SMV	Efficiency	CM Per Dozen	CM Per Dozen
1	65	50	38	33.5	32.64%	\$29.08	\$33.53
2	65	50	46	33.5	39.51%	\$24.44	\$27.70
3	65	50	49	33.5	42.09%	\$23.09	\$26.01
4	65	50	51	33.5	43.81%	\$22.28	\$24.96
5	65	50	56	33.5	48.10%	\$20.51	\$22.75
6	65	50	60	33.5	51.54%	\$19.30	\$21.23
7	65	50	64	33.5	54.97%	\$18.24	\$19.90
8	65	50	69	33.5	59.27%	\$17.10	\$18.45
9	65	50	73	33.5	62.71%	\$16.29	\$17.45
10	65	50	76	33.5	65.28%	\$15.74	\$16.76
11	65	50	80	33.5	68.72%	\$15.08	\$15.92

When the order quantity is lower, it decreases the rate of production per hour and efficiency. Customers are shrinking the CM price and expect higher production per hour. Production can vary by piece and the variation in one piece from the costing system will have an impact to a certain extent. But in the SMV based system, expected efficiency is the key factor. It can easily vary in decimals levels. However, as the system is directly related to the expense details of the organization, it provides the real CM price. Figure 1 shows that increasing the production per hour or efficiency makes clear the difference between the two systems.





The difference is higher when the factory performs at a low level of efficiency. As a result, every garment industry is interested to have a long-termhigh quantity order to archive a better production rate. But the reality in the world is that fashion changes and various people prefer different types of garments, and do not wear similarly fashioned garments. RMG chains are shortening the volume per product to meet changing customer demands and offer a wide variety of styles in their products. This calculation reveals that at low volume order the costing system is not in favor for manufacturing industry.

#### Role of Industrial Engineering

The basic purpose of industrial engineering can be expressed as ECRS

E= Eliminate. Eliminate the non-value added work which increases the cost but does not add value to the core product. They can eliminate marking jobs from process by using jig, fixture, template etc. They can also eliminate unnecessary movements during performing a task by implementing proper work station layout.

C= Combine. Combine the related work together to reduce the in between hidden losses. When any non-value added task cannot be eliminated, it can be reduced by combining with next process.

R= Rearrange. Rearrangement of work can improve the work flow. By drawing the product flow diagram of a sewing line, they can easily visualize the flow of product. Any discrepancy in the flow can be easily detected.

S= Simplify. Leonardo daVincistated that "Simplicity is the ultimate sophistication". The process should be simplified to perform a sophisticated task

To work according to ECRS, industrial engineers should focus on team building. As it is not possible for a person to be an expert on all jobs in a department, acohesive team can builds a system of collaboration.

#### The Speed of Trust

The first step in team building is developing trust among members. It is commonly seen in garments factories, mainly in Knit composite factory, that after receiving fabric from textile, the garment making unit inspectsit again. Though both industries are under the same management, the fabric is inspected twice. This is a result of lack of trust and adds to the cost. If the textile unit is trustworthy, the fabric would not wait for re-inspection. There would be speed in the flow, time would be saved and process costs reduced. A similar pattern is also found in the internal supply chain. The store or cutting department counts their supply during delivery, but the sewing department also crosschecks while receiving them. Enhanced trust in the chain can eliminate such duplication of efforts.

The main challenge of an Industrial Engineer is to gain the trust of workers and line chief about the SMV. They need them understand about SMV calculation, the allowance and rating system or motion system. If the workers and line chief have Trust in the system, implementation of productivity improvement tools and techniques becomes much easier.

### Choosing the Tool to Build Team

Quality and production appear to be in constant conflict in the garment industry. The employees are often divided between "production team" and "quality team". In reality, they are not team, but simply a department in the team. Similar to bowling, batting or fielding units in a cricket team, or goaltender, defense, mid fielder and striker positions in football. Smooth co-ordination of these departments essential for wining. Industrial engineers can play a vital role to form a team within an industry by choosing the right tool.

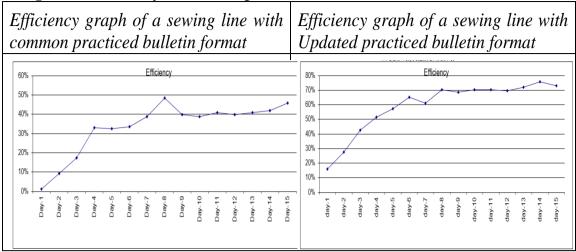
#### **Pre-Production Stage: Preparation of Layout of New Product**

The line chief starts the change in layout with a new product sample in hand. Many factories focus on pre-production process to reduce the changeover time and quick ramp up in learning curve. Industrial engineers make the operation bulletin to help the line chief. But there is a huge gap in understanding between them. Due to lack of team work, differences emerge between the operation bulletin and practical layout. Industrial engineers can resolve the problem and reduce the changeover time by adjusting their workstyle. Industrial Engineering teamsin some factories in Bangladesh now prepare the operation bulletin as a team with the Line Chief, Quality Supervisor and the person in charge of maintenance.



#### **Figure 2:Updated Format for Operation Bulletin**

In this session, all members related to the manufacturing of the new product will be informed earlier, and will plan the task. The line chief can select appropriate workers and can take the initiative to spare them when required. Offline or online training plans can be prepared earlier by the line chief and quality supervisor. People in charge of maintenance can take charge for arranging machine, folder, jig and other required things.



Graph 2. Efficiency trend comparison

Autonomous Maintenance as a Team Building Approach to Ensure Quality

A system is important in which equipment operators learn to perform daily checks, lubricate equipment as needed, replace simple components, carry out minor repairs on machines and assist in problem solving. Operators become the early warning systemfor abnormalities detected in machines. Industrial engineers can form a team with sewing line chief, quality supervisor and maintenance person to prepare guidelines for autonomous engineering. First, they need to identify the most serious problems or defectsthat are damaging the factory. Then next step is to make a fishbone diagram for analyzing the problem. Eventually, they can develop aflow chart for repair, and train the operators. In this way, solving the quality issue becomes everyone's responsibility.

This can be illustrated with an example. Skip stitch on a sewing machine is a common problem in the garment industry. Figure 3 shows a simple fishbone diagnostic for skip stitch in a single needle lock stitch machine.

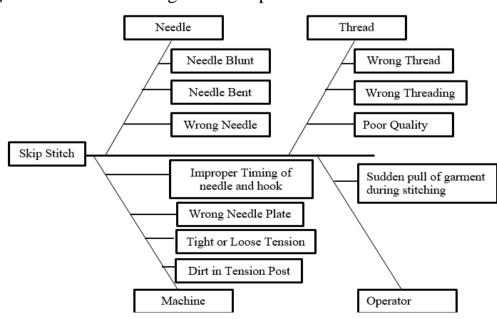
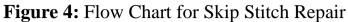
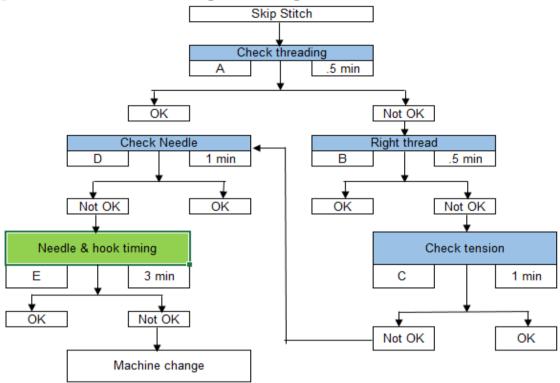


Figure 3: Fish Bone Diagram of Skip Stitch

Using the fish bone diagram, the autonomous maintenance plan flow chart can be developed (see below picture).Blue and green colour boxes depict the responsibility of operators and mechanics respectively.





This can be implemented only through collaborative team work and an effective training system.

#### Conclusions

Garments industries are very familiar with the term defect which is the result of abnormality. A loose nut in a machine, vibration and sound beyond normal range, detecting stitching thread more than allowable length, excess work-in-process are common examples of abnormality. Therefore it is necessary to take steps to eliminate the abnormalities from the system. More problems can be found in repair work stations, spot removing rooms, excess cutting in overlock machines, fallen garment on aisles or floor, most of which do not add any value to the product.

It is the time to review and reset the goals of the business. Along with gradual increase in the export quantity, the objective is to enhance profit. In the process, the industry needs to consider increasing the net profit, return on investment and increasing cash flowsimultaneously. The management should consider the capacity of the organization before marketing. Efforts to market products beyond the capacity of the factory will make the situation worse in terms of compliance, increasing administrative cost and obstacles to implementing modern tools and techniques. Effective performance evaluation at every stage should help reduce wastage in the system, and the manufacturing culture should be realigned to operate with long-term goals in view.

#### References

Eliyahu M. G., Cox, J. (n.d.). The Goal, ISBN 0 566 08664

- http://www.artoflean.com/files/KaizenSession2.
- Mckay, K. N., Wiers, V. C. S. (n.d.). Practical Production Control, A Survival Guide for Planners and Schedulers, ISBN 1-932159-30-4
- Sharma, A., Moody, P. E. (n.d.). The Perfect Engine, How to Win in the New Demand Economy by Building to Order with Fewer Resources, ISBN 0-7432-0381-X
- Stephen, M. R. C., Rebecca R. M. (n.d.). The Speed of The Trust, The one thing that changes everything, ISBN 978-0-7432-9560-4

## Eco-Tourism and Forest Conservation in Bangladesh

#### Md. Shahadat Hosen Abdul Mannan Zobayer Ahmed

#### Introduction

Cox's bazar is the tourism capital of Bangladesh and the Inani natural forest area in the region attracts a large number of tourists as the lush green hills with a view of the sea are its special features. The area is also an important biodiversity hot spot of the country as some natural forests in Cox's Bazar account for about 12.27% of the country's total natural hill forest (BFD, 2016). These forests are not only important for country's biodiversity resources but also a traditional source of livelihood for millions of poor people. A report by a non-governmental organization found that about 80,000 people are dependent on Inani Reserve Forest that has an area of 10,000 hectares (SHED, 2012). This group of people include not only include local Bengalis but also some indigenous communities that migrated from Bandarban Hill district during the British ruling. A few decades ago, about 655 ethnic families (Chakma and Taunchyanga) settled in four villages (Madarboniya, Monkhali, Telkhola and Musarkhola) within Inani forest. Following the tradition of their community, they have been engaged in shifting cultivation as the prime source of livelihood. The harvest was good in the first few years, but gradually the fertility of the soil was lost and the forest became denuded (Ahmed et al., 2016). As a result, they need a non-forest based alternative livelihood as the forest has already been degraded. It is assumed that ecotourism will be an important alternative option for reducing of forest dependency of Madarboniya Chakma para.

Many forms of alternative tourism were introduced since the 1980s in order to cope with the social and environmental impacts of tourism. Ecotourism was included as one of the alternative form of tourism that seemed to be acceptable to the tourism industry. Mass tourism had been detrimental to the environment due to its unsustainable approach, but environment-friendly, ecotourism is supports local livelihood and diversification nature conservation in sustainable way а (Shamuddoha and Nasir, 2011). Ecotourism can help increase green productivity, infrastructure development in remote areas and generate employment for the local community by considering it as a market based product (Hossen, A. et al., 2014).

In 2003, 170 nations attending the World Parks Congress in South Africa called for increasing measures to make ecotourism a more effective "vehicle" for conserving biodiversity and reducing poverty (IUCN, 2003; Stronza and Pegas, 2008). Ecotourism has been adopted in our country recently although it had evolved and was recognized internationally more than three decades ago. Despite its popularity, theorists and practitioners are yet to understand the conditions under which ecotourism works effectively as a tool for conservation (Doan, 2000: Kruger, 2005). It is one of the most important tools of tourism for sustainable development. Ecotourism also focuses on recreation with scientific investigation, education, and awareness to all kind of biological diversity (Hossen, et al., 2014). Cater (1994) suggested that ecotourism improves life expectation in communities and helps to obtain socioeconomic benefits from this sector. Since ecotourism introduced new practices to the local community for assisting with their economic activities, combined efforts by the local community and eco-tourists generate positive attitude towards conserving biological and natural resources (Drake, 1991).

Moreover, revenue from proper use of natural resources can be used for conservation and sustainable development and the economy will gain from ecotourism (Hossen, et al., 2014). Most research on ecotourism to date comprises of case studies on impact on local communities and natural resources (Agrawal & Redford, 2006). The cases are generally used by local and international non-governmental organizations and private actors to promote of awareness for environmental protection, biodiversity conservation as well as rural economic development. This chapter seeks to explore the scope of government initiatives in ecotourism for indigenous community development to create alternative livelihood development options for the forest dependent rural community to assist with conserving and restoring of forest biodiversity.

The objective of the study is to assess the current state and assess the future potentials for ecotourism development in the area. In the British ruling period, some indigenous communities migrated in Inani reserve forest under the Cox's Bazar district from the adjacent Bandarban & Rangamati Hill Tracts in search of better livelihood. Hill forest based shifting cultivation was their prime source of livelihood. But slashing and burning practices in this traditional system was responsible for the loss of biodiversity. It was identified as one of the major drivers behind forest encroachment and change in land use pattern. The study is based on reconnaissance and exploratory assessment, with socioeconomic household and external visitor surveys, focus group discussions, and coordination meetings with the local population.

#### **Research Location, Materials and Methods**

Arannayk Foundation, SHED and Bangladesh Forest Department support the community of Madarboniya Chakma para at Cox's Bazar for developing Ecotourism in their surroundings as an alternative livelihood to reduce their forest dependency. The geographic location of Madarboniya Chakma para refers 21.118165 to 21.121199 N latitude and 92.104293 to 92.106672 E longitudes. The altitude is almost 3 kilometers above sea level and the topography is undulated hilly terrain with evergreen and semi-evergreen natural forest coverage. It is one of the indigenous settlements of Ukhiya upazilla located near the Cox's Bazar– Teknaf marine drive at 15 km from Inani Sea beach point to the south. It is under the Jalia palong union and about 40 kilometers from Ukhyia upazila to the south-west. In the forest administrative circle, the Inani Forest range falls under the Cox's Bazar south forest division.

There are about 85 families with more than 600 inhabitants that belong to Chakma and Tanchangya cultural background. They migrated from Bandarban & Rangamati hill district during the British period in search of better livelihood. The community was solely dependent on shifting cultivation (*Jhum chash*) in the hill that was practiced by their ancestors (Ahmed, *et al.*, 2016).

Primary data collection has been conducted in the period of January-April and secondary data was processed between June-July 2016. A semistructured questionnaire was used to gather information about the community livelihood pattern with reference to the existing socioeconomic condition. Reconnaissance and exploratory assessments surveys were used to assess the prospect of ecotourism facilities development. Focus group discussions were been arranged with potential stakeholders and community leaders at different levels to obtain an understanding of the situation on the ground. An external visitor or tourist survey with a semi structured questionnaire was piloted in Inani Beach point to learn about their expectation about the existing facilities in Chakma para as well as changes they would like to see in the future. Relevant information was collected from various sources including published journals, periodicals, newspapers, magazines, and the internet.

A sample population of 85 respondents from 85 households was interviewed to cover entire community by using purposive and simple random sampling techniques. Most of them were heads of households or leading earning members where the male-female ratio was5:3. They represented 100% households of the community as household heads and 14% (85) of total population (612) as individual respondents. A sample size of tourist opinion survey covered 80 travelers or approximately 2% of daily visitors in Inani Beach. They were selected randomly along with those who wished to express their opinion on the issue.

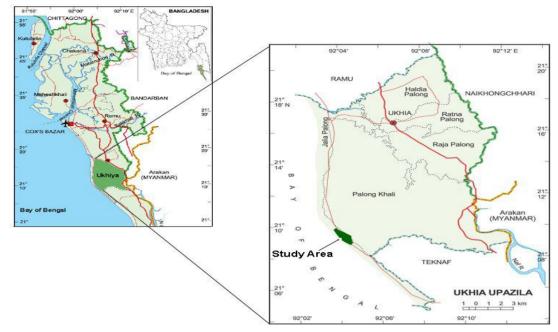


Figure 1: Study location and Map of the study area

#### **Results and Discussions**

#### Socio-cultural Environment in the Village

The socio-cultural relations and cohesion among villagers (i.e. Chakma and Tanchangya community) is very strong as they strictly abide by the customary and traditional community rules under the leadership of the village headman. The Chakma and Tanchangya people are Buddhist in religion and follow the southern form of Buddhism historically (*IndianMirror*, 2016). The Buddhist temple of the community known as Pagoda or Keyang is the Centre for all social and traditional activities. The monk who is the head of the Keyang commands significant respect in the community. He presides over all religious festivals but other social and external activities were led by the village headman. They celebrate all festivals in the Pagoda courtyard. The villagers support the Pagoda and monks in the form of offerings to Buddha as food and gifts. The most important religious and cultural festivals are Buddha Purnima, Biju, and Kothin Chibor Dan.

The traditional Chakma house is made of bamboo and the wooden structure is about 2 meters above the ground. The house is locally known as *Machang Ghor*. The Chakma men have given up their traditional dress but the women still don the traditional two-part thami at times of festivals. The women make their own cloth as they are traditionally skilled weavers. The staple food of Chakma is rice with vegetables grown in the hills by using the traditional shifting cultivation method. They are used to drinking alcohol and the home brewed liquor is consumed in the festivals and social occasions. Guests are greeted with home-made rice liquor and hukka pipe. The villagers mostly have arranged marriages known as Chumulong performed by the monks. Parents arrange matches after taking into account the wishes of sons and daughters, and the dowry is fixed by negotiation at the family level.

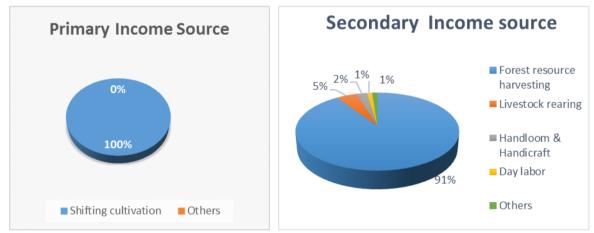
Anthropologically, Chakma and Tanchangya families are headed by males but in some families the female partner has the largest earning contribution. It was found that among the 85 households there are 612 Chakma and Tanchangya people. The pagoda has a religion-oriented educational system for the community children who wish to join the monastery. The village has only two pre-primary schools. One is run by SHED (anon-governmental organization) through financial support from Arannayk Foundation and the other is Pagoda-based pre-primary school funded by the Ministry of Religious Affairs. Most of the children go to their nearest primary school and one junior high school that service the Muslim community. Only 12% of the community people are literate and 3% went to primary school and 2% attended high school. There are only 5people who studied beyond the secondary school level and among them 2 were graduates.

#### Traditional Livelihood Pattern of Villagers and Deforestation

The villagers are mainly farmers and grow their necessary food and materials in the hills and around the forest. They have no land rights as they live in the territory of the forest department administered as reserved or protected forest land. They follow the traditional slash and burn agriculture, known as shifting cultivation or Jhum, and practiced it as their tradition, culture and even a ritual. After burning the vegetation, they plant crop in April after the first heavy rain and harvest it in October-November. They plant multiple crops at different tiers simultaneously to get multiple outputs from a single piece of land. They generally produced rice, corn, millet, mustard etc. with vegetables likes, yams, melons, cucumber, pumpkin, urinal and other leafy vegetables. The most interesting side of Jhum is that this process does not need application of any manure, insecticides/pesticides or even watering. Therefore, the Chakmas follow a practice that is different from agriculture in the plain land. They also rear livestock like pig, goat, cow, and homestead bird like chicken and duck.

Although the Chakma families are headed by males, the contribution of females in the livelihood activities is more significant. Chakma women are more productive in livelihood activities where the male partners are comparatively lazy. It was found that before 2010 they were 100% dependent on shifting cultivation for their livelihood as the primary source of income (Figure2). More than 90% of the people also used to harvest forest resource with other wild vegetables and fruits as a secondary income source (Figure2). They used to collect fuel wood from the forest for selling in the market. It was an arduous task to collect and sell the forest resources and other harvesting crops in the market due to the long distance and lack of transportation. They learned from the forest conservation and development intervention of FD, SHED and AF that shifting cultivation as a farming system is not environment-friendly, and gradually abandoned the practice.

For many centuries, the indigenous communities managed the forests in a sustainable manner by keeping the rotation of their shifting cultivation long enough (15-20 years) (Rasul and Thapa, 2003). Population pressure, over cropping and soil erosion, indiscriminate illegal logging in forest areas and lack of suitable land, and shifting cultivators nowadays are forced to use a shortened fallow period (3-4 years) (Roy and Halim, 2002; Rahman, et al., 2007) resulting in declining yield and drastic loss of forest coverage leading to land degradation (Nath and Inoue, 2008). The same situation exists in Madarboniya Chakma para. They migrated in search of fertile forest land but found that continuous slash and burn nature of shifting cultivation significantly reduced the fertility of the soil which caused lower production. Subsequently the shifting cultivators face a shortage of production. To overcome the food shortage and feed their family they go to the forest and cut down trees illegally and sell them. When the large trees are exhausted, they encroach and convert the forest land into agricultural land and sell the converted



land to other Bengali settlers or local elites.

Figure 2: Traditional Livelihood Pattern of Villagers before Adopting AIGA, 2010

The Chakma community is involved in poaching wild animals for their own consumption and selling to the nearby market. Some local people are associated with wildlife poaching although it has reduced drastically since 2010 due to constant patrolling by community groups. They normally kill Barking Deer, Wild Boars and Jungle Fowls (Ahmed *et al.*, 2016). These are the main reasons for the destruction of forest, biodiversity loss and land use changes of land in Inani Reserve forest area. These circumstances call for an alternative livelihood adoption to reduce dependency on the forest and abolish shifting cultivation. Ecotourism appears to be a potential and effective solution for achieving sustainability and efficient use of the available tangible and intangible resources.

## Non-forest based Alternative Livelihood Options

Shifting cultivation as the traditional source of livelihood failed to fulfill the needs of the households for food and cash. A number of interventions have been carried out to develop non forest based livelihood options for forest dependent households of the village since 2009.

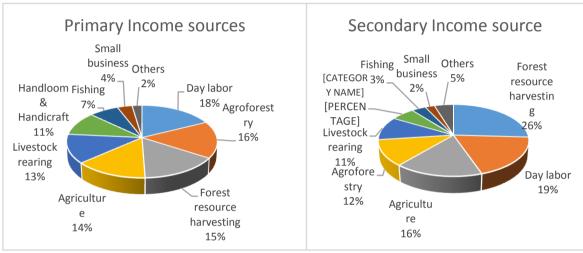


Figure 3: Status of Livelihood Activities of Chakma People, 2016

It was assume that, if livelihood can be secured from non-forest based options, the indigenous people would not destroy the biodiversity in the forest. We found that agro forestry practice was the second highest primary source of livelihood for about 16% of the respondents, followed by day laborers 18% (Figure 3). Approximately 11% of the people still earn their primary livelihood from the traditional handloom and handicraft industry. A significant factor is that about 15% of the people earn their primary livelihood and 26% their secondary livelihood from forest resource harvesting. This indicates that forest resource harvesting is still a significant source of local livelihood (Figure3). The consequences of high population growth create pressure for defragmentation of agricultural land, so they were not able to cultivate these lands with solo agricultural crops. Therefore, they were mostly engaged in agro forestry practice with other common occupations (Ali, 2010).

