

Energy Laws of Bangladesh: Calling for Collaboration to Treat in Amenability with the Standard of Acceptance and Application

Riad Mahmud*
Ayesha Saleh**

Abstract

The economy of Bangladesh is shifting its paradigm in an accelerating speed. Such shifting got its recognition from the World Bank in 2014 as the country was listed as Low Middle Income Country. The country targets a much more ambitious goal of becoming a middle-income country by the year of 2021 in its 50th Birthday. As the economy of a country develops its energy needs and priorities change. The trend in these cases is to adopt more efficient technologies with a substantial change in the policy and legal sphere. All the three elements of energy demand, economic activities, population growth and rapid use of technology are fulfilled by Bangladesh. Moreover, Bangladesh is one the worst victim of climate change. The recent trend shows a fundamental shifting from fossil resources friendly policy to sustainable and environment friendly energy policy all over the world. There are around 14 laws regulating the energy sector in Bangladesh. Half of these laws are about forming and dictating the procedures of regulatory bodies governing the energy sector. Firstly, this paper will analyze these laws to judge whether they are efficient to provide support to the economic aims of the country. Secondly the paper will discuss about the mechanism of these laws to figure it out that whether these laws are in compliance with the test of the 2015 United Nations Climate Change Conference, COP 21 or CMP 11, held in Paris and meeting the criteria of sustainable development of this