## Ecotourism Potentiality in the Village

The Chakma community is enriched with colorful cultural and traditional events which may be a major attracting feature for ecotourism development in the area. Their religious, social and family festivals and traditional food, housing, clothing and lifestyle can attract tourists. Moreover, the location between the sea and the hill provides an excellent opportunity to enjoy unspoiled natural beauty. Major Chakma festivals include Buddha Purnima, Kothin Chibor Dan, and Biju/Bishu. Buddha Purnima is a three day long event celebrated during the full moon in Boishakh (usually in May). They go out in traditional dresses on the occasion, visit the Pagoda, and offer flowers to Buddha, light candles, and listen to holy sermon. The offerings to Buddha are distributed among the poor and feasts are held to honor the priests. Another important festival is Biju, a traditional New Year celebration which falls around the Bangla New Year in 1<sup>st</sup> Boisakh (usually in April). The day is celebrated with colorful events, special respect to elders to get their blessings, houses are festooned with flowers and traditional dishes are prepared for the guests. These events can contribute to the promotion of potential ecotourism in the area.

A survey was conducted among tourists and external visitors in Inani beach to find out about amenities available or required in the village. The survey revealed that 12% of the respondents demand modern luxurious amenities and 28% expect modern facilities in traditional style. But 59% of the tourists wish the night stay in the village at traditional woodenbamboo made *Machang Ghor* (Chakma house) with traditional amenities and a candle light dinner with local food would be a memorable experience. About 63% of the respondents wish to visit the place at the time of a Chakma festival.



## Figure 4: Tourist Expectation for amenities

## Ecotourism and Forest Conservation

The community was 100% dependent on forest for livelihood by shifting cultivation, wildlife hunting and poaching and forest resource harvesting (Figure2). These were the major causes of forest and environmental degradation in the area (Ahmed *et al.*, 2016). This suggested that they need a viable alternative livelihood option to change the traditional practice and ecotourism can bea practical alternative livelihood option for the community. This is a nature-based tourism that intentionally seeks to deliver net positive contributions to environmental conservation and sustainable development for local communities (Cater and Lowman, 1994; Wallace and Pierce, 1996; Wearing and Neil, 1999). Revenue

earned from ecotourism will help fulfill their financial need and the return is expected to be higher than that from their traditional livelihood activities. This will help to conserve forest and biodiversity for attracting tourists.

Ecotourism will also help communities to develop non forest based income generating activities to fulfill the demand of tourists. They can showcase the art of making bamboo made handicraft production and handloom making, native chicken and livestock rearing, vegetable cultivation, and fruit gardening. These non-forest based livelihood options will be much more profitable than the collection of forest resources. As a result, nearby forest will face less anthropogenic pressure and help conserve forest and its biodiversity resources (Figure 5).

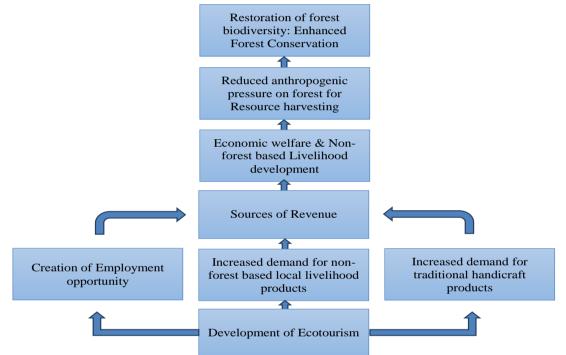


Figure 5: Linkage between Ecotourism & Forest conservation

#### **Conclusion and Recommendations**

A large number of tourists visit Cox's Bazaar every year from all over the world. Most commonly they visit the world's largest continuous sandy sea beach of Cox's Bazaar and the rocky sea beach of Inani. After visiting these places they have nothing else to see or do. Therefore, the development of ecotourism facilities in Madarboniya Chakma para could add a huge value to their trip with opportunities to enjoy the traditional culture and food of indigenous community as well as nature-based ecotourism in Chakma para.

Ecotourism is one of the best options for redistributing wealth from the rich to poor which results from the financial income and job creation. It is a key source of income and employment for local communities, which in turn provides direct benefit for conservation of nature. Sustainable tourism preserves land for nature, offering alternative livelihood options to those who may otherwise resort to less sustainable land use (UNWTO, 2011).

The study found that ecotourism can be an effective vehicle for conserving forests and biodiversity resources. It can also be a major source of livelihood for forest dependent communities as it creates demand for non-forest based products that help reduce their dependency on the forest for livelihood. The culture, religious festivals, traditional food, accommodation and lifestyle have the potentials to be prime attractions for tourists. As adjacent forests and their biodiversity resources are the main components of nature based ecotourism, the communities can be easily motivated to conserve their adjacent forests for promoting ecotourism in their village. Earning revenue will encourage the local community to conserve forests and biodiversity as integrated component of ecotourism and abandon shifting cultivation and wild life hunting. The commoditization of traditional heritage, indigenous culture and better amenities are essential for making eco-tourism successful in Bangladesh.

#### References

- Agrawal, A., and Redford, K. (2006). Poverty, development, and biodiversity conservation: Shooting in the dark? Wildlife Conservation Society, Working Paper.
- Ahmed, F.U., Quddus, A. and Mannan, A. (2016). Conservation issues of Inani Protected Forest, In: Biodiversity of Inani Protected Forest, ed. Mohammad Mostafa Feeroz, Arannayk Foundation, Dhaka, pp 159-167
- Ali, M.R. (2010). Agroforestry for food security and livelihood improvement of small holder farmers in the upland areas of Bangladesh (Unpublished M.Sc. thesis Paper).Shahjalal University of Science & Technology, Sylhet.
- Bangladesh Forest Department, (2016). Status of Bangladesh Natural hill forest, Bangladesh Forest Dept. Retrieved from <u>http://www.bforest.gov.bd/site/</u> <u>page/28615def-835e-4b3a-a412-da954f55a943/ক্রান্তিয়-চিরসবুজ-বন-(পাহাড়ী-</u> <u>বন)</u> Accessed in November 12, 2016.
- Cater, E. (1994). Ecotourism in the Third World problems and prospects for sustainability.Oxford Univ. Press. London. pp 86.
- Cater, E., & Lowman, G. (1994). Ecotourism: A sustainable option? Chichester, UK: John Wiley and Sons.
- Doan, T. (2000). The effects of ecotourism in developing nations: An analysis of case studies. Journal of Sustainable Tourism, 8(4), 288–304.
- Drake, S. (1991). Development of a local participation plan for ecotourism projects.Oxford Univ. Press. London. pp 39.
- Hossen, A., Ahsan, M. F. and Kamruzzaman, M. (2014). Ecotourism Potentiality in the Dulahazra Safari Park, Bangladesh.J. of Environ. Sci. & Natural Resources,

7(1): 189 – 196,

- Indian Mirror, (2016).Chakma Tribes: The traditional Chakma tribe's lifestyle. Available at <u>http://www.indianmirror.com/tribes/chakmastribe.html</u>. Accessed at 09 November 2016
- International Union for the Conservation of Nature (IUCN). (2003). Report for World Commission on Protected Areas.Retrieved from: <u>http://www. iucn.org/themes/wcpa/wpc2003/</u>Accessed November 10, 2016
- Kruger, O. (2005). The Role of Ecotourism in Conservation: Panacea or Pandora's Box? Biodiversity and Conservation 14(3):579–600.
- Mawere, M., and Mubaya, T. (2012). The Role of Ecotourism in Conserving the Environment and Enhancing the Status of Host Local Communities in Developing Economies: The Case of Mtema Ecotourism Centre in South-Eastern Zimbabwe. International Journal of Environment and Sustainability (IJES), 1(1). Available at: <u>https://www.sciencetarget.com/</u> Journal/index.php/IJES/article/view/61/8
- Nath, T. K., and Inoue, M. (2008). The upland settlement project of Bangladesh as a means of reducing land degradation and improving rural livelihoods. Small-Scale Forestry, 7, 163-182. doi:10.1007/s11842-008-9048-0
- Rahman, S. A., Rahman, M. F., Codilan, A. L., and Farhana, K. M. (2007). Analysis of the economic benefits from systematic improvements to shifting cultivation and its evolution towards stable continuous agro forestry in the upland of Eastern Bangladesh. International Forestry Review, 9, 536-547.
- Rasul, G. and Thapa, G. B. (2003). Shifting cultivation in the mountains of south and Southeast Asia: Regional patterns and factors influencing the change. Land Degradation & Development, 14, 495-508. doi:10.1002/ldr.570
- Roy, R. D., and Halim, S. (2002). Valuing Village commons in forestry. Indigenous Perspectives, 5, 9-38.
- Shamsuddoha, M. and T. Nasir. (2011). Eco-tourism: A descriptive study on SitakundaEcopark in Chittagong division of Bangladesh. International J. Educational Res. and Tech., 2(1): 8-13.
- SHED, (2012). Annual Progress Report of Inani Protected Forest Area Comanagement Project: A report of Society for Health Extension & Development (SHED), Cox's bazar, Bangladesh.
- Stronza, A. and Pegas, F. (2008). Ecotourism and Conservation: Two Cases from Brazil and Peru. Human Dimensions of Wildlife, 13:263-279.
- United Nation World Tourism Organization, (2011). UNWTO Recommendations to the 10th Conference of the Parties to the Convention on Biological Diversity.Available at unwto.org/pdf/unwto\_unwto\_recommendations.pdf. Accessed on 12 November, 2016
- Wallace, G., and Pierce, S. (1996). An evaluation of ecotourism in Amazonas, Brazil.Annals of Tourism Research, 23(4), 843–873.
- Wearing, S., and Neil, J. (1999). Ecotourism: Impacts, potentials, and possibilities. Oxford: Butterworth Heinemann.

## Climate Change and Stakeholders Adaptation in Bangladesh

#### Muhammad Abdullah

#### Introduction

Climate change is a serious long-term threat to Bangladesh in the way of achieving overall sustainable development goals. Currently it is one of the worst affected countries in the world due to its vulnerability to climate change, and it has affected several aspects of life including critical areas such as agriculture, livestock, fisheries, biodiversity, environment, water resources and ground water (Karim, 2011). In order to deal with these consequences, Bangladesh has developed a number of policies to respond to the effects of climate change. This chapter aims to understand the impact of climate change on the government and stakeholders as well as the role of policy makers in formulating and implementing climate change policy for adaptation process. The study adopts a qualitative approach based on secondary data collected from published and unpublished documents, relevant research articles and books.

The geographical location and climate pattern has always rendered Bangladesh vulnerable to natural disasters. Moreover the capacity of the country to adapt to the ever-changing effects of climate change is very poor (Karim, 2011). The country is regularly hit by natural disasters like cyclones, inundation, tropical surges and storms and they disrupt the progress of food cultivation and production as well as development projects (Ali, 1999).

Climate change is a big threat for Bangladesh and may obstruct the progress achieved in the increasing of purchase capacity of the common people and reduction of poverty (Masum & Hasan, 2009). Bangladesh needs to urgently mitigate the effects of climate change and has invested more than US\$10 billion for this purpose (World Bank, 2010). The proposed measures include increasing awareness among the people, strengthening the infrastructural capacity and other practical issues such as repairing roads and highways, creating cyclone shelter centers for disaster stricken people and early warning systems, providing relief for the affected people as a post effect method. This has been done with the support of many development partners across the globe (World Bank, 2010).

Climate change is a global issue and it is impossible for a developing country like Bangladesh to overcome the effects of the climate change without substantial support from the international community. It is acknowledged Bangladesh has developed some policies to deal with the effects of climate change, but mere formulation of policy is not adequate as mitigating the effects of climate change require exceptionally huge amounts of finance and state of the art technology (Mia, n.d.).

#### **Impact of Climate Change in Bangladesh**

## Floods

Floods have become a regular feature in Bangladesh and almost 25% of the total land of the country gets inundated (Displacement solution, 2012), and in some extraordinary cases as much as 70% of the entire land area goes under water (Mirza, 2002).

Year of Flood	Flooded area	Effect				
1984	Total area flooded 50,000 sq. km.	Projected damage US\$378 million				
1987	Total area flooded 50,000 sq. km.	Projected damage US\$1 billion, and 2,055 deaths				
1988	Total area flooded 90,000 sq. km.	Projected damage US\$1.2 billion; deaths 2,000 to 6,500 deaths; over 45 million homeless				
1998	Total area flooded approximately 100,000 sq. km.	damage 500 000 homes. I 100 deaths and				
2004	Total area flooded 56,000 sq. km.	Projected damage US\$6.6 billion; 700 deaths and 3.8 million people affected.				
2007	Total area flooded 32,000 sq. km.	Projected damage over US\$1 billion; 6490 deaths; 1.2 million acres of crops destroyed or partially damaged.				
Source: Government of Bangladesh (2005) National Adaptation Programme of						
Action, Ministry of Environment and Forests, Dhaka and Government of						
Bangladesh (2007) 'Consolidated Damage and loss Assessment, Lessons Learnt from the Flood 2007 and Future Action Plan', Disaster Management Bureau,						
Dhaka. (Cited: MOEF, 2009).						

Table 1. Floods in Bangladesh, 1984-2007

## Droughts

Drought is one of the worst forms of climate change that affects agricultural production as well as farmworkers seriously and they lose their source of subsistence. The northwestern part of the country is most seriously affected by droughts (MOEF, 2009).



*Figure 1:* Severe drought condition *Source: MOEF, 2009.* 

#### Sea Level Rise

The sea level will continue to rise due to continuous global warming (Displacement solution, 2012). Mohal and Hossain (2007, cited in Pender, 2008) anticipate that the land mass of Bangladesh could be affected by sea level rise and it might happen within 2050. 10 cm of sea level may rise within 2020 and it may affect 2% of the total land mass of Bangladesh and within 2050 sea level may rise up to 25 cm which may also affect another 4% of the total land mass of Bangladesh, according to the Bangladesh Strategic Program for Climate Resilience (SPCR).

#### Land Erosion

Land erosion is a common problem in the coastal zone of Bangladesh because of climate change. According to government statistics, river erosion is taking away land and making many people landless and homeless. It is happening quite frequently every year in the country (Displacement solution, 2012).



*Figure 2:* River bank erosion *Source: MOEF, 2009.* 

## Temperature Trend

World temperature may increase by $0.2^{\circ}$ Centigrade annually over the next twenty years and by the year 2100 global temperature may increase by  $4^{\circ}$ c (Alley *et al*, cited in Pender, 2008). Effect of climate change becomes visible if we see the current trend of temperature in summer and winter. The temperature in summer continues to get higher and drops more than usual in the winter, with some variations. Temperature in Bangladesh has increased 1°C in May and 0.5°C in November respectively and in the future this trend may continue (Huq and Ayers, 2008).

## Salinity Intrusion and Reduced Fresh Water Availability

The southern region of Bangladesh is seriously affected by soil salinity intrusion and it is a big threat for the region and the coastal area in particular. The intrusion is seasonal in nature. The effect of saline water intrusion is very high in the dry season. It rises from 10 to 40% in the dry season in comparison with monsoon (DOE, 2003).

## Impact of Climate change in Bangladesh

## Impact on Health

Climate change negatively affects the health of the people directly or indirectly in Bangladesh. The most important factors responsible for health risks are increasing temperature, precipitation, and sea level rise, changes in the quality of air, water, food, the ecosystem and agriculture. The results of these risks are death, disability and suffering (Rahman, 2008).

## Impact on Bio-diversity

Climate change and its impact will also affect the ecosystem and many species will face extinction which will ultimately affect the biodiversity of the nature (Reid, n.d.). Bangladesh is popularly known as a land of rivers, lakes, haors and ponds which play an effective role in enhancing natural beauty and foster biodiversity. There are over 400 species but many of these have to struggle to survive due to salinity intrusion and severe drought which are the results of climate change (Pender, 2008).

## Impact on Costal Zone

Bangladesh faces increased risk of natural disasters that emanate from the effects of climate change and the coastal areas are more vulnerable. Out of sixty four districts of the country, the coastal zone includes 19 and out of over 500 thanas it includes 153. The coastal area of Bangladesh covers 32% of the total land mass of Bangladesh(about 47,201 square kilometer, see Figure: 3)(Islam,2004, as cited in Islam, n.d.).

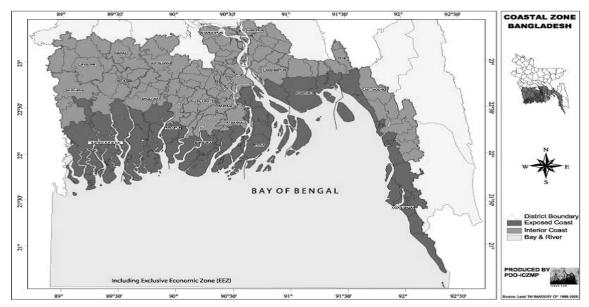


Figure 3: The coastal zone of Bangladesh

*Source: Pre-and post-tsunami coastal planning and land-use policies and issues in Bangladesh, Rafiqul Islam, (n.d.).* 

#### Impact on Water Resources

Climate change can have a catastrophic effect on the surface and groundwater resources. The problems of sea level rise and the impact of water resources will have negative impact on the coastal area as well as on entire Bangladesh which is a land of rivers. This will cause inundation in the wet season as most of the rivers in the country are silted up and cause drought in the winter (Alam, 2004).

#### Impact on Agriculture

Bangladesh is an agricultural country and most of the people depend on agricultural activities for their existence. The impact of climate change will affect the agriculture of the country. Increasing temperature, drought, reduced rainfall and salinity will contribute to reduce the crop harvest in the country. The sign is already visible in many parts of Bangladesh and arable land is on the decline and the economy of the country is affected (Huq and Ayers, 2008).

Climate change will also affect the fisheries industry along with agriculture sector of Bangladesh. This will affect both the food security as well as intake of protein that come from fish. Due to extinction of many types of fish the country will suffer from scarcity of fish (MOEF, 2005).

#### **Future Climate Change Impact**

#### **Global Warming**

Climate hazard is crucial for Bangladesh because of its geographical location, rapid population growth and excessive dependence on natural

resources. Potential future impacts are outlined in the following paragraphs.

## **Changing Temperature**

Bangladesh experiences marked inconsistency in temperature trend. It is predicted that average temperature of Bangladesh will increase to  $1.0^{\circ}$ C by 2030,  $1.4^{\circ}$ C by 2050 and  $2.4^{\circ}$ C by the year 2100. According to temperature trend, the average rainfall of Bangladesh will also change. It is assumed that in the summer season, the average rainfall of Bangladesh will increase 8% by 2050 and 12% by 2100. On the other hand the average rainfall in the winter season will decrease -2% by 2050 and -3% by 2100 (Tanner, Hassan, Islam, Conway, Mechler, Ahmed, and Alam, 2007).

## Excessive Flooding

Due to global warming, glaciers of the Himalayas are melting rapidly are contributing to increases in the sea level. If this process continues and global temperature increases by 3 to  $4^{0}$ C, it is predicted that more than 70 million people of Bangladesh will be permanently affected and displaced by flooding (Human Development Report, 2008).

## Increasing Salinity Interference

The southern parts of Bangladesh (districts of Bagerhat, Khulna and Sathkhira) near the coastal regions have faced salinity erosion for some time. At present, 13% of the land area in this part has been affected by salinity and it is expected to increase to 16% by the year 2050 and 18% by the year 2100 (Mostofa, 2009).

## Increasing Cyclone and Rainstorm

The annual incidences of cyclones and storm surges are gradually increasing in Bangladesh. Approximately three to seven cyclones hit the coastal zone every ten years. The coastal areas of Bangladesh with high risk of cyclones will increase 35% by 2020 and 40% by 2050 (Tanner, 2007).

## Effects on Agriculture and Bio-diversity

Most of the people of Bangladesh depend, in one way or another, on agricultural production which is badly affected by climate change. This threatens the food security of the country (Huq and Ayers, 2008). If the temperature increases by  $4^{0}$ C, rice production in Bangladesh will decrease by 30% and wheat production by 50% (Lezlie, Moriniere, Taylor, Hamza, and Downing, 2009).

Drawing upon the discussion above, the impact of climate change in the short and long run can be summarized. In the short run, increasing temperature trend will cause health risks, particularly for the children and elderly. Excessive climate hazards such as cyclone, storm surges, riverbank erosion and extensive flooding will have negative impact on human settlement as well as socio economic condition. Shrinkage of arable land will force people to migrate from rural to urban areas in search of work. Rising sea level may inundate the coastal areas with increased possibility for tidal waves. Agricultural production will be affected by both excessive and inadequate rainfall and erosion of land will diminish availability of cultivable land.

In the long run, prolonged flooding may make the inundation permanent. The fish population will be reduced or become extinct along with various species of animals and birds. Agricultural production will be decreased and food security will be threatened. This will have an impact of social relationships and the process of development will be hindered.

#### **Government Policies on Climate Change**

## National Adaptation Program of Action (NAPA), 2005

The National Adaptation Program of Action (NAPA) is one of the main programs of the government of Bangladesh to adapt to the effects of climate change. It was drafted on the principles of the LDC Expert Group and the Ministry of Environment and Forest that sought to implement the decision of the Seventh Conference of parties of UNFCC (COP7). NAPA was prepared in 2005 with the participation of all stakeholders related to the issues of the environment and management of resources. It ensured a bargaining option in the field of resource use, allocation and disbursement. NAPA covered a wide range of areas and required all stakeholders to observe impact, vulnerability and adaptation measures. Its coverage areas were water, coastal areas, natural disaster, health, agriculture, fisheries and livestock. The program also covered biodiversity, forestry, land use, industries, infrastructure, food security, livelihood, gender and local governance (Tanner et al., 2007).

Later, NAPA put forward a number of suggestions in relation to climate change strategy in Bangladesh (MOEF, 2005). The recommendations covered the following areas.

- The hazards of the effects of climate change must be minimized and for that purpose the coastal afforestation approach and the participation of the community should receive prominence.
- The coastal communities have to be supplied pure and safe drinking water.
- There should be opportunities for the integration of climate change planning, infrastructure design, conflict management and water management institutions.

- The vulnerable community should be provided with early information to create awareness among them so that they can take preparation for going safer places before disasters strike. In this way, they would be able to mitigate the fall out of climate change.
- Sector wise policies and programs should be adopted for disaster management.
- Climate change issues have to be included in the curriculum of secondary and tertiary educational institutions.
- Capacity of urban infrastructure and industries need to be developed to contain effects of climate change.
- Rigorous research would have to be conducted on drought, flood, and salinity.
- Efforts should be made to make coastal crops salinity proof.
- Appropriate practices that are helpful for fisheries of northeast and central region and coastal areas of Bangladesh should be introduced.
- A system of crop insurance should be introduced to minimize the effect of climate change.

## Bangladesh Climate Change Strategy Action Plan, 2008

The 2008 action plan was formulated as part of the preparation of a UK-Bangladesh conference and the government came up with the Bangladesh Climate Change Strategy and Action Plan (MOEF, 2008). It is widely known as action Plan 2008, and included the following six main points.

- 1 All programs will be planned with the intention to ensure food security, social security and health security so that the effects of climate change will have light impact on the most vulnerable and the poorest in the society. Their employment will also be prioritized.
- 2 A comprehensive disaster management approach will be adopted to cope with various systems of disaster management and also focus on the capacity to face the effects of climate change effectively and efficiently.
- 3 There should be massive improvement and renovation of the infrastructure.
- 4 Continuous research and updated knowledge management should be undertaken to mitigate impacts of climate change on the economy and other sectors.
- 5 Ensuring Mitigation and low carbon development and implementation should be ensured so that the effects of climate change on the poor and vulnerable gradually diminishes in the upcoming decades.
- 6 Efforts should be directed towards capacity building, institutional strengthening, ensuring the participation of various sectors of the government and the members of the civil society, non-governmental organizations and other players of the private sector to formulate

timely policy to develop skills of the ministries of the government to deal with the challenges of climate change.

### Bangladesh Climate Change Strategy Action Plan, 2009

The climate change strategy action plan, 2009 is a long term action plan for responding to the challenges of climate change. It is a complete package of the government and will be implemented over a period of ten years. The action plan consists of six pillars with each is of special and distinctive features, and they are summarized below.

## Food security, social protection and health

There is no denying the fact that climate change will affect the poorest and most vulnerable of the society very badly. Under this pillar government will take every required step to protect the poor and vulnerable. In order to ensure this, the government will have to undertake many tasks such as increasing the resilience capacity of the affected people including children and women, developing community based adaptation programs, introducing climate change resilient cropping, fisheries and livestock systems to ensure food security, ensuring health security of the people through effective health policy, supplying safe and pure drinking water among the affected and arranging proper sanitation system for them.

## Comprehensive disaster management

It is not possible for the government on its own to ensure a comprehensive disaster management system because it is a massive task. This pillar focuses on developing and increasing the capacity of the various ministries and agencies of the government to ensure participation of all stakeholders in the society.

## Infrastructure

It is not possible to deal with the effects of climate change without strong infrastructure. Taking this into consideration government has to focus on constructing new infrastructure and repairing the existing facilities. Building strong infrastructure and maintaining them is critical for effective response to climate change.

## Research and knowledge management

This pillar of the action plan 2009 is very important because research is essential for acquiring the knowledge required to face the challenges of climate change. Its importance in underlined by the fact that climate change is an ever changing issue. This body of research will focus on studying global climate change model and applying the findings in Bangladesh to mitigate the effects of climate change, and modeling the hydrological impacts.

## Mitigation and low carbon development

Bangladesh does not have massive industrialization and programs that could contribute to greenhouse gas emission. Nevertheless, the government moves very cautiously in this regard, and would like to emphasize on the development of a strategic plan, expansion of social forestry program across the country on government and community land, and careful consumption and utilization of energy.

#### Capacity building and institutional strengthening

This pillar focuses on strengthening the capacity of the government ministries, agencies, civil society and the private sector of the country. The activities will include review and/or revision of sector wise policies relating to climate change and focus on key ministries and agencies for adaptation purpose.

#### **Conclusion and Policy Recommendation**

#### Conclusion

Climate change is no longer a domestic or regional issue; rather it is a global and ever changing challenge. Developing countries will fall victims to the severe effects of climate change although it may be for no fault of their own. In reality, they are in this situation due to the overambitious programs of the developed countries and emerging economies which are contributing to the problem with excessive and rapid industrialization. The impacts of climate change on Bangladesh have been very costly. Food production has declined as agriculture in the coastal zones is gravely affected due to salinity of soil, contributing to food insecurity for the entire nation. The agricultural sector makes a substantial contribution to gross domestic product of Bangladesh which depends excessively on agriculture to feed the nation. This underlines the need for a pragmatic approach for increasing food production in the country.

Another sector that faces a major threat is water resources. People in the coastal areas will suffer from lack of pure drinking water. The poor and marginalized groups will suffer from various diseases, and the biodiversity and ecosystems of the country are affected by climate change. Bangladesh has developed policy outlines for dealing with the challenges, but does not have the financial strength and technological knowledge to implement the policies and programs on time. This will require full cooperation of developed countries and the United Nations for effectively formulating and implementing climate change adaptation policy and programs.

#### **Policy Recommendations**

In order to mitigate the intensity of the effects of climate change, this chapter proposes a number of recommendations. More research is needed

to increase food production, develop an appropriate agricultural system for the coastal areas and upgrade knowledge of relevant personnel to formulate, review and monitor climate change adaptation policy to keep pace with the changing pattern of climate change.

Crop insurance should be introduced to mitigate the financial loss of farmers that emanate from climate change. Strengthening the infrastructure ought to receive top priority because it will help the government achieve more institutional capability to mitigate repercussions of climate change.

Competence must be achieved by the diplomats, the government of Bangladesh and other non-governmental players including the civil society to globally project the problem of climate change and its impact on Bangladesh to work towards achieving adequate financial allocation and updated technological support from the global community required for implementing climate adaptation policy. Public awareness should be developed across the country with the help of press and electronic media to inform the citizens of the risks and effects of climate change.

The policies should be formulated on a sector-wise basis. Cooperation and co-ordination among the concerned ministries and agencies that are responsible for implementing climate change adaptation policy is strongly recommended. Climate change issues should be included in the curriculum of secondary and higher secondary education so that the future leadership of the country becomes aware of the effects of climate change right from the early stage of their lives. The bio-diversity and ecosystem of the country will be greatly affected by the effects of climate change. Therefore, special measures from the part of the government should be undertaken to ensure the equilibrium of the nature. Therefore, more local, national, regional and global commitment is critical indispensable for preparing climate change adaptation policies of the developing countries like Bangladesh for mitigating the consequences of climate change.

#### References

- Alam, M. (2004). Adverse impacts of climate change on development of Bangladesh: Integrating adaptation into policies and activities. Dhaka: Bangladesh Centre for Advanced Studies (BCAS), Dhaka.
- Ali, A. (1999). Climate change impacts and adaptation assessment in Bangladesh. Climate Research, 12, 109-116.
- Department of Environment (DOE), Ministry of Environment and Forests, Government of the People's Republic of Bangladesh. (2003). Bangladesh: National program of action for protection of the coastal and marine environment from land-based activities. Dhaka: Author.

- Displacement Solutions. (2012). Climate displacement in Bangladesh: The need for urgent housing, land and property (HLP) rights solutions. Retrieved February 10, 2013, from http://displacementsolutions.org/wp-content/ uploads/DS-Climate-Displacement-in-Bangladesh-Report-LOW-RES-FOR-WEB.pdf
- Huq, S. & Ayers, J. (2008).Climate change impacts and responses in Bangladesh: Note. Brussels: European Parliament.
- Human Development Report,(2008). Fighting climate change: Human Solidarity in a divided world, United Nations Development Program (UNDP). http://hdr.undp.org/en/media/HDR\_20072008\_Summary\_English.pdf
- Islam, R. (n.d.).Pre-and post-tsunami coastal planning and land-use policies and issues in Bangladesh.Dhaka: Integrated Coastal Zone Management program. Retrieved May 15, 2013, fromhttp://www.fao.org/forestry/13138-098e3e2e57aa60088543a509788445c8d.pdf
- Karim, Z. (2011). Assessment of investment and financial flows to adapt to the climate change effects in the agriculture sector [Draft final report of the Capacity Development for Policy Makers to Address Climate Change, Agriculture Sector]. Dhaka: Government of the People's Republic of Bangladesh and United Nations Development Programme (Dhaka) [joint publication].
- Lezlie, C., Moriniere, E., Taylor, R., Hamza, M. & Downing, T., (2009).Climate Change and its Humanitarian Impacts, Stockholm Environment Institute, Oxford, UK.Retrieved May 28, 2013 from http://www. humanitarianfutures.org/sites/default/files/climate-change.pdf
- Masum, S.J.H. &Hasan M.M.M. (2009).Climate change impact on food sovereignty in Bangladesh.Retrieved April 21, 2013 from http://www. climatefrontlines.org/en-GB/node/479
- Mia, T.I. (n.d.). Mainstreaming climate change adaptations into developmental planning (Country paper: Bangladesh). Dhaka: Ministry of Agriculture, Bangladesh. Retrieved April 17, 2013, from http://www.adbi.org/files/ 2009.04.17.cpp.sess6.islam.country.paper.bangladesh.pdf
- Ministry of Environment and Forest, Government of the People's Republic of Bangladesh,(2005). National adaptation programme of action, final report 2005. Dhaka: Author.
- Ministry of Environment and Forest, Government of the People's Republic of Bangladesh. (2008). Bangladesh climate change strategy and action plan 2008. Dhaka: Author.
- Ministry of Environment and Forest, Government of the People's Republic of Bangladesh. (2009). Bangladesh climate change strategy and action plan 2009. Dhaka: Author.
- Mirza, M.M.Q. (2002). Global warming and changes in the probability of occurrence of floods in Bangladesh and implications. Global Environmental Change, 12, 127–138.
- Mostofa, G., (2009). Impacts of climate change in Bangladesh. Retrieved June 2, 2013 from http://www.climatefrontlines.org/en-GB/node/426

- Pender, S. J. (2008). What is climate change? And how it may affect Bangladesh.[Briefing paper]. Dhaka: Church of Bangladesh Social Development Programme.
- Rahman, A. (2008). Climate change and its impact on health inBangladesh. Regional Health Forum, 12(1), 16-26.
- Reid, H. (n.d.). Climate change: Biodiversity and livelihood impacts. Retrieved April 5, 2013, from http://pubs.iied.org/pdfs/G00433.pdf
- Tanner, T., Hassan, A., Islam, K M N, Conway, D., Mechler, R., Ahmed, A. U. &Alam, M., (2007).ORCHID, Piloting climate risk screening in DFID, Bangladesh. Detailed research report. Institute of development studies, University of Sussex, UK.
- World Bank.(2010). Economics of adaptation to climate change, Bangladesh. Washington, DC: The World Bank Group. Retrieved April 20, 2013, from http://climatechange.worldbank.org/sites/default/files/documents/EACC\_B angladesh

# 9

## **Climate Change and Farmers' Response in North-East India**

#### **Utpal Kumar De**

#### Introduction

Changing climate and extreme climatic behaviour like sudden floods and draughts have extensive impacts on the agricultural activities and its productivity which compel rural farmers to shift their existing cropping pattern to reduce risk (Auffhammer et al., 2012; De & Chattopadhyay, 2010). Agricultural performance is vulnerable to the variability in local climate across different locations rather than global climate patterns that raise risk and uncertainty (IPCC, 2007b; Ye et al., 2013). Under increasing uncertainty, maintenance of agricultural productivity depends on the adaptability of the farmers with the changing weather pattern over the years. Farmers in developing countries, especially in rural areas are hit the hardest by extreme climatic events such as floods and draughts that reduces crop yields in most tropical and sub-tropical regions that also happens due to changes in water availability (Adger et al., 2003; IPCC, 2007a; Tanner et al., 2008). The rural poor normally have limited adaptation choices including very limited options to diversify cultivation of crops. At the same time, they are more vulnerable than the rich farmers to agricultural disruptions and they lack access to improved technologies such as flood and draught resistant varieties of seeds or crop insurance etc. However, most of the farmers are aware of the fact that greater crop diversity and mixed farming (crops and livestock) offers considerable protection against farming risk, including climate-related risk (FAO, 2011).Continuous adaptation is a useful tool for dealing with climate change risk or climate extremes. Crop diversity is the best way of adaptation and the foundation for future efforts to feed the world (Kyte, 2014). It is therefore, important to analyse farmers' perception and awareness about crop diversification as their adaptation actions followed the climate change scenario in the region. Although there are several studies on the process of diversification of crops along with the other resources to deal with the changing weather pattern, agro-technology, and infrastructure are critical for sustainable agricultural growth (Krishnan, Vasisht and Sharma, 1991; Bastine and Palaniswami, 1994; Dale, 1997; Hazra, 2003; De, 2003; and Mehta, 2009). However, analyses of adaptation measures of farmers in response to changing weather pattern,

different agro-technologies, risk and uncertainty on account of the climate extremes are rare.

Changes in climate, agricultural productivity and crop diversity over time is examined by using secondary data, while farmers' adaptation is understood by collecting primary data across two different zones of extremely opposite weather conditions. The role of various factors in adaptation and crop diversification has been analysed by using regression analyses. Extent of diversification of crops has been measured by the Herfindahl Index (HI) of diversity. Also an adaptation index (AI) is constructed by using the formula  $AI = (\sum P_i * X_i)/n$ , where  $P_i$  is the weight of  $i^{th}$  adaptation; X<sub>i</sub>. P<sub>i</sub> is computed as the proportion of  $i^{th}$  strategy in the gross number of adaptations followed by all the farmers in the area. Effects of different factors on the level of crop diversification by individual farmers and on the adaptability with the changing agroclimatic conditions is tested by multiple regression technique. The results reveal significant changes in weather pattern during the last six decades with slow crop diversity across zones. It is however observed that education of the respondent farmers, farm size, area of holdings and share of family income from agricultural activities have significantly positive impacts on the crop diversification as well as adaptation to moderate the adverse climate impact or avoid climate related disaster. Education improves technology adoption capacity and thus helps farmers adapt better to the changing climatic conditions.

Climate change has important consequences on agricultural practices and productivity in the North-Eastern part of India. This chapter explores changes in agricultural productivity and its regional pattern using a composite productivity index. It examines the pattern of climate change, changing agricultural productivity and farmers' response towards changing climatic conditions or extreme climatic events in Assam. Additionally, the impact of various factors including changing technological support, age, education and training, farming experience, area under cultivation, income and access to capital for crop diversification or other adoption mechanisms are examined by using a cross section data collected from sample villages of Kokrajhar and Dhemaji.Finally, the farmers' response to changing climate has been observed through the crop diversity pattern and adaptability of farmers with varying climatic conditions.

#### **Agricultural Productivity and Climate Change**

Agricultural productivity, pattern of crop diversity across regions have been subject to the changing agro-climatic conditions of respective regions (IPCC, 1995; Peng, et al., 2004; Aufhammer, Ramanathan, and Vincent, 2006, 2011; Kar et al. 2004; Wejnert, 2002; Deschenes and Greenstone 2007; Feng, Krueger and Oppenheimer, 2010; De and Bodosa, 2014). As changing production condition leads to variation in productivity of crops, it also affects farmer's option for diversification of land use in an optimum manner. Moreover, uncertainty on account of market informationgap disallows farmers to adopt appropriate crop diversification (Ellis, 1989; Anderson, 2003) and adopt new technology (Rasul et al., 2004; Knowler and Bradshaw, 2007; Teklewold et al., 2006). However, productivity growth and crop diversity are closely agricultural prosperity and, by turn,agro-economic linked with development of a country (Kasem and Thapa 2010, Hutagaol 2006, Pingali 2004, FAO/RAP 2000, Rahman 2009 and Van den Berg et al. 2007). Under changing climatic conditions, agricultural sustainability of any region depends on farmers' capability to adapt to the changing climatic conditions and moderate its adverse impacts on the agricultural performances of that region.

Adaptation to climate change refers to adjustments in practices, processes and systems to minimise current and/or future adverse effects of climate change and take advantage of available opportunities to maximise benefits (Eriksen et al., 2011; Pouliotte et al., 2009). Adaptation and mitigation in agriculture require local responses. Selection of crop variety and diversification, date of planting, harvesting, tillage and fertilisation are some possible adaptation strategies to the changing climatic pattern. However, farmers' adaptability to the changing climate and choice of suitable cropping pattern depends largely upon their awareness and skill to anticipate the expected situation that is highly dependent on their level of education, availability of information, training, extension services by outside agencies regarding climate change and assets, access to appropriate agro-technology and agro-infrastructure (IPCC, 2007a; Anselm and Taofeeq, 2010; Onyeneke & Madukwe, 2010; Adensina, et al., 1995; and Krishnamurthy, 2012). Moreover, innovative agricultural practices and technologies can play an important role in climate mitigation and adaptation. This adaptation and mitigation potential is most pronounced in developing areas like North-East India where agricultural productivity remains low, and poverty, vulnerability and food insecurity remain high; and the direct effects of climate change are expected to be especially harsh (Lybbert & Sumner, 2010).

Assam is the largest agrarian state in North-East India dominated by small landholdings (average 1.2 hectare; GoA, 2012-13) with high weather dependence and substantial agricultural diversity. Climate of Assam region recorded gradual changes over time as reflected in inconsistent variations in rainfall, rising temperature and erratic humidity level. In recent years, the highest level of precipitation was observed in Assam (De and Bodosa, 2014) either in pre-normal monsoon months of March-May or during post monsoon months of August–October, resulting in untimely devastating floods. Flood is a common phenomenon in Assam and Dhemaji, Lakhimpur, Nagaon and some other districts are highly prone. Moreover, both maximum and minimum temperatures were observed to increase consistently and the winter months recorded faster growth across different parts of the state. Needless to say that rising uncertainty in monsoon rainfall and temperature seriously affect pattern of agricultural activities undertaken by the farmers and their livelihood conditions as well. It thus necessitates appropriate preparedness and continuous adaptation in the crop and non-crop activities for the reduction in risk and best possible livelihood practice in the region.

#### **Materials and Methods**

The analysis is based on primary as well as secondary data. Information on maximum and minimum temperature, morning and evening humidity and rainfall for the last six decades was collected from the India Meteorological Department (IMD). Data on area under various crops since 1951 to 2011 were collected from issues of the *Statistical Hand Book* of Assam, *Economic Survey of Assam* and Reports from the Directorate of Economics and Statistics and Directorate of Agriculture, Government of Assam. Temporal changes in climatic variables are examined by comparing both the 11 and 31 years averages of month-wise variation at different periods. The trend in month-wise and region-wise variation is plotted against over time change in average figures in order to determine the seasonal and spatial variation over time.

Productivities of different crops are non-comparable in quantitative terms due to heterogeneity and without converting them in value terms for non-availability of price figures. However an overall agricultural productivity as a composite unit can be constructed based on yields of different crops as well as allocation of land towards cultivation of various crops. The index is constituted to describe the overall productivity of the districts vis-a-vis the state average. Composite Productivity Index (CPI) for the district *j* can be written as  $CPI_j = \sum_i (Y_{ij}/Y_{i0}) \cdot (A_{ij}/A_{i0}) * 100$ where  $A_{i0} = \sum A_{ij}$  and  $A_{ij}/A_{i0}$  = proportion of area under i<sup>th</sup> crop to total cropped area in  $j^{th}$  district (j = 1, 2..... 10) and (Y<sub>ij</sub>/Y<sub>i0</sub>) is the *yield* relative for i<sup>th</sup> crop in district j with Y<sub>ij</sub> is the average yield of i<sup>th</sup> crop in the state. Composite productivity index is constituted for each district separately to have an inter-district comparison with varied agro-climatic conditions. Here the weight of proportion of area under different crops for the yield relative would indicate the effect of cropping pattern changes on the overall agricultural productivity and that in a way reflects the farmers move towards cultivation of crops. Inter-district disparity in CPI has been examined by coefficient of variation.

The above analysis is done for the 10 composite districts of Assam, which were in existence before 1990. Since at several points of time the erstwhile districts were divided to create smaller districts, data on all aspects are not available for all the present 27 districts of the state. Data were regrouped and computed for those erstwhile 10 districts of the state.

There are several methods of examining convergence of the series. *Beta* ( $\beta$ ) and *Sigma* ( $\sigma$ ) convergence have been popular with researchers (Barro and Sala-iMartin, 1992; Mankiw, Romer and Weil, 1992). *Beta*convergence comes from Baumol's (1986) work on real convergence between economies. It is basically a conventional approach that examines whether the initial values across the zones are correlated with the rate of growth during the period of study. For this purpose, the following equation can be used: (1/T) Ln (Y<sub>iT</sub>/Y<sub>i0</sub>) =  $\alpha + \beta$  Ln Y<sub>i0</sub> +  $\varepsilon_i$ 

Here T is the end of time period,  $Y_{iT}$  is the value of the variable (CPI) in i<sup>th</sup> zone at the end of the period of study,  $Y_{io}$  is the value of the same variable at the beginning of the period and  $\varepsilon$  is statistical error term.

The sign of slope coefficient,  $\beta$  indicates the pattern of convergence. If the sign is positive and significant, it means that the regions are experiencing divergence in the growth of the variable Y. Conversely, a negative sign of  $\beta$  is an indication of the convergence of the regions in terms of growth of Y. The problem of this measure is that it depends only on the two end values and ignores the pattern of changes in all other intervening years. Focusing on the extreme values at the end of the period can be misleading. Quah (1993), Bernard and Durlauf (1996), Evans (1997), Sala-i-Martin's (1994, 1995) criticized this method on the ground of methodological flaw and lack of reliability and suggested the time series method of unit root and co-integration techniques for examining convergence in case of the time series data (Quah 1992, Bernard and Durlauf 1995, Li and Papell 1999). Moreover, panel unit root test is suggested by Levin and Lin (1992, 1993), Quah (1994), Im et al. (1997), Taylor and Sarno (1998), Choi and Ahn (1999). Im et al. (1997) proposed a Lagrange multiplier (LM) statistic to test for the presence of unit roots in the panel framework.

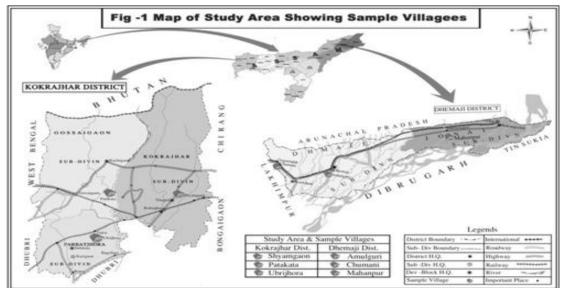
In this respect sigma-convergence can reveal a much better picture of the inter-zonal variations over the years. Thus, the convergence of growth is examined by using  $\sigma$ -convergence. The concept of  $\sigma$ -convergence is based on the neoclassical growth theory. It is defined as decline of variance (in logarithm) of composite productivity across the districts with time (Dalgaard and Vastrup, 2001; Lucke, 2008; Miller and Upadhyay, 2002; De, 2014). Sigma convergence is then described as the catching up effect. The same is also applied in case of Modified Diversity index (MDI).

Also, convergence is examined by unit root test of coefficient of variation and by estimating the following regression equation (Dickey and Fuller 1979).

$$\Delta \mathbf{Y}_{it} = \alpha_i + \beta_i \cdot \mathbf{t} + \gamma_{i0} \mathbf{Y}_{i, t-1} + \sum_{j=1}^{p_i} \delta_{i,j} \Delta \mathbf{Y}_{i, t-j} + \varepsilon_{it} \text{ where } \mathbf{t} = 1... \text{ T}$$

Here,  $Y_{it}$  is the value of i<sup>th</sup> variable at time t. The inference is based on the usual Dickey-Fuller  $\tau$ -statistic of  $\gamma_{i0}$ , which has a non-standard distribution. If the value of the coefficient  $\gamma_{i0}$  is found to be negative and statistically significant, the series is stationary. The Akaike information criterion has been used to determine the lag length parameter  $p_i$ .

In order to analyse the farmers' response to climate change and the impact of various factors on the farmers' adaptation to moderate climate change impact a primary survey was conducted. Multi-stage purposive sampling procedure has been followed to select the village. First of all, two districts Kokrajhar and Dhemaji have been selected purposively from the 27 districts of Assam. It may be noted that the district of Kokrajhar seldom faces extreme climate effect (except occasional draught), while devastating flood is a regular phenomenon of the Dhemaji district. In Kokrajhar three blocks namely Kokrajhar, Kachugaon and Debitola have been selected from its three sub-divisions. Dhemaji, Bordoloni and Murkongseleck blocks have been chosen from two sub-divisions (Dhemaji and Jonai) of Dhemaji district. Three blocks - one advanced, one moderately developed and another backward respectively - were selected in terms of their socio-economic characteristics. Thereafter, three villages have been chosen from each district (one from each of the selected development blocks).



Considering the socio-economic characteristics (Table 1) like transport and communication, presence of academic and administrative institutions, irrigation facilities, literacy rate, and available banking facilities in mind,

we selected one advanced, one moderate and one backward village from Kokrajhar and Dhemaji districts as sample villages. These are Shyamgaon, Patakata, and Ubrijhora from Kokrajhar and Amulguri, Chumoni and Mahanpur from Dhemaji District (Figure 1). From each of the selected villages, 50 sample households (a total of 300 sample farm households who have been practising agriculture) have been chosen as final sample units by simple random sampling without replacement. Data have been collected by direct interview using a pre-tested schedule, which includes questions pertaining to the socio-economic and demographic status of the families, utilisation of family and hired labourer, uses of fertiliser, various agro-implements, availability of irrigation facilities, topology of plots, crops damaged due to floods or other weather aberrations, perception about the diversification pattern, area allocated to various crops and outputs of crops, measures adopted for saving crops from extreme weather (mitigation measures) or changes in cultivation practices to avoid extreme weather effects (abatement measures).Information was also collected on educational achievement, experience, availability of family labour, farm size, proportion of income earned from agriculture, total family income, training, access to capital, and technology. These are some potential factors responsible for bringing changes in the existing cropping pattern and also influencing the adaptability of farmers. Descriptive statistics are used to understand farmers' socio-economic profiles, their perceptions on the impact of climate change, diversity of crops and the technologies used by them along with various adaptation measures to moderate the impacts of changing climate. Percentage of farmers who cited cropping pattern changes as a response to climate change is used to indicate the extent to which changing pattern of cultivation has been perceived as an adaptation strategy.

On the basis of primary data, effects of different factors on the level of diversification of crops by the individual farmers and on the adaptability with the changing agro-climatic conditions, is examined by *multiple* regression of the form  $Y = \beta X + D + U_i$ . Here, Y represents either farm level Herfindahl Index of Diversity In (it can be written as: HI=  $1 - \sum_{i}^{n} (pi)^2$ , where, n is the number of crops grown and  $p_i$  represents proportion of area under i<sup>th</sup> crop to gross area under cultivation by the families) or Adaptation Index; X is the vector of explanatory variables and  $\beta$  the vector of coefficients. D is a dummy variable included in the regression that takes value zero in case of Kokrajhar (since the region hardly faces any flood incidence) and one in case of Dhemaji (that observes frequent devastating flood almost every year). Extent of diversification of crops has been measured by using Herfindahl Index (HI) of diversity at the farm as well as village level.

	istrict		lokrajhar	1	U	Dhemaj	i
Samp	le Village	Shyamgaon	Patakata	Ubrijhora	Amulgur	Chumon	Mahanpur
Total Nu	mber of HHs	<b>98</b>	85	64	96	70	88
Literacy	Male	95	88	71	95	89	69
Rate (%)	Female	86	78	66	90	81	64
Kate (70)	Total	90.5	83	68.5	92.5	85	66.5
	District H.Q.	5	35	40	8	30	56
	Sub-Davison H.O		13	15	8	30	45
	Distance Devt Block H O		15	20	8	15	45
from Village to	Market	2	2	7	3	4	8
Village to	National Highway	13	9	20	0.5	4	8
Important Places (Km)	Bus Stand	2	9	7	0.5	5	8
T laces (Kill)	Railway Station	5	13	7	3.5	6	9
	Bank	3	7	8	8	5	8
	Electrification	Yes	Yes	No	Yes	Yes	No
	Faire Price shop	Yes	Yes	No	Yes	Yes	No
Facilities	Irrigation	Yes	Yes	No	Yes	No	No
available in	Mobile	Yes	Yes	Yes	Yes	Yes	Yes
the Village	Land Line/WLL	Yes	No	No	Yes	No	No
	Internet/Wi-Fi	Yes	No	No	Yes	No	No
	Road Type	Pacca	Gravel	Kacha	Pacca	Gravel	Kacha
Educational	I P		Yes	Yes	Yes	Yes	Yes
	Institutions me/mv		Yes	No	No	Yes	No
Institutions	Institutions IE/HSS/College		No	No	No	No	No
Classification	Classification of Village as per		Moderate	Backward	Advanced	Moderate	Backward
Development o	characteristics	Village	Village	Village	Village	Village	Village

**Table 1:** Basic Characteristics of the Sample Villages

Source: Field Survey, 2013-14.

*Notes*: HHs= Households, LP = Lower Primary, ME/MV = Middle English/ Middle Vernacular.

Here, the adaptation index is constituted by using the formula  $AI = (\sum P_i * X_i)/n$ . Here, n is the number of possible adaptation measures, which are adopted by the farmers in the area differently according to their needs and capacity,  $P_i$  is the weight of i<sup>th</sup> adaptation  $X_i$  and  $P_i$  is computed as the proportion of i<sup>th</sup> strategy in the gross number of adaptations followed by all the farmers in the area. It is made to make the possible measures equally likely for all the individuals as observed in the overall sample and the value of AI lies between 0 and 1. In the same way technology index and infrastructure index is computed.

### **Observations and Analysis**

### Changes in Agro-Climatic Condition of Assam

Assam is well known for its diverse sub-Himalayan agro-climatic conditions which is suitable for the growth of varieties of crops across the districts. The climatic conditions in the state also changed significantly over the years and that to some extent led to the variation in crop cultivation but not observed to be in line with the growth process as expected from a progressive agricultural economy. Here, temporal variation in three major components of weather like rainfall and max-min temperature over six decades of time is observed.

11 and 31 years average figures of monthly average minimum and maximum temperature show a rise in minimum temperature in the range of  $1.1^{\circ}$  C to  $1.3^{\circ}$  C, while a rise of maximum temperature from  $0.7^{\circ}$  C to  $1.8^{\circ}$  C (Fig.-1). Also, variation in average minimum temperature across the months of the year is found to decline at a significant rate along with the rising yearly average minimum temperature over the years. Thus, an inverse relation is revealed between the yearly average temperature and the seasonal variation in minimum temperature. This is an indication of gradual convergence of seasonal temperature with global worming in the state (Fig.2). However, there is insignificant change in month-wise variation in maximum temperature with rising trend, which is subject to significant volatility in the prime monsoon months, which starts earlier than the normal monsoon season of Indian plains (Fig.3).



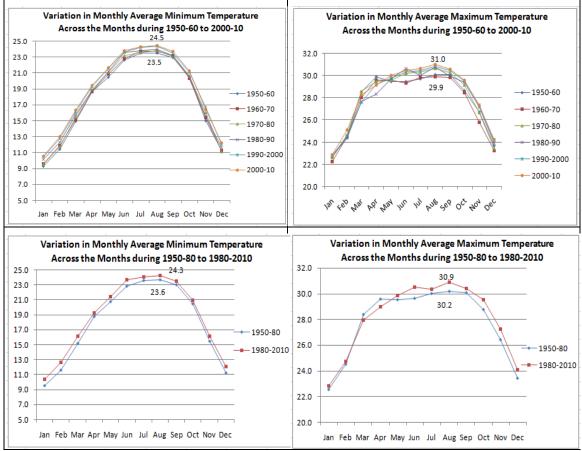
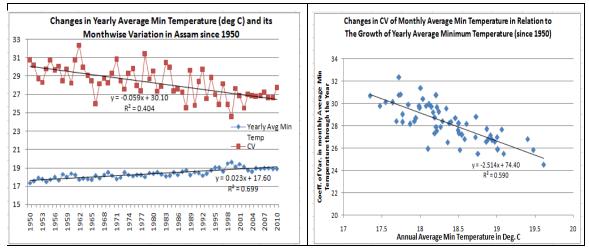
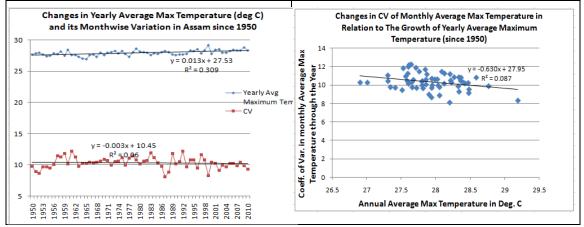


Figure: 2: Trend of Min Temp. and Its Monthwise Variation in Assam since 1950

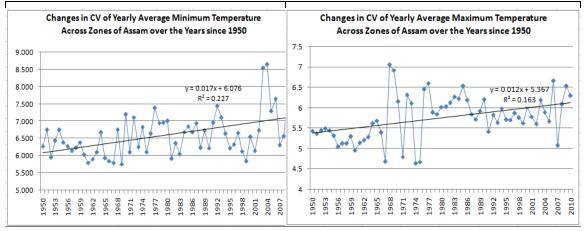


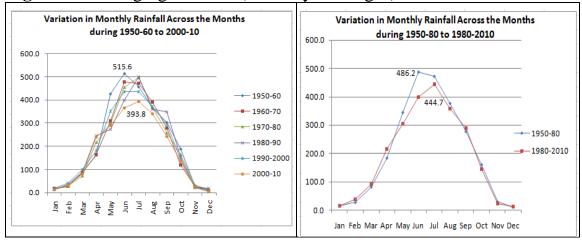
Zone-wise variation in minimum temperature has also been rising at a faster rate than the maximum temperature. This growing regional variation is also associated with increasing volatility (Fig.4).

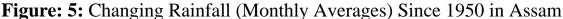
Figure: 3: Trend of Maximum Temperature and Monthwise Variation in Assam since 1950



**Figure: 4:** Changing Zone-wise Minimum and Maximum Temperature in Assam since 1950

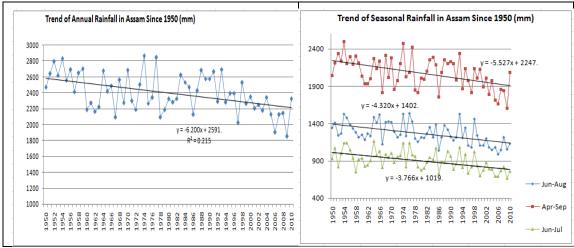






Yearly rainfall also declined during the last six decades. In addition, its seasonal pattern has changed and the monthly rainfall reaches its peak alternately in June, July or August. The 31 years average shows that the rainfall in the peak month declined from 486.2 mm during 1950-80 to 444.7 mm during 1980-2010. Despite the fall in total annual rainfall, occurrence of flood became erratic as concentration of heavy rainfall is recorded in a few days when maximum portion of rainfall of the month occurs (Fig.5).Fig.6 also shows significant decline in annual rainfall and that the share of the annual rainfall occurred during the peak monsoon months declined over time. However, the overall trend in low rainfall zones though not significant, it declined significantly in the relatively high rainfall zones and rising zonal variability is also clear from Fig.7.

Figure: 6: Trend in Annual Rainfall and Share of Various Seasons in Assam



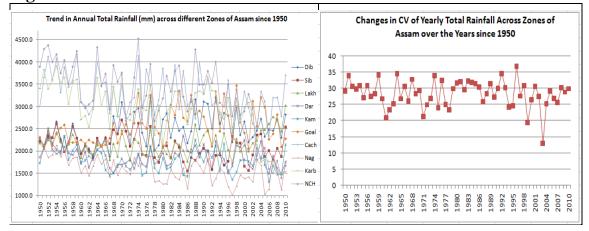


Figure: 7: Trend in Annual Rainfall of Various Zones of Assam and its CV

Quinquennial average annual rainfall in Assam has been found to be increasingly erratic and on an average declined from over 2576.3 mm during 1951-56 to 2358.5 mm in 1971-76 and further to 2040 mm during 2005-10. Among the districts, Cachar area recorded the highest average annual rainfall since 1951-56 but registered decreasing trend along with other zones except in Lakhimpur where monsoon rainfall increased over time. On the other hand, Nagaon area recorded the lowest annual rainfall among all the zones and that too declined over time. Annual average rainfall in Cachar was about 3777.4 mm during 1951-56 and increased to 2833.6 mm during 2005-10, while in Nagaon it decreased drastically from around 1980.3 mm in 1951-56 to 1335.3 mm during 2005-10. In hilly Karbi Anglang and N.C. Hills however annual rainfall continuously declined from 3910.9 mm in 1951-56 to 1663.4 mm during 2005-10. Not only having inter-zonal skewed distribution of rainfall, the month-wise variation in rainfall increased significantly in the high rainfall areas, while that of low rainfall area declined (Appendix-1). In Lakhimpur, Dhemaji zone monsoon rainfall has increased continuously over the years during Kharif season and thus incidence of flood and its severity also increased with more damaging impact on the late summer and autumn crops. In Karbi Anglong and N.C. Hills, rainfall over the years shows more erratic pattern and thus farmers avoided settled paddy cultivation even in low lying areas in order to avoid uncertainty and the diversity pattern shows people's preference for more tea, horticulture and sericulture on the basis of wildly grown host plant, castor. Gradually, farmers in other areas also tried to switch over to the short period, more resistant crop varieties to reduce the risk of cultivation due to changing frequency, intensity and timing of occurrence of rain and flood emanating from the long term changes in climatic condition, which has been closely associated with the changing relative humidity and temperature variation across the months and regions over the years. Relative humidity has also been found to increase gradually in the rising rainfall areas and declined

in the falling rainfall areas of Assam. The record of maximum and minimum temperature also shows that average level of maximum and minimum temperature has increased since 1970 across the places but it has associated with rising extremeness (max-min gap) especially in the high rainfall areas (Appendix2).

#### Spatio-Temporal Variation in Composite Agricultural Productivity

The *Composite Productivity Index* (CPI) calculated for different districts are displayed in Table1. It can be noticed that the range of variation in index in percentage term for all crops when taken together was 82.22 to 124.96, in 1951-52, 79.79 to 148.87 in 1971-72, 87.0 to 116.93 in 1991-92 and 83.38 to 106.0 in 2010-11 respectively. The range of index first increased from 1951-52 to 1971-72 and thereafter it declined and stabilized.

Table 1 also shows that Lakhimpur, Karbi Anglang and N.C. Hills were at the top three positions in respect of CPI during 1951-52, to 1981.82. Kamrup was at the bottom position in the relative ranking. Remarkable achievement in composite productivity index has been found in case of Cachar, which has jumped over many other districts in respect of CPI during 2001-02. Kamrup, too, has made significant progress. Lakhimpur and N.C. Hills lagged behind in their relative ranking in this case. Fig.8 shows the stable inter-district variation in CPI except an increase in variability in the middle of the period.

Year	Dibrugarh	Sibsagar	Lakhimpur	Darrang	Kamrup	Goalpara	Cachar	Nagaon	Karbi Anglong	N.C. Hills
1951-52	NA	102.79	124.96	104.53	82.22	97.85	105.38	99.91	101.89	NA
1952-53	NA	114.97	107.47	108.12	82.85	98.82	92.32	108.70	100.97	NA
1953-54	NA	100.43	121.86	116.07	84.39	103.75	80.93	101.02	100.18	NA
1954-55	NA	104.24	113.02	124.69	84.80	95.85	103.22	85.29	99.42	NA
1955-56	NA	109.56	101.10	114.81	85.88	96.48	95.43	104.59	100.91	NA
1956-57	NA	92.96	121.27	104.10	87.37	96.04	106.51	106.18	99.88	NA
1957-58	NA	112.07	116.29	107.10	83.17	105.48	107.38	82.52	99.56	NA
1958-59	NA	108.84	112.70	104.17	88.98	98.38	98.96	96.86	100.87	NA
1959-60	NA	106.69	113.05	112.71	74.27	98.98	102.73	109.82	98.89	NA
1960-61	NA	102.04	112.19	103.68	81.58	100.22	114.36	102.99	99.45	NA
1961-62	NA	114.44	117.06	105.49	78.11	91.99	116.12	97.60	99.59	NA
1962-63	NA	115.94	119.52	111.07	82.60	93.89	95.66	92.55	116.46	NA
1963-64	NA	107.58	113.40	107.58	88.01	95.01	102.26	94.06	117.96	NA
1964-65	NA	106.76	112.93	117.04	85.70	88.44	113.60	90.99	104.52	NA
1965-66	NA	109.67	112.90	113.52	76.42	101.35	119.78	86.95	102.73	NA
1966-67	NA	103.45	115.69	108.35	81.30	95.76	113.39	92.06	139.73	NA
1967-68	NA	118.60	113.19	111.43	81.25	86.93	117.88	86.98	123.67	NA
1968-69	NA	105.51	117.41	109.90	82.45	91.43	98.68	102.36	134.02	NA
1969-70	NA	107.91	124.06	103.44	83.68	98.64	96.63	86.42	140.51	NA
1970-71	NA	109.33	108.55	105.91	86.11	92.52	106.93	91.65	144.80	169.86
1971-72	109.34	119.12	117.51	99.54	79.79	89.63	123.77	92.99	123.63	148.87
1972-73	107.62	97.98	121.55	112.44	86.91	90.62	101.04	98.46	124.97	129.10
1973-74	117.52	107.88	115.71	110.92	84.96	82.82	113.28	97.94	115.85	144.03
1974-75	111.22	103.82	123.32	107.69	87.34	89.06	106.61	91.32	117.95	139.59
1975-76	107.06	109.14	120.00	101.92	83.80	88.75	105.85	107.29	107.69	134.70
1976-77	120.47	102.95	118.87	94.52	80.06	94.59	98.71	99.27	107.30	143.46
1977-78	120.12	104.71	110.61	89.29	84.69	91.14	111.32	90.47	115.54	120.34
1978-79	120.15	112.75	111.61	96.24	86.86	78.63	100.80	91.26	125.07	116.91
1979-80	109.15	113.78	110.46	93.25	90.16	81.85	94.70	95.55	119.68	117.42
1980-81	114.37	110.25	118.42	89.49	80.06	82.11	122.13	85.14	133.66	120.85

**Table:1:** Growth of Composite Productivity Index of Various Districts of Assam during 1951-52 to 2010-11

Year	Dibrugarh	Sibsagar	Lakhimpur	Darrang	Kamrup	Goalpara	Cachar	Nagaon	Karbi Anglong	N.C. Hills
1981-82	127.20	121.27	104.53	91.66	81.96	86.74	89.57	88.16	110.39	128.20
1982-83	108.76	112.32	111.01	94.84	89.43	86.11	105.36	81.24	115.62	120.30
1983-84	110.26	116.51	99.15	94.20	85.46	91.35	99.72	87.18	108.04	110.56
1984-85	112.61	117.30	106.21	99.31	82.69	81.23	95.39	94.63	106.50	107.50
1985-86	107.34	107.23	100.76	102.81	86.18	80.66	96.85	107.43	104.48	91.93
1986-87	112.27	112.15	108.59	102.01	79.30	86.89	99.39	93.29	99.17	99.92
1987-88	109.23	109.77	93.93	96.69	79.70	82.52	116.13	107.24	101.07	90.62
1988-89	120.44	108.83	101.07	95.12	79.95	85.39	114.38	88.38	111.46	114.35
1989-90	122.07	111.02	95.69	94.01	86.31	87.69	101.28	89.65	98.79	113.97
1990-91	107.93	120.29	81.92	92.91	84.38	83.14	108.86	97.85	105.33	97.56
1991-92	112.08	116.93	89.17	88.32	78.16	87.00	112.30	102.05	100.25	94.44
1992-93	117.16	103.50	83.90	90.79	85.87	82.33	114.07	102.56	101.45	97.17
1993-94	108.55	105.18	104.79	99.40	84.07	86.83	88.38	100.53	98.67	97.05
1994-95	104.62	104.20	88.55	95.55	82.36	88.43	108.02	96.98	112.77	108.78
1995-96	110.65	111.86	99.16	91.96	79.85	82.60	108.10	101.13	101.03	116.19
1996-97	115.86	106.05	80.08	88.70	86.16	85.22	119.68	96.37	97.56	114.13
1997-98	109.10	101.50	83.56	94.19	91.71	79.62	104.89	103.35	102.63	106.35
1998-99	108.05	107.67	81.33	92.90	83.21	84.86	112.35	103.21	97.67	107.16
1999-00	101.24	109.33	80.69	91.50	87.82	86.47	103.04	106.74	99.65	99.07
2000-01	101.38	109.17	76.04	90.29	85.10	87.37	120.94	105.04	96.34	90.97
2001-02	101.34	108.74	71.60	94.91	82.68	88.24	123.26	100.72	95.58	97.71
2002-03	94.23	108.54	66.11	91.60	83.48	95.18	124.82	98.78	99.50	99.34
2003-04	103.18	108.35	65.54	95.77	87.82	88.73	119.89	98.77	87.88	87.34
2004-05	107.31	109.11	71.56	95.88	87.66	88.45	108.31	96.56	92.18	99.77
2005-06	102.39	103.15	74.74	93.33	90.71	90.55	111.88	96.58	95.78	101.23
2006-07	94.84	119.12	76.17	93.29	97.08	86.09	104.81	86.34	90.09	103.70
2007-08	104.34	106.89	70.03	89.93	95.61	88.11	108.00	99.84	93.31	89.89
2008-09	99.88	107.42	77.22	86.85	94.67	89.15	115.49	105.05	74.99	91.98
2009-10	103.03	102.87	76.37	86.18	91.32	88.04	115.19	102.89	106.87	94.92
2010-11	106.00	88.61	86.68	98.75	101.19	95.25	94.80	88.63	93.84	83.38

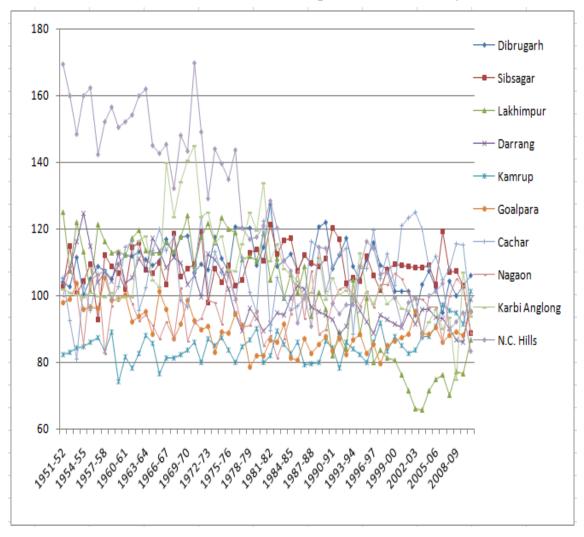


Figure: 8: Over Time Variation in Composite Productivity Index

The district level convergence of CPI is estimated through Sigma convergence and presented in Table2. As the variation is noticed (from Fig.8) to be fluctuating, it is examined for two sub-periods (1951-52 to 1976-77 and 1977-78 to 2010-11). During the first sub-periods from 1951-52 to 1976-77 there was significant convergence of CPI across the districts (significant negative slope), while during 1977-78 to 2010-11 insignificant negative trend of CV is observed.

Table: 2: Estimated Value of Sigma Convergence of CPI in Assam

Period	Intercept	t-value	Slope Coef.	t-value	AdjR <sup>2</sup> , F
1951-52 to 1976-77	2.966***	63.40	-0.0075**	-2.48	0.171, 6.148**
1977-78 to 2010-11	2.598***	39.95	-0.0049	-1.497	0.040, 2.24**

\*\*\* & \*\* indicate the coefficient is significant at 1% & 5% level respectively

The unit root test of district level CV of CPI and MDI is presented in Table3. The result shows an overall convergence for CPI during 1951-52 to 2010-11. But the coefficient of MDI is found to be insignificant. It means there is virtually no convergence of MDI during the whole period.

	Coef.	t-value	Mackinnon P	Trend	t-value	AdjR <sup>2</sup> , F
Without Trend	-0.2772**	-2.99	0.036			0.12, 8.94***
With Trend	-0.6119***	-4.94	0.0009	0877***	-3.67	0.28, 12.19***

**Table: 3:** Unit Root Test of CV of CPI in Assam by ADF Test for the whole Period

\*\*\* & \*\* indicate the coefficient is significant at 1% & 5% level respectively.

#### Land Use Pattern and Area of Operational Holdings in the Sample Village

One of the important characteristics of the surveyed villages is that the chosen farm families are mostly small (more than one hectare but less than four hectares) and marginal (below one hectare) farmers. Also, there is non-uniform distribution of cultivated area among farming households in all the villages. About 66 percent and 65 percent of the respondent farmers in Kokrajhar and Dhemaji districts respectively are small holders. However, more than 25 percent of farmers have land holdings between 30.0 to 75.0 bighas in Dhemaji district, while about 7 percent of the farmers in Kokrajhar belong to that group. It also indicates the presence of common land leasing practice in all the villages. The land holdings are not only small in size but also fragmented into many parcels due to subdivisions on account of breakdown of the joint family system and law of inheritance (Table 4). The lease-out and lease-in phenomena are found to be more prominent among the marginal and small farmers (Table5). Total operational holdings of the sample farmers in Kokrajhar district is 2115.5 bighas (about 283.62 hectares), of which 11.70 and 3.45 per cent are leased-in land and leased-out land respectively. On the other hand, among the sample farms of Dhemaji district the total holding is 3048 bigha (about 408.63 hectares) of which about 2 and 1 percent are leasedin and leased-out respectively. Leased on short term contracts and substantial fraction of croplands would lead to fewer incentives for investments in soil conservation by the operators. However, owner farmers have more capacity to adopt new technologies frequently than owner-cum-tenant and tenants farmers (Habiba et al., 2012). Moreover, it is widely believed that land ownership encourages adaptation of technologies like irrigation and application of fertiliser. Farmers adapt their choice of farm type and irrigation to their local climate that treats the choice of crops, livestock, and irrigation as endogenous factors (Mendelsohn and Seo, 2007c).

			Nu	mber of Res	pondent Fa	armers			
Category/Size of operational		Kokr	ajhar			Dhen	naji		Overall
holdings	Shyamgaon	Patakata	Ubrijhora	Sub-Total	Amulguri	Chumoni	Mahanpur	Sub- Total	Total
Marginal	23	1	16	40	2	2	10	14	54
(Below 7.5)	(46)	(2)	(32)	(26.7)	(4)	(4)	(20)	( <b>9.3</b> )	(18)
Small (7.5 to	26	43	30	<i>99</i>	36	28	34	<b>98</b>	197
30.0)	(52)	(86)	(60)	(66)	(72)	(56)	(68)	(65.3)	(66)
Medium	1	6	4	11	12	20	6	38	49
(30.0 to 75.0)	(2)	(12)	(8)	(7.33)	(24)	(40)	(12)	(25.3)	(16)
<b>Large</b> (75.0 & above)		Ň	lil				Nil		
Total	50 (100)	50 (100)	50 (100)	150 (100)	50 (100)	50 (100)	50 (100)	150 (100)	300 (100)

 Table:
 4: Distribution of Respondents according to the Size of Operational Holdings (in Bigha)

Source: Field Survey, 2013-14.

*Note*: Figure in the parentheses represents percentage of the respondent farmer.

#### Cropping Pattern in the Sample Villages

Various types of crops are cultivated by the respondent farmers in different seasons. Generally, paddy, oilseeds, sugarcane and potato are grown abundantly in the study area and cultivation of areca nut, bamboo and banana was also observed almost in all the villages. Although different food and non-food crops are grown by them, over 82 percent of the area is found to be allocated for food grain (Table 6) in the two consecutive preceding years i.e. in 2011-12 and 2012-13. It is also observed that the farmers in Dhemaji district are cultivating proportionately more food grain crops than Kokrajhar.

Rice occupies the predominant place in all the six villages (similar to the state) comprising over 80 per cent of the total cropped area (Table 6). Mustard is the second most important crop in the sample villages. Share of non-food gains is still very low (merely 18 percent of gross cultivated area or GCA). This is an indication of very poor level of diversification and that towards inferior crops, which happens only when there is a lack of basic inputs like irrigation, access to capital and other technology. Other than food grains, farmers of the Shyamgaon village allocate relatively more proportion of GCA for the cultivation of potato (2.62 per cent), roots (1.84 per cent), chilly (1.41 per cent) and mustard (1.36 per cent) than that of other villages.

District		Kokrajhar														
Sample Village		Shya	amgaon			Pa	takata			Ubr	ijhora			Sub	o-Total	
Size/Class (Area in Bigha)	Cultivable land area	Own land cultivated	Leased-out to other farmer	Leased-in from other farmer	Cultivable land area	Own land cultivated	Leased-out to other farmer	Leased-in from other farmer	Cultivable land area	Own land cultivated	Leased-out to other farmer	Leased-in from other farmer	Cultivable land area	Own land cultivated	Leased-out to other farmer	Leased-in from other farmer
Marginal (Below 7.5)	103	103	5	18	7	19	18	102	78.5	101	19	32	188.5	223	42	152
Small (7.5 to 30.0)	336.5	313.5	Nil	Nil	772	700	21	58	403.5	312.5	10	37.5	1512	1326	31	95.5
Medium (30.0 to 75.0)	36	36	Nil	Nil	199	60	Nil	Nil	180	150	Nil	Nil	415	246	Nil	Nil
Large (75.0 & above)			Nil				Nil			1	Nil				Nil	
Total	475.5 (100)	452.5 (95.16)	5 (1.05)	18 (3.79)	978 (100)	779 (79.65)	39 (3.98)	160 (16.36)	662 (100)	563.5 (85.12)	29 (4.38)	69.5 (10.50)	2115.5 (100)	1795 (84.85)	73 (3.45)	247.5 (11.70)
District			, , ,					Dhen	naji		. ,	. , , ,			, ,	
Sample Village		Am	ulguri			Ch	umoni			Ma	hanpur			Su	b-Total	
Marginal (Below 7.5)	13	13	29	24	12	12		5	42	40	2	32	67	65	31	61
Small (7.5 to 30.0)	642	703	Nil	Nil	451	446	Nil	Nil	516	484	Nil	Nil	1609	1633	Nil	Nil
Medium (30.0 to 75.0)	408	294	Nil	Nil	714	714		Nil	250	250	Nil	Nil	1372	1258	Nil	Nil
Large (75.0 & above)			Nil													
Total	1063 (100)	1010 (95.01)	29 (2.73)	24 (2.26)	1177 (100)	1172 (99.57)	Nil	5 (0.42)	808 (100)	774 (95.79)	2 (0.25)	32 (3.96)	3048 (100)	2956 (96.98)	31 (1.02)	61 (2.00)

**Table: 5:** Farm Operation under Tenancy Land of the Sample Farmers (Area in Bigha)

*Source*: Field Survey, 2013-14. *Note*: Figure in the parentheses represent percentage of the area to total cultivable area of respective sample village.

District		Kokrajhar	during 2	.012 13 (	Dhemaji	ngna)
Crop/Sample Village	Shyamgaon	Patakata	Ubrijhora	Amulguri	Chumoni	Mahanpur
Autumn Dias	29	198	101	157	175	187
Autumn Rice	(5.63)	(18.60)	(19.20)	(15.14)	(14.38)	(19.06)
Winter Dies	405	647	330.5	819	810	683
Winter Rice	(78.64)	(60.79)	(62.83)	(78.98)	(66.56)	(69.62)
a D'	8	48	6	0	0	0
Summer Rice	(1.55)	(4.51)	(1.14)	(0.00)	(0.00)	(0.00)
D 11	442	<i>893</i>	437.5	976	<i>9</i> 85	870
Paddy	(85.83)	(83.91)	(83.17)	(94.12)	( <b>80.94</b> )	(88.69)
11.71	2	0	0	0	0	0
Wheat	(0.39)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
G	3	15.5	0.5	2	4	7
Gram	(0.58)	(1.46)	(0.00)	(0.19)	(0.33)	(0.71)
E	2 (	0	1	1	8	0
Tur	0.39)	(0.00)	(0.19)	(0.10)	(0.66)	(0.00)
Pulses	1.5 (0.29)	0 (0.00)	0 (0.00)	1 (0.10)	2 (0.16)	1 (0.10)
<b>F</b> 16	450.5	908.5	439	980	999	878
Food Crops	(87.48)	(85.37)	(83.46)	(94.5)	(82.09)	(89.50)
Rapes &	7	56.5	4	6	62.5	31
Mustard	(1.36)	(5.31)	(0.76)	(0.58)	(5.14)	(3.16)
q	2.5	0	12	0	2	3
Sesamum	(0.49)	(0.00)	(2.28)	(0.00)	(0.16)	(0.31)
T · 1	4	5	0	0	9	0
Linseed	(0.78)	(0.47)	(0.00)	(0.00)	(0.74)	(0.00)
-	3.5	26.5	19.5	0	2	0
Jute	(0.68)	(2.49)	(3.71)	(0.00)	(0.16)	(0.00)
-	0	0	10	0	37	0
Tea	(0.00)	(0.00)	(1.90)	(0.00)	(3.04)	(0.00)
a	2	3	0	5	25	8
Sugarcane	(0.39)	(0.28)	(0.00)	(0.48)	(2.05)	(0.82)
	4.75	20.5	18	26.5	32	24.25
Arecanut	(0.92)	(1.93)	(3.42)	(2.56)	(2.63)	(2.47)
Potato	13.5	16.5	2	3.5	7	4
rotato	(2.62)	(1.55)	(0.38)	(0.34)	(0.58)	(0.41)
Chilly	7.25	4.75	3	0.5	2.25	0.25
Chilly	(1.41)	(0.45)	(0.57)	(0.05)	(0.18)	(0.03)
Turmeric	1	3.5	1	0	0	0
	(0.19)	(0.33)	(0.19)	(0.00)	(0.00)	(0.00)
Banana	$\begin{pmatrix} 0 \\ (0, 00) \end{pmatrix}$	0.5	1	3	2.25	2.5
	(0.00)	(0.05)	(0.19)	(0.29)	(0.18)	(0.25)
Bamboo	0 (0.00)	10.5 (0.99)	6 (1.14)	11.5	37 (3.04)	27
	(0.00)	(0.99)	(1.14)	(1.11)	(3.04)	(2.75)

**Table: 6:** Area under Different Crops and their Percentage Share to Total

 Cropped Area in the Sample Villages during 2012-13 (Area in Bigha)

District		Kokrajhar			Dhemaji	
Crop/Sample Village	Shyamgaon	Patakata	Ubrijhora	Amulguri	Chumoni	Mahanpur
Onion	3	0	0	0	0	0
OIIIOII	(0.58)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Brinjal	2.5	1.25	0.5	0.75	0	1
Dillijai	(0.49)	(0.12)	(0.10)	(0.07)	(0.00)	(0.10)
Cabbage/	1	5.75	0	0.25	0	2
Cauliflower	(0.19)	(0.54)	(0.00)	(0.02)	(0.00)	(0.20)
Roots	9.5	1.5	9.5	0	0	0
KOOIS	(1.84)	(0.14)	(1.81)	(0.00)	(0.00)	(0.00)
Radish	3	0	0.5	0	0	0
Kaulsii	(0.58)	(0.00)	(0.10)	(0.00)	(0.00)	(0.00)
Non-Food	64.5	155.75	87	57	218	103
Crops	(12.52)	(14.63)	(16.54)	(5.50)	( <b>17.91</b> )	(10.50)
Total	515	1064.25	526	1037	1217	981
Total	(100)	(100)	(100)	(100)	(100)	(100)
No. of Crops	21	17	17	14	16	14
Cultivated	(87.5)	(70.83)	(70.83)	(58.33)	(66.67)	(58.33)

Source: Field Survey, 2013-14.

*Note*: Figure in the parentheses indicate percentage of area to GCA and percentage of crop to total cultivated crops.

Farmers of the Patakata village cultivate relatively more mustard (5.31 percent) and jute (2.49 percent). On the other hand, farmers of Ubrijhora village allocate more towards jute (3.71 percent), areca nut (3.42 percent) and sesamum (2.28 percent). Whereas, farmers in Amulguri allocate land for other than food-grain crops, towards areca nut and bamboo as cash crops with 2.56 and 1.11 percent of total cropped area respectively. Cultivation of mustard (5.14 percent of GCA) is significant in Chumoni along with tea (3.04 percent), bamboo (3.04 percent) and areca nut (2.63 percent). Similarly, farmers of Mahanpur village under Murkongseleck block cultivate mustard (on 3.16 percent of GCA), Bamboo (2.75 percent), and areca nut (2.47 percent). Most of the farmers in Dhemaji district utilise a part of their cultivable land for mustard, bamboo and areca nut. This may be due to the occurrence of floods in rainy seasons that force the poor farmers to cultivate early some winter crops but less capital intensive and cultivate bamboo that can sustain in flood and protect homelands from the flood. However, for non-food grain crops, irrigation is important, as many of these crops are highly water-intensive. Potato and chilly are grown mostly for home consumption like other vegetable crops by the farmers in the study area. All these facts reflect the non-arrival of the Green Revolution technology at desired level and the rural farmers have not yet fully adapted to the modern methods of cultivation.

Another important feature of the surveyed area is that most of the farmers follow single cropping system. The low incidence of double cropping is due to the prevalence of traditional and subsistence farming depending primarily on rainfall with very limited irrigation facility, use of chemical fertiliser, flood and pesticides control arrangements. However, out of 24 varieties of crops cultivated in these two sample areas, most of the farmers (62 percent) in Dhemaji district are found to be less diverse in cropping pattern. Whereas, Kokrajhar district is more diverse compared to Dhemaji and grows relatively higher more number of crops (over 70 percent). The Herfindahl index also shows a very low diversity during study year across the sample villages of Dhemaji. Moreover, there is great variation in the pattern of diversification across the villages. For instance, Shyamgaon in Kokrajhar and Amulguri in Dhemaji are less diversified and Patakata in Kokrajhar and Chumoni in Dhemaji are more diversified in terms of the Herfindahl index (Table7). This variation is in line with the disparity in the share of income generated from crop raising activities. However, some varieties of rice are found to be grown by the sample farms.

Table: 7:	Herfindahl	Index	of	Diversity	of	Area	under	Crops	in	the
Sample Vil	llages									

District	Sample Village	2011-12	2012-13
	Shyamgaon	0.37	0.38
Volzaihar	Patakata	0.61	0.59
Kokrajhar	Ubrijhora	0.57	0.56
	Sub-Total	0.55	0.51
	Amulguri	0.33	0.35
Dhamaii	Chumoni	0.53	0.53
Dhemaji	Mahanpur	0.47	0.48
	Sub-Total	0.45	0.42
	All Villages	0.49	0.49

Source: Field Survey, 2013-14.

**Table: 8:** Distribution of Farmers according to the High and Low Herfindhal Index of Diversity

District	Village	High Diversified (0.50>)	Less Diversified (<0.50)
	Shyamgaon	6 (12)	44 (88)
Kokrajhar	Patakata	32 (64)	18 (36)
	Ubrijhora	17 (34)	33 (66)
	Sub-Total	55 (37)	95 (63)

District	Village	High Diversified (0.50>)	Less Diversified (<0.50)
	Amulguri	2 (4)	48 (96)
Dhemaji	Chumoni	21 (42)	29 (58)
	Mahanpur Pt-I	16 (32)	34 (68)
	Sub-Total	39 (26)	111 (74)
	All Villages	94 (31)	206 (69)

Source: Primary Data. Note: Figures in the parentheses indicate percentage to total.

From Table 8, it is also found that around 69 percent of the total sample farmers are agriculturally less diversified. Only 26 percent of the sample farmers in Dhemaji district are high diversified while in Kokrajhar district it is 37 percent. It may be due to the impact of extreme climate hazards (especially regular flood) in the area. Another reason is the availability of farm land or farm size that constrained many farmers from diversifying towards many crops equitably. The low diversified 206 sample farm families have an average farm size of only 14.54 bigha, while only 94 high diversified farm families have an average farm size of 24.95 bigha. Per capita income of those high diversified families is much more than that of the low diversified families.

The regression result of Table9 shows that both the index of diversity and total area under cultivation has significant positive impacts on the earning from agriculture. Significantly positive coefficient of dummy indicates that farmers in the flood prone area of Dhemaji earn comparatively more from agriculture. Also, number of agricultural labourer available from the family has inverse effect on the agricultural earnings of the families.

Explanatory Variable	Coefficients	t-stat	Significance
Constant	6155.647	6.252	0.0000
Total Cultivated Area	495.165	16.889	0.0000
Diversity Index (HI)	4960.207	2.972	0.0032
Family Size	-81.859	-0.686	0.493
D	1906.446	3.233	0.001
No. of Family Labour in Agriculture	-1586.006	-7.997	0.0000

Table: 9: Results of Regression of Per Capita Income fromAgriculture on Relevant Explanatory Variables

 $R^2 = 0.658$ , Adj.  $R^2 = 0.652$ , F= 113.06 (P-value: 0.0000)

Source: Field Survey, 2013-14.

#### Measures Adopted to Mitigate Climate Risk in the Study Area

This section focuses on farmers' perceptions and adaptations strategy in the study area. The analysis provides information on the farmers' response to climate change and possible factors that influence their adaptation of strategies to moderate extreme climate impacts. Diversification of crops is one of the important adaptation measures where, with changing climatic conditions, farmers can choose suitable cropping pattern over periods of time to adjust with the changing climate and simultaneously maximise returns from agriculture in the respective region. However, geographical locations and socio-economic conditions have important influence on the farmers' adaptability with changing technology and climatic conditions in diversifying their crops. Sources of acquiring new knowledge or information about agricultural technologies and their cost effectiveness are important factors that also affect technology adoption. However, most of the farmers in the sample villages, particularly the tribal farmers, are unaware of many programs sponsored by the government to promote adaptation of new technology. This may be due to the lack of dissemination of information or knowledge regarding agricultural techniques. These farmers being more traditional and conservative are found to be less responsive towards the adoption of new agricultural technology. However, some farmers are ready to adopt new agricultural technology (as observed from foregoing discussions) but are not in a position to adopt it on a full scale due to certain socio-economic constraints faced in their daily life. Nevertheless, sample farmers reported that they have used some sort of modern implements on hiring basis with their limited capacity. Usually, the farmers also use both the modern varieties and traditional varieties of crops simultaneously depending upon the availability of seed and capital.

Experience from the last five years by the respondents reveals that the entire Kokrajhar district has never been affected by floods, and rarely do they face draught (Table 10). Thus, no damage of crops due to extreme climatic hazards is reported by the farmers in the district as a whole. However, draught like situation damaged some crops in southern parts of the district (Ubrijhora area) and damage of some crops of a few farmers due to pests and insects were reported for the last five years. On the other hand, farmers of Dhemaji district reported damage of their crops due to regular floods. Thus, farmers of Kokrajhar district did not follow any adaptation measure to save their crops from floods and draughts in last five years as the farmers were not affected by these climatic hazards severely in the past. On the other hand, farmers of Dhemaji district reported several adaptation measures to save their crops particularly from floods that occur frequently every year and at different times. Most of the respondents adopt early cultivation method and cultivate short period crops to save them from floods and harvest early. They argued that early land preparation and plantation is associated with increased chances of survival of the crops (mainly winter paddy) from floods. Over 76 percent of the respondents preserve seedlings for sowing again if the crop is damaged due to flood during the peak monsoon time (Table 10).

District			rajhar			Dhe		
Measures Adopted/ Village	Shya.	Pata.	Ubri.	Sub- Total	Amul.	Chum.	Maha.	Sub- Total
Cultivated short period crops					12 (24)	20 (40)	18 (36)	50 (33.3)
Cultivated early					(24) 29 (58)	(40) 12 (24)	25 (50)	66 (44)
Cultivated flood resistant crops					3 (6)	9 (18)	3 (6)	15 (10)
Changed next crops		ſ	Nil		9 (18)		(1)	12 (8)
Diversified to other crops					2 (4)	Nil	Nil	2 (1.3)
Preserve seedling for sowing after floods					45 (90)	38 (76)	41 (82)	124 (82.7)
Total		ľ	Nil		100 (67)	81 (59)	88 (58)	269 (89.7)

**Table:** 10: Distribution of Respondent Farmers according to theAdoption of various Measures to Tackle the Incidence of Flood

Source: Field Survey, 2013-14.

*Notes*: Figure in the parentheses indicates percentage of respondent farmer, (ii) Shya. = Shyamgaon, Pata. = Patatkata, Ubri. = Ubrijhora, Amul. = Amulguri, Chum. = Chimoni and Maha. = Mahanpur.

**Table: 11:** Percentage of Respondent Farmers that Changes their CropCultivation for Different Reasons from 1990 to 2013

			Reasons of c	hanging	to newer	r crops	
District	Village	Availability of HYV seeds	Reduction of Risk	Earning Profits	Lower Cost	Weather Resistance	Total
	Shyamgaon	Nil	Nil	46 (92)	4 (8)		50 (100)
<b>W</b> - 1 <sup>1</sup> 1	Patakata	9 (18)	1 (2)	32 (64)	8 (16)	NT'1	50 (100)
Kokrajhar	Ubrijhora	Nil	1 (2)	47 (94)	2 (4)	Nil	50 (100)
	Sub-Total	9 (6)	2 (1.33)	125 (83)	14 (9)		150 (100)
	Amulguri		7 (14)	27 (54)	11 (22)	5 (10)	50 (100)
D1 "	Chumoni	NT'1	4 (8)	20 (40)	26 (52)	Nil	49 (98)
Dhemaji	Mahanpur	Nil	18 (36)	22 (44)	9 (18)		50 (100)
	Sub-Total		29 (19.33)	69 (46)	46 (31)	6 (4)	149 (99)

Source: Field Survey, 2013-14.

*Note*: Figures in the parentheses indicate percentage to total.

Farmers reported that they had to change their cultivation of crops (whatever possible) in the last two decades (i.e. 1990-91 to 2012-13) for various reasons (Table 11). Some farmers (18 per cent) of Patakata village of Kokrajhar district have changed from traditional varieties to newer crops due to availability of HYV seeds, and 83 percent of the respondents of the same district changed cropping pattern to earn more profit. Some of them cited lower cost of cultivation for changing cropping pattern. No weather resistant crop varieties have been chosen by the farmers of Kokrajhar district. On the other hand, risk factors (19.33 percent), earning profits (46percent), lower cost of cultivation (31 percent) and weather resistance (4 percent) are cited to be the main reasons for adopting newer varieties of crops during last 20 years by the farmers in the sample villages of Dhemaji district.

The above discussion and analysis of data clearly indicates that despite a number of constraints faced by the farmers in the study area; there is enormous scope to diversify their crops and adaptability varies across the space with changing technology and environment. Adaptation and disaster mitigation requires adequate knowledge, access to suitable technology, capital and appropriate policy measures. A failure in adaptation with the changing climatic uncertainty may lead to socioeconomic disaster and jeopardise the livelihood security of the people particularly those who are dependent more on natural weather for agricultural activities.

#### Adaptability of Farmers in Response to Climate Change

Agricultural adaptation to climate risk is a relatively new field of inquiry with reference to North-Eastern India. On the basis of the farmers' response to climate change and other relevant variables, their perceptions and adaptation strategy is examined for the study area. The regression results are presented in Table 12which shows that knowledge of the respondent farmers; farm size and area of holdings and share of family income from agricultural activities are significantly important factors behind the diversification (here Herfindahl Index). The coefficients of training to the farmers, and irrigation intensity are, however, not significant and that implies that crop diversity is hardly influenced by the training facilities and irrigation in the surveyed area. This may be due to the fact that training on cultivation of particular crops makes the farmers proficient on some specific crops and not on diversification needs. Additionally slowly growing irrigation facilities helped the small and marginal farmers to cultivate staple food-crops for food security and agriculture is still at the subsistence stage.

Explanatory Variable	Coefficients	Std. error	t-stat	Significance
(Constant)	0.097	0.051	1.926	0.055
Education of head	0.020*	0.008	2.354	0.019
Family agricultural labour	0.028	0.007	0.210	0.800
Cultivation experience	0.001	0.001	1.049	0.295
Training	-0.023	0.046	-0.489	0.625
Total cropped area	0.008**	0.001	6.601	0.000
Agricultural share in Income	0.001**	0.00403	3.060	0.002
Irrigation intensity	-0.00037	0.000299	-1.231	0.219
Dummy variable	-0.131**	0.023	-5.762	0.0000

**Table: 12:** Results of Regression of Diversity Index (HI) on RelevantExplanatory Variables

 $R^2 = 0.354$ , Adj.  $R^2 = 0.336$ , F= 19.944 (P-value: 0.00)

*Source*: Field Survey, 2013-14. *Note*: \*\*and \* indicate that the coefficient is significant at 1 and 5 per cent level of significance by two tailed test.

The regression results of adaptation index on various explanatory variables are depicted in Table13. The table reveals that the level of education of the heads of households has significantly positive impact on adaptation. Education generally increases knowledge and helps farmers to gain adaptive capacity to the changing climatic conditions and use of appropriate agro-technologies. The size of operational holding of the farmer (total cropped area), and years of cultivation experience also have significantly positive impacts on adaptation. The implication is that adaptive capacity of farmers increases with the larger size of the land holdings and cultivation experience. Interestingly, training of farmers is found to have no impact on adaptation. It may be noted that most of the training conducted by the concerned departments are basically related to raising crop productivity through the use of modern technology rather than on adaptation and awareness strategy towards climate change in Assam. In addition, share of income from agricultural sources and irrigation intensity reflected insignificant effects on climate change adaptation. It appears that farmers are more comfortable with the traditional way of cultivation under rain-fed conditions in Assam.

Explanatory Variable	Coefficients	Std. Error	t-stat	Significance
(Constant)	-0.043**	0.008	-5.248	0.000
Education of head	0.005**	0.001	3.368	0.001
Family agricultural labour	0.003*	0.001	2.189	0.029
Cultivation experience	0.000454**	0.000167	2.724	0.007
Training	-0.005	0.008	-0.722	0.471
Total cropped area	0.001**	0.000194	2.839	0.005
Income from agricultural	7.770e-005	0.00066	1.183	0.238
share	1.1100 005	0.00000	1.105	0.250
Irrigation intensity	6.727e-005	0.00049	1.337	0.169
Dummy variable	0.090**	0.004	24.347	0.000

**Table:** 13: Results of Regression of Adaptation Index (AI) on Relevant

 Explanatory Variables

 $R^2 = 0.774$ , Adj.  $R^2 = 0.767$ , F= 124.265 (P-value: 0.00)

*Source*: Field Survey, 2013-14. *Notes*: \*\*, \* indicate that the coefficient is significant at 1 and 5 per cent level of significance by two tailed test.

It is clear from the aforementioned results that size of holdings and education level of the farmers are important factors for the extent of diversification and adaptation of crops with the climate change in different districts of Assam. This is in conformity with the results obtained by some other researchers not only in India, but in some other countries as well (Pingali *et al.*, 1997; Mendelssohn and Seo, 2007c; De and Chattopadhyay, 2010; Anselm and Taofeeq, 2010; Onyeneke and Madukwe, 2010, Sahu and Mishra, 2013). Moreover, the other agro-infrastructural variables like irrigation, training to the farmers, and share of agricultural income are also important for agricultural diversification and adaptation. But the nature and extent of variations of these variables for different crops and climatic conditions in different regions do not contribute in the same way or to the same extent.

This discussion reveals that in spite of many problems and limitations, the rural farmers of Assam manage to raise varieties of crops under rainfed weather condition depending upon their availability of resources. One of the major factors hindering the proper utilisation of new farm technology is the dominance of scattered tiny plots (marginal and small in size) in the state.

It is needless to mention that training of farmers on available modern technology can go a long way in accelerating agricultural production and productivity. But the respondents reported that they are not aware of the new knowledge and farm practices due to lack of adequate exposure from the agricultural extension centres. Besides, farmers of the sample areas generally cultivate mustard, sesamum potato, gram and vegetable crops for home consumption with no interest in commercialization. Hence, adequate attention has not been paid on irrigation for batter and efficient cultivation.

Most of the farmers are found to be risk averters and are sceptical in trying new varieties. It is also observed that farmers are not aware of the concept of crop planning and the effort of the agriculture department to train them is inadequate. As expected in the traditional cropping system, crop diversification is limited as the farmers do not have suitable facilities and agro-infrastructure for support. Lack of climatic change perception of the farmers in Kokrajhar is due to limited climate change effects in the area. Nature of adaptation with the changing technology and climatic conditions by some sample farmers of Dhemaji however proves that farmers are eager to adopt newer technology in their cropping activities to save their crops and moderate climate change impacts.

#### **Concluding Remarks**

The above discussion clearly indicates significant changes in climatic variables like minimum and maximum temperature that is associated with

high degree of seasonal and regional variations over time. Share of peak rainfall season has also declined with rising fluctuations and reduction in overall annual rainfall. There is slow growth of overall agricultural productivity and it is associated with significant regional convergence. With uncertain weather conditions, diversification as a measure of moderating climate change effect is found to be far from common. Despite a number of constraints faced by the farmers in the study area, there is enormous scope for diversifying their crops and adaptability options with the changing variables of technology and environment.

Cultivation of a large number of crops indicates the suitability of agroclimatic environment in the state of Assam. Majority of the farmers are small landholders and their income from crop and non-crop activities is not enough to meet their subsistence and they produce only a few specialised crops which are risk prone. Due to fluctuations in price and climatic conditions; diversification of crops becomes important as a welldiversified agricultural economy opens up many opportunities. Soil fertility can be increased by way of crop rotation. It adds value in the agriculture by increasing the total productivity and at the same time stabilises the farm income by minimising the risk associated with producing only one crop.

Moreover, there is an urgent need for restructuring the existing sequence of crops so as to make suitable adjustments to changing climatic condition in flood prone districts of Assam. Hence, emphasis should shift towards growing more *rabi* crops with assured irrigation support. There is ample opportunity for increasing the production of summer rice and short duration paddy in the sample area in particular and Assam in general. For introduction and popularisation of new crop varieties, adoptive and result oriented field demonstration may be encouraged. In the flood prone areas short duration variety of paddy may be cultivated and harvested early to avoid flood damages. Adaptation options such as irrigation management and promotion of improved crop varieties are only viable if there is external support. However, there is a need to focus not only on technical aspects but also social dimensions such as perceptions of smallholder farmers. Government and policy makers should support farmers to generate long-term and location-specific adaptation strategies and therefore, emphasis should be placed on the development of irrigation, easy availability of modern agro-inputs, provision of location specific and need based solutions to support crop diversification in any type of land e.g. plain land, lowland and upland, while management of irrigation, cheap and simple technologies, innovative micro-insurance schemes can be another tool to help small-holder farmers to cope with climate variability and change (Pattet al. 2010).

#### References

- Adensina, A.A. and Forson, J.B. (1995). Farmers' Perceptions and Adaptation of New Agricultural Technology: Evidence from Analysis in Burkina Faso and Guinea, West Africa, *Agricultural Economics*, 13, 1-9.
- Adger, W. N., Hug, S., Brown, K. Conway, D. and Hume, M. (2003). Adaptation to Climate Change in Developing World, *Progress in Development Studies*, 3 (3), 179-195. Available at http://dx.doi.org/10.1191/1464993403ps060oa, (Accessed March, 15).
- Anderson, J.R., 2003. Risk in rural development: challenges for mangers and policy makers. Agricultural Systems 75, 161–197.
- Anselm, A. E. and Taofeeq, A. A. (2010). Challenges of Agricultural Adaptation Climate Change in Nigeria: A Synthesis from the Literature, *Field Actions Science Reports* [online], 4, Available at http://factsreports.revues.org/678, (Accessed June, 2011).
- Aufhammer, M., Ramanathan, V., and Vincent, J. (2006). Integrated Models show that Atmospheric Brown Clouds and Greenhouse Gases have Reduced Rice Yields in India, Available at http://www.pnas.org\_cgi\_doi\_10.1073\_ pnas.0609584104, (Accessed November, 2014).
- Aufhammer, M., Ramanathan V. and Vincent, J. (2011), "Climate Change, the Monsoon, and Rice Yield in India", *Climate Change*, September, DOI: 10.1007/s10584-011-0208-4.
- Barro, R. J. and Sala-i-Martin, X. (1992), "Convergence", Journal of Political Economy, 100 (2), 223-251.
- Bastine C. L. and Palanisami. K. P. (1994). An Analysis of Growth Trends in Principal Crops in Kerala, *Agricultural Situation in India*.48 (12), 885-891.
- Baumol, W. J. (1986), "Productivity Growth, Convergence, and Welfare: What the Long-run Data Show", *American EconomicReview*.76 (5), 1072-1085.
- Choi, I. and Ahn, B.C. (1998). Testing the Null of Stationarity for Multiple Time Series, *Journal of Econometrics*. 88, 41–77.
- Dale, V.H. (1997). The Relationship between Land-Use Change and Climate Change, *Ecological Application*, 7(3), 753-769.
- Dalgaard, C.J., Vastrup, J. (2001), "On the Measurement of [Sigma]-Convergence", *Economics Letters*, 70 (2), 283-287.
- De, U. K. (2003). Economics of Crop Diversification, Akansha Publishing House, New Delhi.
- De, U. K. and Bodosa, K. (2014).Crop Diversification in Assam and Use of Modern Inputs under Changing Climatic Condition, *Journal of Climatology* & Weather Forecasting,2(2), 1-14.Available at http://www. Editorialmanager.com/environsci/default.asp, (Accessed February, 2015).
- De, U.K. and Chattopadhyay, M. (2010). Crop Diversification by Poor Peasants and Infrastructure: Evidence from West Bengal, *Journal of Development* and Agricultural Economics, 2 (10), 340-350.
- Deschenes, O., and M. Greenstone.(2007). The economic impacts of climate change: evidence from agricultural output and random fluctuations in weather. American Economic Review 97(1), 354-385.
- Ellis, F., (1989). Peasant Economics: Farm Households and Agrarian Development. Cambridge University Press, New York, USA.
- Eriksen, S., Aldunce, P., Bahinipati, C.S., Martins, R.D., Molefe, J.I., Nhemachena, C., O'brien, K., Olorunfem, F., Park, J., Sygna, L. and Ulsrude, K. (2011).When Not Every Response to Climate Change is a Good one: Identifying Principles for Sustainable Adaptation, *Climate and*

*Development, 3*, 7-20.Available athttp//dx.doi.org/10.3763/cdev.2010.0060, (Accessed March, 2015).

- Evans, P. (1997). How Fast Do Economies Converge?, *Review of Economics and Statistics*. 79, 219–25.
- FAO. (2011). Save and Grow: A Policymaker's Guide to the Sustainable Intensification of Smallholder Crop Production. Food and Agriculture Organization, The United Nations, Rome.
- FAO/RAP, 2000. Report of the Expert Consultation on Crop Diversification in the Asia-Pacific Region. 4–6 July 2000, Food and Agriculture Organization of the United Nations, Regional Office for Asia and the Pacific, Bangkok, Thailand.
- Feng, S., Krueger A.B. and Oppenheimer, M.(2010).Linkages among climate change, crop yields and Mexico-US cross-border migration.http://www.pnas.org/cgi/doi/10.1073/pnas.1002632107.
- Government of Assam, (2012-13). *Economic Survey*, Directorate of Economics and Statistics, Assam.
- Habiba, U., Show, R. and Takeuchi, Y. (2012). Farmer's Perception and Adaptation Practices to Cope with Draught: Perspectives from Northwestern Bangladesh, *International Journal of Disaster Risk Reduction*, 1, 72-84.
- Hazra, C. R. (2001). Diversification in Indian Agriculture, Agricultural Situation in India, 58 (9), 409-418.
- Hutagaol, P., (2006). Agricultural diversification and self-sufficiency. UNESCAPCAPSA, Indonesia. In: CGPRT Flash, 4(4), 1.
- Im, K.S., Pesaran, M.H. and Shin, Y. (1997). Testing for Unit Roots in Heterogeneous Panels, mimeo, Department of Applied Economics, University of Cambridge.
- IPCC. (2007a). *Climate Change 2007: Impacts, Adaptation and Vulnerability*, Cambridge University Press.
- IPCC. (2007b). *Climate Change: Synthesis Report*, Contribution of Working Groups I, II and II to the Fourth Assessment Report of the International Panel on Climate Change, Geneva.
- Kar, G., Singh, R., Verma, H.N. (2004). Alternative cropping strategies for assured and efficient crop production in upland rainfed rice areas of Eastern India based on rainfall analysis. Agricultural Water Management 67, 47–62.
- Kasem, S. and G. B. Thapa (2011), "Crop diversification in Thailand: Status, determinants, and effects on income and use of inputs", *Land Use Policy*, 28, 618-628.
- Khound, H.P., and Borthakur, N. (1999). The Status and Future Needs of Infrastructure, Related to Sustainable Agriculture in Assam, Assam Agricultural University, Jorhat.
- Knowler, D., Bradshaw, B., 2007. "Farmer's adoption of conservation agriculture: a review and synthesis of recent research", *Food Policy*, 32, 25–48.
- Krishna, M. Vasisht, A. K. and Sharma, B. M. (1991). Growth and Instability in Kerala Agriculture, *Agricultural Situation in India*, 46 (1), 168-173.
- Krishnamurthy, B. C. (2012). The Distributional Impacts of Climate Change on Indian Agriculture: A Quantile Regression Approach, Working Paper 69/2012, May, Madras School of Economics, Chennai, India.

- Kyte, R. (2014). Crop Diversity is Key to Agricultural Climate Adaptability, Available at http://blogs.scientificamerican.com/guest-blog/crop-diversityis-key-to-agricult ural-climate-adaptation/, (Accessed May, 2015).
- Levin, A. and C.F. Lin (1993). Unit Root Tests in Panel Data: New Results, Working Paper 93–56, Department of Economics, University of California, San Diego.
- Levin, A. and Lin, C.F. (1992). Unit Root in Panel Data: Asymptotic and Finite Sample Properties, Working Paper 92–63, Department of Economics, University of California, San Diego.
- Li, Q. and D. Papell (1999). Convergence of International Output: Time Series Evidence for 16 OECD countries, *International Review of Economics and Finance*. 8: 267–80.
- Lucke, B. (2008), "Sigma-Convergence", Economics Letters, 99(3), 439-442.
- Lybbert, T. and Sumner, D. (2010). Agricultural Technologies for Climate Change Mitigation and Adaptation in Developing Countries: Policy Options for Innovation and Technology Diffusion, *International Centre for Trade and Sustainable Development (ICTSD)*, Issue Brief No. 6, Available at http://www.ictsd.org/sites/default/files/research/2010/06/agriculturaltechno logies-for-climate-change-mitigation-and-adaptation-in-developingcountries web.pdf, (Accessed March, 2015).
- Mankiw, N. G., Romer, D. and Weil, D. N. (1992), "A Contribution to the Empirics of Economic Growth", *Quantitative Journal of Economics*. May, 407-437.
- Mehta, P. K. (2009). Role of Crop Diversification in Output Growth in India: A State-level Analysis ICFAI, *University Journal of Agricultural Economics*, 6(2), 1-18.
- Mendelsohn, R. and Seo, S.N. (2007c). Changing Farm Types and Irrigation as an Adaptation to Climate Change in Latin American Agriculture, Policy Research Working Paper 4161, Washington, DC, United States, Word Bank.
- Miller, S. M. and Upadhyay, M. P. (2002), "Total Factor Productivity and the Convergence Hypothesis" *Journal of Macroeconomics*, 24(2): 267-286.
- Onyeneke, R. andMadukwe, D. (2010). Adaptation Measures by Crop Farmers in the Southeast Rainforest zone of Nigeria to Climate Change, *Science World Journal*, 5 (1), 32-34.
- Patt, A., Pablo. S. and Hess, U. (2010). How do Small Holder Farmers understand Insurance, and How much They Want It? Evidence from Africa, *Global Environment Change*, 20, 153-161.
- Pauliotte, J., Smith, B. and Westerhoff, L. (2009). Adaptation and Development: Livelihoods and Climate Change in Subarnabad, Bangladesh, *Climate Change and Development*, 1, 31-46, Available at http://dx.doi.org/10.3763/ cdev.2009.0001, (Accessed March, 2015).
- Peng, S.B.; J.L. Huang; J.E. Sheehy; R.C. Laza; R.M. Visperas; X.H. Zhong; G.S. Centeno; G. S. Khush; and K.G. Cassman(2004). Rice yields decline with higher night temperature from global warming. <u>http://www.pnas.org/</u>content/101/27/9971.short
- Pingali, P. L., Hossain, M. and Gerpacio, R.V. (1997). Asian Rice Bowls- The Returning Crisis? CAB International Wallingford.
- Pingali, P.(2004). Agricultural diversification: Opportunities and constraints. FAO Rice Conference, 12–13 February 2004. Agricultural and Development Economics Division, Food and Agriculture Organization of the United Nations, Rome, Italy.

- Rahman, S.(2009). Whether crop diversification is a desired strategy for agricultural growth in Bangladesh? Food Policy 34, 340-349.
- Rasul, G., Thapa, G.B., Zoebisch, M.A. (2004). Determinants of land-use changes in the Chittagong Hill Tracts of Bangladesh. Applied Geography, 217–240.
- Sahu, N. C. and Mishra, D. (2013). *Analysis of Perception and Adaptability Strategies of the Farmers to Climate Change in Odisha, India, 5,* 123-127, Available at www.elsevier.com/locate/procedia, (Accessed March, 15).
- Tanner, T.and Mitchell, T. (2008). Entrenchment or Enhancement: Could Climate Change Adaptation Help to Reduce Chronic Poverty? *Institute of Development Studies Bulletin, 39*, 6-15.
- Taylor, M. and L. Sarno (1998). The Behavior of Real Exchange Rates during the Post- Brettonwoods Period, *Journal of International Economics*. 46, 281– 312.
- Teklewold, H., Legesse, D., Alemu, Y.A., Negusse, D.(2006). Adopting poultry breeds in the highlands of Ethiopia. Research report. Ethiopian Institute of Agriculture Research.
- Van den Berg, M.M., Hengsdijk, H., Wolf, J., Ittersum, M.K.V., Guanghuo, W., Roetter, R.P.(2007). The impact of increasing farm size and mechanization on rural income and rice production in Zhejiang province, China. Agricultural Systems 94, 841–850.
- Wejnert, B. (2002). Integrating models of diffusion of innovations: a conceptual framework. Annual Review of Sociology 28, 297–326.
- Ye, L., Tang, Wu, W., Yang, P., Nelson, G.C., D'Croz, D.M. and Palzzo, A. (2013). Chinese Food Security and Climate change: Agriculture Futures, Economics, The Open- Access, E-Journal, No.2013-2.

	Season			KH	ARIF SEA	SON						RA	ABI SEA	SON*			
Zone	District/Dist. Group	Months	1951- 55	1961- 65	1971- 75	1981- 85	1991- 95	2001- 05	2005- 09	Months	1951-2 to 1955-6*	to	to	to	1991-2 to 995-6*	2001-2 to 2005-6*	2005-6 to 2009-10*
		Apr.	216.2	208.6	143.3	170.1	124.8	293.8	168.3	Oct.	243.6	139.2	82.8	61.1	114.3	176.3	131.8
		May	557.6	443.5	251.9	216.8	287.8	218.7	184.5	Nov.	27.8	19.2	32.2	20.1	10.3	18.9	12.7
	Kamrup	Jun.	191.1	242.7	329.3	322.4	376.8	318.4	197.9	Dec.	8.3	2.1	7.5	14.4	6.4	2.9	4.0
(Z	Kamrup(M) Barpeta	Jul.	205.0	214.9	377.6	339.9	342.7	287.2	273.7	Jan.*	12.1	7.0	10.3	8.7	25.2	9.6	7.1
LBV	Nalbari	Aug.	140.0	178.6	215.4	223.5	355.5	291.8	332.6	Feb.*	11.2	16.8	20.5	22.4	33.8	15.1	22.1
Zone(LBVZ)	Baksa	Sep.	428.0	328.6	168.4	238.5	201.1	129.3	152.9	Mar.*	131.8	74.2	36.7	34.6	60.3	77.2	53.1
		Total	1737.9	1616.9	1485.9	1511.2	1688.8	1539.1	1309.9	Total	434.7	258.5	190.0	161.3	250.3	300.0	230.9
/alle		Mtly Avg.	289.6	269.5	247.6	251.9	281.5	256.5	218.3	Mtly Avg.	72.5	43.1	31.7	26.9	41.7	50.0	38.5
tra V		Apr.	84.0	88.7	183.2	172.7	198.3	349.9	290.0	Oct.	109.5	132.1	203.8	104.4	127.8	308.7	189.8
ıapu	~ .	May	212.9	318.9	386.9	423.3	439.4	363.3	326.5	Nov.	9.3	9.3	29.8	0.3	23.6	10.9	3.3
rahn	Goalpara	Jun.	578.8	471.4	549.1	463.1	627.5	653.5	416.6	Dec.	2.6	1.0	2.4	16.4	5.3	9.5	1.2
Lower Brahmaputra Valley	Dhubri Kokrajhar	Jul.	586.9	479.4	527.4	678.2	560.7	568.0	459.7	Jan.*	12.9	5.4	11.3	4.7	19.0	6.0	10.7
LOW	Bongaigaon	Aug.	418.5	407.0	301.4	341.8	327.6	243.4	461.1	Feb.*	2.7	5.9	13.9	13.7	27.8	6.9	16.8
	Chirang	Sep.	271.8	227.4	461.9	545.5	324.1	205.9	250.5	Mar.*	29.9	43.9	26.6	41.6		53.0	68.3
	_	Total	2152.9	1992.7	2409.9	2624.6	2477.6	2383.9	2204.5	Total	166.8	197.6	287.7	101 7	Append	1 2040 lix-1: co	ntinued.1
		Mtly Avg.	358.8	332.1	401.6	437.4	412.9	397.3	367.4	Mtly Avg.	27.8	32.9	48.0	30.2	41.1	65.8	48.3
tra /Z)		Apr.	148.3	161.7	281.9	245.8	175.1	228.3	230.3	Oct.	167.1	118.8	160.4	86.5	157.3	140.4	104.0
napu UBV	Dibmacorh	May	301.5	201.1	302.9	247.7	344.1	336.5	282.6	Nov.	26.2	42.9	24.7	23.7	15.8	18.1	26.1
rahn one(1	Dibrugarh Tinsukia	Jun.	432.9	359.8	417.7	415.3	499.3	304.8	456.6	Dec.	26.9	18.0	12.6	37.0	18.1	7.5	6.5
Jpper Brahmaputra 'alley Zone(UBVZ)	mounu	Jul.	452.3	419.2	508.3	577.3	480.8	546.1	500.5	Jan.*	25.2	18.0	29.1	20.7	38.5	33.5	23.9
Jpp /alle		Aug.	322.0	356.2	446.1	418.8	428.1	382.9	385.0	Feb.*	41.0	43.2	45.1	42.1	88.1	76.8	70.4

Appendix: 1: Season-Wise & Agro-Climatic Zone-wise Monthly Rainfall Pattern in Assam since 1951-2010 (Millimeter)

	Season			KH	ARIF SEA	SON						RA	ABI SEA	SON*			
Zone	District/Dist. Group	Months	1951- 55	1961- 65	1971- 75	1981- 85	1991- 95	2001- 05	2005- 09	Months	1951-2 to 1955-6*	to	1971-2 to 1975-6*	to	to	2001-2 to 2005-6*	2005-6 to 2009-10*
		Sep.	273.8	266.1	331.0	354.3	454.2	220.7	233.9	Mar.*	121.4	57.2	91.3	84.9	175.5	126.2	100.8
		Total	1930.9	1764.1	2287.9	2259.1	2381.7	2019.3	2089.0	Total	407.9	298.1	363.2	294.9	493.4	402.5	331.8
		Mtly Avg.	321.8	294.0	381.3	376.5	396.9	336.5	348.2	MtlyAvg.	68.0	49.7	60.5	49.2	82.2	67.1	55.3
		Apr.	146.5	156.0	230.4	202.0	144.8	207.3	198.1	Oct.	175.3	142.6	134.5	83.5	169.1	124.1	120.9
		May	296.0	191.8	249.3	237.5	204.0	239.1	166.1	Nov.	27.9	41.9	29.5	22.9	20.4	24.8	24.6
	C'1	Jun.	449.2	374.5	403.0	337.2	307.0	231.4	338.4	Dec.	22.3	16.5	18.1	37.6	17.1	3.2	5.0
	Sibsagar Jorhat	Jul.	457.0	399.9	501.5	402.9	272.7	413.9	318.0	Jan.*	21.6	16.8	21.0	14.3	18.6	22.9	7.3
	Golaghat	Aug.	317.4	355.3	315.6	308.3	326.6	362.9	400.9	Feb.*	34.7	38.6	29.5	32.7	47.8	76.7	48.9
	Conglia	Sep.	273.2	259.2	260.9	241.5	223.7	223.3	200.1	Mar.*	116.1	49.1	72.3	62.1	74.1	103.1	63.5
		Total	1939.2	1736.6	1960.6	1729.3	1478.9	1677.9	1621.5	Total	397.9	305.5	304.8	253.2	347.0	354.8	270.2
		Mtly Avg.	323.2	289.4	326.8	288.2	246.5	279.6	270.2	Mtly Avg.	66.3	50.9	50.8		Append	ix-1: co	ntinued. $\theta$
		Apr.	188.9	192.0	146.4	189.9	136.3	223.6	186.0	Oct.	183.0	111.0	160.9	122.7	117.9	156.1	95.6
3PZ)		May	398.5	363.0	279.4	212.4	299.0	264.3	256.4	Nov.	18.2	18.7	13.2	4.5	25.2	26.3	15.7
e(NI	Domono	Jun.	289.3	313.1	234.3	282.5	399.2	238.0	253.9	Dec.	10.6	3.4	12.8	34.2	11.4	3.9	13.0
Zon	Darrang Sonitpur	Jul.	314.1	294.7	354.9	371.4	272.8	275.0	258.4	Jan.*	13.3	8.6	13.0	11.4	24.7	8.3	6.8
lain	Udalguri	Aug.	224.6	251.0	290.2	316.5	306.2	356.5	308.4	Feb.*	9.9	18.8	15.2	14.4	37.0	22.9	27.1
ra P	6	Sep.	341.1	274.1	206.3	301.6	197.3	180.2	148.8	Mar.*	118.2	60.3	26.2	34.1	44.4	69.8	60.8
aput		Total	1756.5	1687.8	1511.4	1674.3	1610.9	1537.7	1412.0	Total	353.4	220.8	241.5	221.4	260.6	287.3	218.9
ahm		Mtly Avg.	292.7	281.3	251.9	279.1	268.5	256.3	235.3	Avg.	58.9	36.8	40.2	36.9	43.4	47.9	36.5
North Brahmaputra Plain Zone(NBPZ)	Lakhimpur	Apr.	145.6	159.3	192.8	183.5	135.3	210.8	204.9	Oct.	151.4	102.2	111.6	75.5	150.8	167.6	131.6
Nort	Dhemaji	May	301.8	223.4	253.9	247.7	319.2	322.5	334.6	Nov.	20.3	30.7	26.9	18.9	15.1	27.7	34.3
	Dhemuji	Jun.	415.9	378.3	383.4	348.5	443.0	356.4	503.8	Dec.	22.9	12.7	17.2	35.3	14.5	2.6	12.7

	Season			KH	ARIF SEA	SON						RA	BI SEA	SON*			
Zone	District/Dist. Group	Months	1951- 55	1961- 65	1971- 75	1981- 85	1991- 95	2001- 05	2005- 09	Months	1951-2 to 1955-6*	to	to	1981-2 to 1985-6*	to	2001-2 to 2005-6*	2005-6 to 2009-10*
		Jul.	445.3	422.7	425.1	450.8	362.8	439.4	489.6	Jan.*	20.3	14.7	20.1	12.2	25.0	29.2	21.0
		Aug.	325.8	351.8	328.8	310.2	372.7	265.2	427.5	Feb.*	26.3	33.4	33.1	26.4	52.5	77.3	54.9
		Sep.	257.3	252.2	232.1	248.9	300.0	268.5	271.2	Mar.*	106.8	49.2	53.5	51.3	90.2	127.4	63.5
		Total	1891.7	1787.7	1816.1	1789.6	1933.0	1862.8	2231.6	Total	348.0	243.0	262.4	210 -	Append	lix-1: co	ntinued 0
		Avg.	315.3	298.0	302.7	298.3	322.2	310.5	371.9	Avg.	58.0	40.5	43.7	36.6	58.0	1	53.0
BZ)		Apr.	109.1	115.5	145.9	114.9	84.9	181.4	88.0	Oct.	139.5	79.6	109.6	72.1	90.2	148.3	96.2
e (C		May	278.9	180.3	159.7	121.3	160.2	156.3	133.2	Nov.	20.8	16.5	35.3	8.6	29.3	13.7	10.2
Zon		Jun.	413.6	416.2	351.2	226.4	326.2	185.4	208.7	Dec.	5.9	2.7	13.2	14.2	6.6	2.8	7.9
utra	Nagaon	Jul.	424.8	369.4	352.9	275.0	279.4	268.7	241.6	Jan.*	7.3	4.4	8.4	7.6	20.2	20.4	6.7
map	Morigaon	Aug.	267.2	264.6	291.0	292.2	237.6	245.6	231.1	Feb.*	10.2	13.1	12.4	10.3	37.8	19.2	25.8
3rah		Sep.	221.6	166.3	192.5	238.5	200.2	164.6	247.6	Mar.*	81.4	37.7	28.5	37.2	44.0	41.5	38.3
Central Brahmaputra Zone (CBZ)		Total	1715.1	1512.4	1493.2	1268.3	1288.5	1202.0	1150.1	Total	265.2	154.0	207.4	149.9	228.0	246.0	185.2
Cent		Avg.	285.9	252.1	248.9	211.4	214.8	200.3	191.7	Avg.	44.2	25.7	34.6	25.0	38.0	41.0	30.9

#### Appendix:1: concluded

		$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$														1	
	Season	KHARIF SEASONRABI SEASONstill W $\stackrel{5}{5}, \stackrel{1}{5}, \stackrel{6}{5}, \stackrel{1}{6}, \stackrel{5}{6}, \stackrel{1}{6}, \stackrel{5}{6}, \stackrel{1}{6}, \stackrel{6}{6}, \stackrel{5}{6}, \stackrel{6}{6}, \stackrel{6}{6}$															
Zone	District /Dist. Group	Months	1951-55	1961-65	1971-75	1981-85	1991-95	2001-05	2005-09	Months	1-2 5-6	1961-2 to 1965-6*	1971-2 to 1975-6*	1981-2 to 1985-6*	1991-2 to 1995-6*	2001-2 to 2005-6*	2005-6 to 2009-10*
		Apr.	297.7	241.2	356.0	445.5	229.3	379.0	228.9	Oct.	307.3			154.4	191.6		180.1
Zone		May	472.1	303.9	356.8	433.1	507.0	430.2	393.3	Nov.	66.0	42.1	69.9	28.0	35.3	23.0	31.5
	Cashar	Jun.	823.4	824.5	675.4	510.5	597.8	490.2	511.2	Dec.	5.1	9.7	19.7	36.1	25.9	24.0	2.8
Barak Valley (BVZ)	Cachar Karimgani	Jul.	619.1	663.0	595.7	570.8	360.7	547.4	510.0	Jan.*	13.3	15.0	4.0	7.6	12.4	4.2	7.4
Va (BV	Karimganj Hailakandi	Aug.															34.5
ak.	Hanakanui	Sep.	479.7														117.8
Bar		Total					2476.9	2473.8		Total				460.9	636.4		374.0
		Avg.					<i>412.8</i>		409.9	Avg.	97.7	57.9				68.5	62.3
		Apr.								Oct.							94.0
$\widehat{\mathbf{N}}$		May								Nov.							20.9
(HZ)	Mikir Hills	Jun.				633.6								28.1			3.8
ne	(KarbiAnglong	Jul.	768.9	637.7	629.9	696.8	613.4	438.1	363.6	Jan.*	15.0	13.9	10.4	10.3	23.4	19.9	7.2
Zone	)	Aug.	498.2	501.3	443.1	497.4	545.3	334.2	229.4	Feb.*	27.4	37.9	41.2	30.8	59.7	17.0	29.0
Hill	N.C. Hills	Sep.	434.7	327.9	315.5	414.6	371.3	249.9	184.3	Mar.*	186.4	109.9	102.9	127.3	167.5	86.4	59.1
j.L.j		Total	3328.8	2778.2	2689.6	2987.5	2854.7	2040.7	1449.4	Total	582.1	391.5	486.2	329.5	507.0	325.7	214.0
		Avg.	554.8	463.0	448.3	497.9	475.8	340.1	241.6	Avg.	97.0	65.2	81.0	54.9	84.5	54.3	35.7
		Apr.	177.0	172.4	220.1	227.1	155.9	258.9	195.2	Oct.	196.1	129.4	159.2	97.3	146.6	173.5	127.1
		May	370.3	282.6	289.2	285.0	338.0	294.4	253.3	Nov.	30.3	29.3	36.0	16.1	24.1	21.1	19.9
		Jun. Jul.	494.6	460.6	442.4	393.3	471.7	358.0	354.9	Dec.	12.5	8.1	12.6	28.1	13.3	6.9	6.3
	ASSAM		474.8	433.4	474.8	484.8	394.0	420.4	379.5	Jan.*	15.7	11.6	14.2	10.8	23.0	17.1	10.9
		Aug.	334.8	357.9	343.4	349.5	369.9	315.0	363.5	Feb.*	21.1	27.6	28.9	26.5	54.4	39.3	36.6
		Sep.	331.2	269.3	273.3	334.8	291.6	213.0	223.3	Mar.*	117.8	62.5	64.4	73.5	107.2	92.6	69.5
		Total	2182.7	1976.3	2043.1	2074.5	2021.2	1859.7	1769.7	Total	393.6	268.5	315.4	252.4	368.6	350.5	270.3
		Avg.	363.8	329.4	340.5	345.8	336.9	310.0	295.0	Avg.	65.6	44.7	52.6	42.1	61.4	58.4	45.1

*Source*: Computed from data published by the IMD, Regional Meteorological Centre, Guwahati.

Note: \* indicates that in the Rabi season, the months January, February and March fall in the immediate next year.

	Season					K	HA	RIF	F SE	EAS	ON										]	RAE	BI SI	EAS	ON						
Zone	District Dist. Grou	Months	1051 55	Ċ.	10/1 /5	CO-1061	1071-75	CI-TICT	1001 05	CQ-1061	1001 05	CK-1661	3001.05	cn-1007	00 1000	60-007	Months	1951-2 to	1955-6*	1961-2 to	1965-6*	1971-2 to	1975-6*	1981-2 to	1985-6*	1991-2 to	1995-6*	2001-2 to	2005-6*	2005-6 to	2009-10*
			Mn.	Mx.	Mn.	Mx.	Mn.	Mx.	Mn.	Mx.	Mn.	Mx.	Mn.	Mx.	Mn.	Mx.		Mn.	Mx.												
		Apr.	18	28	19	29	20	31	20	31	20	31	21	29	21	31	Oct.	20	28	20	27	22	30	22	31	21	30	22	29	23	30
		May	19	28	20	28	22	31	22	30	22	31	23	31	24	32	Nov.	15	25	15	24	16	27	15	28	16	28	18	27	18	27
(Z)	Kamrup Kamrup(M)	Jun.	21	28	22	28	24	31	24	32	24	32	25	31	25	32	Dec.	11	22	11	22	10	24	11	24	11	24	14	24	14	24
(LBVZ)	Barpeta	Jul.	22	28	23	29	25	31	25	31	25	32	26	31	26	32	Jan.*	8	21	9	21	9	24	10	23	12	23	11	22	12	23
Zone (	Nalbari Baksa	Aug.	23	29	23	29	25	32	25	32	26	33	26	32	26	33	Feb.*	11	24	11	24	11	26	11	26	12	26	15	27	14	26
y Zc	Dukbu	Sep.	22	28	23	29	24	31	24	31	24	32	25	32	26	32	Mar.*	15	28	15	28	15	32	16	30	16	29	18	30	18	31
Vally		Avg.	21	28	22	28	23	31	24	31	23	32	24	31	25	32	Avg.	13	25	13	24	14	27	14	27	15	27	16	26	17	27
Brahmaputra		Apr.	21	34	21	33	21	33	21	32	21	33	21	33	21	34	Oct.	23	31	23	31	23	31	23	31	23	31	22	30	23	31
mapı		May	23	32	23	32	23	32	23	32	23	32	23	32	23	33	Nov.	17	29	17	28	17	28	17	28	18	28	18	28	17	28
Srahı	Goalpara Dhubri	Jun.	25	31	25	32	25	31	25	32	25	32	25	32	25	31	Dec.	13	25	12	25	12	25	13	25	13	25	14	26	13	25
	Kokrajhar	Jul.	25	31	26	32	25	31	26	31	26	31	26	31	26	31	Jan.*	10	24	10	24	11	24	11	24	11	24	11	24	10	24
Lower	Bongaigaon Chirang	Aug.	26	32	26	32	26	32	26	32	26	32	26	32	26	32	Feb.*	12	28	13	28	13	27	13	26	13	26	14	28	13	27
	Cinitang	Sep.	25	32	25	32	25	31	25	31	25	31	25	31	25	32	Mar.*	17	32	17	32	17	31	17	32	17	31	17	32	17	32
		Avg.	24	32	25	32	24	32	24	32	24	32	25	32	24	32	Avg.	15	28	15	28	16	28	16	2	Aj	ppe	ndix	-2: c	conti	nued

**Appendix: 2:** Season-Wise & Agro-Climatic Zonewise Monthly Mean Minimum-Maximum Temperature in Assam since 1951-2010 (Deg. Celsius)

	Season					K	HA	RIF	F SE	CAS	ON										]	RAE	BI SI	EAS	ON					
Zone	District Dist. Grou	Months	1051-55	, ,	1061 <i>EE</i>	C0-1061	1071-75	-	1001 05	CO-1061	1001 05	CK-1661		<b>CU-1002</b>	005 00	60-007	Months	1951-2 to	1955-6*	1961-2 to	1965-6*	1971-2 to	1975-6*	1981-2 to	1985-6*	1991-2 to	1995-6* 2001_2 to	2005-6*	2005-6 to	2009-10*
			Mn.	Mx.	Mn.	Mx.	Mn.	Mx.	Mn.	Mx.	Mn.	Mx.	Mn.	Mx.	Mn.	Mx.		Mn.	Mx.	IVIII. NAv	Mn.	Mx.								
		Apr.	18	29	18	28	19	28	19	27	19	28	20	27	20	27	Oct.	20	29	20	29	21	30	21	30	21	30 21	1 3	022	31
		May	20	30	21	29	22	30	22	30	22	29	22	30	23	31	Nov.	15	28	15	25	14	27	14	27	15	2816	5 2	816	28
(ZV		Jun.	23	31	23	31	24	31	24	31	24	31	25	31	25	31	Dec.	11	24	11	23	9	23	10	23	10	2411	1 2	512	25
(UBVZ)	Dibrugarh Tinsukia	Jul.	23	31	24	31	24	31	25	30	25	31	25	31	25	31	Jan.*	9	23	9	22	9	23	9	23	10	2310	) 2	311	24
Zone	11150110	Aug.	24	31	24	30	25	32	25	32	25	32	25	32	25	31	Feb.*	12	25	12	24	12	24	12	24	13	24 14	4 2	513	25
y Zo		Sep.	23	31	23	31	23	30	24	30	24	31	25	31	25	32	Mar.*	15	28	14	27	16	27	16	26	16	25 17	7 2	617	27
Valley 2		Avg.	22	30	22	30	23	30	23	30	23	30	24	30	24	31	Avg.	14	26	13	25	14	26	14	26	14	2515	5 2	615	27
itra V		Apr.	17	28	18	28	18	28	18	27	18	28	18	29	18	28	Oct.	20	29	20	28	20	29	20	29	20	29 20	) 2	920	28
napu		May	20	29	20	29	21	29	21	29	20	29	20	29	20	29	Nov.	14	27	14	25	15	26	15	25	16	2615	5 2	715	26
rahn	Sibsagar	Jun.	22	30	22	30	23	30	23	30	23	30	23	31	23	30	Dec.	11	24	10	22	10	22	11	23	11	23 1 1	1 2	310	23
er B	Jorhat	Jul.	23	30	23	30	23	30	23	30	23	30	23	30	23	30	Jan.*	9	22	9	22	10	22	9	22	10	229	2	29	22
Upper Brahmaputra	Golaghat	Aug.	23	30	23	30	23	30	24	31	24	31	24	31	23	30	Feb.*	12	25	11	23	12	23	12	23	12	23 12	2 2	411	24
		Sep.	22	30	23	30	22	30	22	30	23	30	23	30	22	30	Mar.*	14	27	14	27	15	27	15	27	15	2614	1 2	714	27
		Avg.	21	30	22	29	22	<b>29</b>	22	29	22	30	22	30	22	30	Avg.	13	26	13	24	13	25	14	25	14	25 14	4 2	513	25

#### **Appendix-2: continued**

| Season                          | KHARIF SEASON                                           |                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                         |     |         |     |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                      
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | RABI SEASON                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                            
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------------|---------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|---------|-----|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| District<br>Dist. Grouj         | Months                                                  | 1951-55                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1961-65                                                                                                                                                                                                                                                                                                 |     | 1971-75 |     | 1981-85 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1991-95                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 2001-05                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 2005-09                                              
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Months | 1951-2 to                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1955-6*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1961-2 to                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 1965-6*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | ~                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 1975-6*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | _                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1991-2 to                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1995-6*                                                                                                                                                                                                                                                                                                                                                    
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2001-2 to                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 2005-6*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 2005-6 to                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 2009-10*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                 |                                                         | Mn.                                                                                                                                                                                                                                                  | Mx.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Mn.                                                                                                                                                                                                                                                                                                     | Mx. | Mn.     | Mx. | Mn.     | Mx.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Mn.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Mx.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Mn.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Mx.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Mn.                                                  
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Mx.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |        | Mn.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Mx.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Mn.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Mx.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Mn.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Mx.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Mn.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Mx.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Mn.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Mx.                                                                                                                                                                                                                                                                                                                                                        
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Mn.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Mx.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Mn.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Mx.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                                 | Apr.                                                    | 18                                                                                                                                                                                                                                                   | 29                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 19                                                                                                                                                                                                                                                                                                      | 30  | 19      | 30  | 19      | 28                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 19                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 29                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 28                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 19                                                   
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 29                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Oct.   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 29                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 31                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 31                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 30                                                                                                                                                                                                                                                                                                                                                         
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 32                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| -                               | May                                                     | 20                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 20                                                                                                                                                                                                                                                                                                      | 29  | 21      | 31  |         | 30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 22                                                   
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 32                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Nov.   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 16                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                            
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 29                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Darrang<br>Sonitpur<br>Udalguri | Jun.                                                    |                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                         |     |         |     |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                      
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Dec.   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                            
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 26                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                 | Jul.                                                    |                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                         |     |         |     |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                      
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                            
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 25                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                 | Aug.                                                    |                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                         |     |         |     |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                      
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 13                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                            
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 26                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                 | Sep.                                                    |                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                         |     |         |     |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                      
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 17                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                            
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 29                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                 | Avg.                                                    |                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                         |     |         |     |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                      
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                            
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 28                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Lakhimpur                       | 1                                                       |                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                         |     |         |     |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                      
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                            
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                 | ~                                                       |                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                         |     |         |     |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                      
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                            
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 29                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                 |                                                         |                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                         |     |         |     |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                      
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                            
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 25                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| -                               |                                                         |                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                         |     |         |     |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                      
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                            
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 23                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                 | -                                                       |                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                         |     |         |     |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                      
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                            
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 26                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| -                               | -                                                       |                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                         |     |         |     |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                      
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                            
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 29                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                 | -                                                       |                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                         |     |         |     |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                      
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                            
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 27                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| -                               |                                                         |                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                         |     |         |     |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                      
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                            
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 27                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| -                               | 2                                                       |                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                         |     |         |     |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                      
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                            
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 24                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Nagaon                          |                                                         |                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                         |     |         |     |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                      
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                            
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Morigaon                        |                                                         |                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                         |     |         |     |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                      
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | ð<br>11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                            
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 20<br>21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| F                               |                                                         |                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                         |     |         |     |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                      
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                            
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 21<br>25                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                 | -                                                       |                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                         |     |         |     |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                      
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | | | | | | | | | | | | | | | | | | | | | | | | | | | |
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 23<br>23                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                 | Darrang<br>Sonitpur<br>Udalguri<br>.akhimpur<br>Dhemaji | Apr.<br>May<br>Jun.<br>Sonitpur<br>Udalguri<br>Udalguri<br>Aug.<br>Sep.<br>Avg.<br>Apr.<br>May<br>Jun.<br>Jul.<br>Jul.<br>Aug.<br>Sep.<br>Aug.<br>Sep.<br>Avg.<br>Apr.<br>May<br>Jun.<br>Jul.<br>Jul.<br>Jul.<br>Jul.<br>Jul.<br>Jul.<br>Jul.<br>Jul | Apr.         18           May         20           Jun.         23           Sonitpur         Jul.         24           Jul.         24           Aug.         24           Sep.         23           Avg.         22           Apr.         19           May         21           Jun.         24           Jul.         24           Aug.         22           Apr.         19           May         21           Jun.         24           Aug.         24           Aug.         24           Aug.         21           Jul.         24           Aug.         24           Aug.         24           Aug.         24           Aug.         24           Aug.         24           Aug.         23           Apr.         16           May         18           Jun.         20           Jul.         21           Aug.         21           Aug.         21           Sep.         21 <td>Apr.<math>\stackrel{\leftarrow}{\boxtimes}</math><math>\stackrel{\leftarrow}{\boxtimes}</math>Darrang<br/>Sonitpur<br/>UdalguriApr.1829May2029Jun.2329Jul.2429Aug.2430Sep.2330Avg.2230Avg.2230May2131Jun.2431Jun.2431Jul.2432Sep.2432Sep.2432Avg.2331Aug.2432Jun.1626May1827Jun.2026Jul.2126Aug.2127Sep.2127Sep.2127Sep.2127</td> <td></td> <td></td> <td></td> <td></td> <td>Nagaon<math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>E</math></td> <td>Apr.<math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math><math>\overset{\downarrow}{\boxtimes}</math></td> <td>Apr.<math>18</math><math>29</math><math>19</math><math>30</math><math>19</math><math>30</math><math>19</math><math>28</math><math>19</math>May<math>20</math><math>29</math><math>20</math><math>29</math><math>21</math><math>31</math><math>22</math><math>30</math><math>22</math>Jun.<math>23</math><math>29</math><math>23</math><math>30</math><math>24</math><math>32</math><math>25</math><math>32</math><math>24</math>Jun.<math>23</math><math>29</math><math>24</math><math>30</math><math>24</math><math>32</math><math>25</math><math>32</math><math>24</math>Jun.<math>23</math><math>29</math><math>24</math><math>30</math><math>24</math><math>32</math><math>25</math><math>31</math><math>25</math>SonitpurJul.<math>24</math><math>29</math><math>24</math><math>30</math><math>24</math><math>33</math><math>25</math><math>32</math><math>25</math>Sep.<math>23</math><math>30</math><math>24</math><math>30</math><math>24</math><math>33</math><math>25</math><math>32</math><math>25</math>Sep.<math>23</math><math>30</math><math>24</math><math>30</math><math>24</math><math>31</math><math>24</math><math>30</math><math>24</math>Avg.<math>22</math><math>30</math><math>22</math><math>30</math><math>22</math><math>30</math><math>22</math><math>30</math><math>22</math>Jun.<math>24</math><math>30</math><math>24</math><math>30</math><math>24</math><math>31</math><math>24</math><math>30</math><math>24</math>Apr.<math>19</math><math>30</math><math>19</math><math>30</math><math>19</math><math>29</math><math>20</math>May<math>21</math><math>31</math><math>22</math><math>30</math><math>22</math><math>30</math><math>22</math><math>30</math><math>22</math>Jun.<math>24</math><math>31</math><math>24</math><math>31</math><math>24</math><math>32</math><math>24</math><math>31</math><math>25</math>Aug.<math>24</math><math>32</math><math>24</math><math>31</math><math>23</math><math>31</math><math>23</math><math>31</math><math>23</math>Jun.<math>24</math><math>31</math><math>25</math><math>32</math><math>25</math><math>32</math><math>25</math></td> <td>Apr.<math>18</math><math>29</math><math>19</math><math>30</math><math>19</math><math>30</math><math>19</math><math>28</math><math>19</math><math>29</math>May<math>20</math><math>29</math><math>20</math><math>29</math><math>21</math><math>31</math><math>22</math><math>30</math><math>22</math><math>29</math>Jun.<math>23</math><math>29</math><math>23</math><math>30</math><math>24</math><math>32</math><math>25</math><math>32</math><math>24</math><math>31</math>Jun.<math>23</math><math>29</math><math>24</math><math>30</math><math>22</math><math>32</math><math>25</math><math>32</math><math>24</math><math>31</math>Jul.<math>24</math><math>29</math><math>24</math><math>30</math><math>24</math><math>32</math><math>25</math><math>32</math><math>25</math><math>32</math>Sep.<math>23</math><math>30</math><math>24</math><math>30</math><math>24</math><math>33</math><math>25</math><math>32</math><math>25</math><math>32</math>Sep.<math>23</math><math>30</math><math>24</math><math>30</math><math>24</math><math>31</math><math>24</math><math>30</math><math>24</math><math>31</math>Avg.<math>22</math><math>30</math><math>22</math><math>30</math><math>22</math><math>30</math><math>23</math><math>31</math>Avg.<math>22</math><math>30</math><math>22</math><math>30</math><math>22</math><math>30</math><math>22</math><math>30</math><math>23</math><math>31</math>Avg.<math>22</math><math>30</math><math>22</math><math>30</math><math>22</math><math>30</math><math>22</math><math>30</math><math>22</math><math>30</math>Jun.<math>24</math><math>31</math><math>24</math><math>31</math><math>24</math><math>32</math><math>24</math><math>32</math><math>24</math><math>32</math>Jun.<math>24</math><math>31</math><math>24</math><math>32</math><math>24</math><math>32</math><math>24</math><math>32</math><math>24</math><math>32</math>Jun.<math>24</math><math>32</math><math>24</math><math>32</math><math>24</math><math>32</math><math>24</math><math>32</math><math>31</math><math>23</math><math>31</math>Avg.<math>23</math><math>31</math><math>23</math><math>31</math><math>2</math></td> <td>Apr.<math>IIS</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math><math>ZP</math></td> <td><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>E</math></td> <td><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>\vec{E}</math><math>E</math></td> <td></td> <td>Image: Second state         Image: Second state         <thimage: second="" state<="" th="">         Image: Second state</thimage:></td> <td>Image: Second Second</td> <td>Image: Normal and the second state of the s</td> <td>interview         interview         <t< td=""><td>interview         interview         <t< td=""><td>Image: Normal state         Image: Normal state</td><td>Image: Second state         Image: Second state</td><td>Apr.         18         29         24         25         25         32         29         20         28         19         20         28         19         20         28         19         29         20         28         19         29         0.0         18         29         20         28         19         29         20         28         19         29         0.0         15         21         15         25         16         29         15           Jun.         23         29         23         30         24         32         25         32         23         24         32         25         32         23         24         32         25         32         23         24         32         Dec.         11         23         11         23         11         23         11         23         11         23         11         21         12         13           Udalguri         Jul.         24         30         24         32         25         32         25         32         25         32         25         32         24         33         25         32         24         33         24</td><td>Apr.         18         29         24         24         25         32         29         20         28         19         20         28         19         20         28         19         20         28         19         20         28         19         20         20         28         19         20         20         21         21         29         21         29         21         31         21         31           May         20         29         20         29         21         31         22         30         22         29         22         31         22         32         24         31         25         32         24         31         25         32         24         32         Dec.         11         23         11         22         10         23           Mug         24         30         24         32         25         32         25         32         25         32         24         33         Mar.*         15         29         12         25         12         25         12         25         12         25         12         25         12         25         12</td><td>intervision         intervision         intervision</td><td>indication       indication       indication</td></t<><td>indication       indication       indication</td></td></t<><td>interview       interview       interview</td><td>Image: Normal and the state of the stat</td></td> | Apr. $\stackrel{\leftarrow}{\boxtimes}$ $\stackrel{\leftarrow}{\boxtimes}$ Darrang<br>Sonitpur<br>UdalguriApr.1829May2029Jun.2329Jul.2429Aug.2430Sep.2330Avg.2230Avg.2230May2131Jun.2431Jun.2431Jul.2432Sep.2432Sep.2432Avg.2331Aug.2432Jun.1626May1827Jun.2026Jul.2126Aug.2127Sep.2127Sep.2127Sep.2127 |     |         |     |         | Nagaon $\vec{E}$ $E$ | Apr. $\overset{\downarrow}{\boxtimes}$ | Apr. $18$ $29$ $19$ $30$ $19$ $30$ $19$ $28$ $19$ May $20$ $29$ $20$ $29$ $21$ $31$ $22$ $30$ $22$ Jun. $23$ $29$ $23$ $30$ $24$ $32$ $25$ $32$ $24$ Jun. $23$ $29$ $24$ $30$ $24$ $32$ $25$ $32$ $24$ Jun. $23$ $29$ $24$ $30$ $24$ $32$ $25$ $31$ $25$ SonitpurJul. $24$ $29$ $24$ $30$ $24$ $33$ $25$ $32$ $25$ Sep. $23$ $30$ $24$ $30$ $24$ $33$ $25$ $32$ $25$ Sep. $23$ $30$ $24$ $30$ $24$ $31$ $24$ $30$ $24$ Avg. $22$ $30$ $22$ $30$ $22$ $30$ $22$ $30$ $22$ Jun. $24$ $30$ $24$ $30$ $24$ $31$ $24$ $30$ $24$ Apr. $19$ $30$ $19$ $30$ $19$ $29$ $20$ May $21$ $31$ $22$ $30$ $22$ $30$ $22$ $30$ $22$ Jun. $24$ $31$ $24$ $31$ $24$ $32$ $24$ $31$ $25$ Aug. $24$ $32$ $24$ $31$ $23$ $31$ $23$ $31$ $23$ Jun. $24$ $31$ $25$ $32$ $25$ $32$ $25$ | Apr. $18$ $29$ $19$ $30$ $19$ $30$ $19$ $28$ $19$ $29$ May $20$ $29$ $20$ $29$ $21$ $31$ $22$ $30$ $22$ $29$ Jun. $23$ $29$ $23$ $30$ $24$ $32$ $25$ $32$ $24$ $31$ Jun. $23$ $29$ $24$ $30$ $22$ $32$ $25$ $32$ $24$ $31$ Jul. $24$ $29$ $24$ $30$ $24$ $32$ $25$ $32$ $25$ $32$ Sep. $23$ $30$ $24$ $30$ $24$ $33$ $25$ $32$ $25$ $32$ Sep. $23$ $30$ $24$ $30$ $24$ $31$ $24$ $30$ $24$ $31$ Avg. $22$ $30$ $22$ $30$ $22$ $30$ $23$ $31$ Avg. $22$ $30$ $22$ $30$ $22$ $30$ $22$ $30$ $23$ $31$ Avg. $22$ $30$ $22$ $30$ $22$ $30$ $22$ $30$ $22$ $30$ Jun. $24$ $31$ $24$ $31$ $24$ $32$ $24$ $32$ $24$ $32$ Jun. $24$ $31$ $24$ $32$ $24$ $32$ $24$ $32$ $24$ $32$ Jun. $24$ $32$ $24$ $32$ $24$ $32$ $24$ $32$ $31$ $23$ $31$ Avg. $23$ $31$ $23$ $31$ $2$ | Apr. $IIS$ $ZP$ | $\vec{E}$ $E$ | $\vec{E}$ $E$ |        | Image: Second state         Image: Second state <thimage: second="" state<="" th="">         Image: Second state</thimage:> | Image: Second | Image: Normal and the second state of the s | interview         interview <t< td=""><td>interview         interview         <t< td=""><td>Image: Normal state         Image: Normal state</td><td>Image: Second state         Image: Second state</td><td>Apr.         18         29         24         25         25         32         29         20         28         19         20         28         19         20         28         19         29         20         28         19         29         0.0         18         29         20         28         19         29         20         28         19         29         0.0         15         21         15         25         16         29         15           Jun.         23         29         23         30         24         32         25         32         23         24         32         25         32         23         24         32         25         32         23         24         32         Dec.         11         23         11         23         11         23         11         23         11         23         11         21         12         13           Udalguri         Jul.         24         30         24         32         25         32         25         32         25         32         25         32         24         33         25         32         24         33         24</td><td>Apr.         18         29         24         24         25         32         29         20         28         19         20         28         19         20         28         19         20         28         19         20         28         19         20         20         28         19         20         20         21         21         29         21         29         21         31         21         31           May         20         29         20         29         21         31         22         30         22         29         22         31         22         32         24         31         25         32         24         31         25         32         24         32         Dec.         11         23         11         22         10         23           Mug         24         30         24         32         25         32         25         32         25         32         24         33         Mar.*         15         29         12         25         12         25         12         25         12         25         12         25         12         25         12</td><td>intervision         intervision         intervision</td><td>indication       indication       indication</td></t<><td>indication       indication       indication</td></td></t<> <td>interview       interview       interview</td> <td>Image: Normal and the state of the stat</td> | interview         interview <t< td=""><td>Image: Normal state         Image: Normal state</td><td>Image: Second state         Image: Second state</td><td>Apr.         18         29         24         25         25         32         29         20         28         19         20         28         19         20         28         19         29         20         28         19         29         0.0         18         29         20         28         19         29         20         28         19         29         0.0         15         21         15         25         16         29         15           Jun.         23         29         23         30         24         32         25         32         23         24         32         25         32         23         24         32         25         32         23         24         32         Dec.         11         23         11         23         11         23         11         23         11         23         11         21         12         13           Udalguri         Jul.         24         30         24         32         25         32         25         32         25         32         25         32         24         33         25         32         24         33         24</td><td>Apr.         18         29         24         24         25         32         29         20         28         19         20         28         19         20         28         19         20         28         19         20         28         19         20         20         28         19         20         20         21         21         29         21         29         21         31         21         31           May         20         29         20         29         21         31         22         30         22         29         22         31         22         32         24         31         25         32         24         31         25         32         24         32         Dec.         11         23         11         22         10         23           Mug         24         30         24         32         25         32         25         32         25         32         24         33         Mar.*         15         29         12         25         12         25         12         25         12         25         12         25         12         25         12</td><td>intervision         intervision         intervision</td><td>indication       indication       indication</td></t<> <td>indication       indication       indication</td> | Image: Normal state         Image: Normal state | Image: Second state         Image: Second state | Apr.         18         29         24         25         25         32         29         20         28         19         20         28         19         20         28         19         29         20         28         19         29         0.0         18         29         20         28         19         29         20         28         19         29         0.0         15         21         15         25         16         29         15           Jun.         23         29         23         30         24         32         25         32         23         24         32         25         32         23         24         32         25         32         23         24         32         Dec.         11         23         11         23         11         23         11         23         11         23         11         21         12         13           Udalguri         Jul.         24         30         24         32         25         32         25         32         25         32         25         32         24         33         25         32         24         33         24 | Apr.         18         29         24         24         25         32         29         20         28         19         20         28         19         20         28         19         20         28         19         20         28         19         20         20         28         19         20         20         21         21         29         21         29         21         31         21         31           May         20         29         20         29         21         31         22         30         22         29         22         31         22         32         24         31         25         32         24         31         25         32         24         32         Dec.         11         23         11         22         10         23           Mug         24         30         24         32         25         32         25         32         25         32         24         33         Mar.*         15         29         12         25         12         25         12         25         12         25         12         25         12         25         12 | intervision         intervision | indication       indication | indication       indication | interview       interview | Image: Normal and the state of the stat |

	Season	KHARIF SEASON													RABI SEASON															
Zone	District Dist. Grou	Months 1951-55		1961-65		1971-75		1981-85		1991-95		2001-05		60-0007	Months	1951-2 to 1955-6*		1961-2 to 1965-6*		1971-2 to	1975-6*	1981-2 to 1985-6*		1991-2 to 1995-6*		2001-2 to 2005-6*		2005-6 to	2009-10*	
			Mn.	Mx.	Mn. Mx.		Mx.	Mn.	Mx.	Mn.	Mx.	Mn.	Mx.	Mn.	Mx.		Mn.	Mx.	Mn.	Mx.	Mn.	Mx.	Mn.	Mx.	Mn.	Mx.	Mn.	Mx.	Mn.	Mx.
Zone		Apr.	21	32	20 32		31	20	31	21	32	21	31	21	32	Oct.	22	30	22	30	22	31	22	32	22	31	23	31	22	32
Zo	Cachar Karimganj Hailakandi	May	22	31	22 31		31	22	31	23	31	23	31	23	32	Nov	16	28	16	28	17	28	16	30	18	29	18	29	18	29
Barak Valley (BVZ)		Jun.	24	30	24 30		31	25	32	25	31	25	32	25	32	Dec.	12	26	12	25	11	25	13	26	13	26	14	27	13	27
		Jul.	24	30	24 30		31	24	31	25	32	25	32	25	32	Jan.*	9	25	9	24	10	25	11	26	11	25	12	25	12	26
		Aug.	24	31	24 30		31	25	32	25	32	26	33	25	32	Feb.*	12	28	12	27	13	27	13	27	13	26	14	28	14	28
		Sep.	24	31	24 31		31	24	32	25	32	25	32	25	32	Mar.*	17	31	16	31	17	31	18	31	18	30	19	31	18	32
В		Avg.	23	31	23 31		31	23	32	24	32	24	32	24	32	Avg.	15	28	14	28	15	28	15	<i>29</i>	<i>16</i>	28	17	<i>29</i>	<u>16</u>	<i>29</i>
$\widehat{\mathbf{N}}$	Mikir Hills (KarbiAnglong) N.C. Hills	Apr.	18	29	18 28		27	18	27	18	28	18	28	19	29	Oct.	20	28	20	28	20	27	20	29	20	28	20	28	21	29
ΗZ		May	20	28	20 28		27	20	28	20	28	20	29	21	29	Nov.	15	26	15	25	15	25	15	26	16	26	16	26	16	27
Hill Zone (HZ)		Jun.	21	28 28	22 28		28	22	28	22	28	22	28	22	29	Dec.		23 22	11	22	11	21	11	23	11	23	12	23	12	24
Zoi		Jul.	22 22	28	23 29 22 28		28 28	22 23	28 29	23	28 29	23 23	29 29	23 23	29 29	Jan.* Feb.*	9	22	9	22 24	9	21 23	10 12	22 23	10	22 23	10 12	22 24	10 13	23 25
ill î		Aug. Sep.	22	29	$\frac{22}{22}$ $\frac{26}{29}$		28	23	29	23	29	23	29	23	29 29	Mar.*	15	23	15	24	15	25	12	23	16	23 27	12	24	15	23
Η			22	<u>29</u> 28	$\frac{22}{21}$ 28		28	22 21	29 28	<u>22</u> 21	29 29	23	<u>29</u> 29	23 22	<u>29</u> 29		<u>13</u>	20	<u>13</u>	<u>20</u> 25	<u>13</u> 14	<u>20</u> 24	10	27	10 14	27 25	10	27	15	<u>26</u>
		Avg. Apr.	19	20	19 29		30	19	20	19	29	20	29	20	30	Avg. Oct.	20	29	21	29	21	30	21	30	21	<u>23</u> 29	21	29	21	30
		May	20	30	21 29		30	21	30	21	30	20	30	20	30	Nov.	15	27	15	25	16	27	15	27	16	27	16	27	16	27
		Jun.	20	29	23 30		31	24	31	24	30	24	31	24	31	Dec.	11	24	11	23	11	23	11	24	11	24	12	24	12	24
	ASSAM	Jul.	23	29	24 30		31	24	30	24	31	24	31	24	31	Jan.*	8.9	23	9.1	22	9.5	21	9.9	23	10	23	11	23	10	23
	1001101	Aug.	24	30	24 30		31	24	31	24	31	25	31	24	31	Feb.*	12	26	12	25	12	24	12	24	12	24	13	25	13	25
		Sep.	23	30	23 30		30	23	30	23	31	24	31	24	31	Mar.*	15	29	15	29	16	27	16	28	16	28	17	28	16	29
		Avg.	22	<u>30</u>	$\frac{23}{22}  \frac{3}{30}$		30	23	30	23	30	23	30	23	31	Avg.	14	26	14	25	14	25	14	26	15	26	15	26	15	26

Source: Computed from data published by the IMD, Regional Meteorological Centre, Guwahati.

*Note*: (i) Mn and Mx. indicate minimum and maximum temperature respectively, (ii) \* indicates that in the Rabi season, the months January, February and March fall in the immediate next year.

**Appendix-2: concluded**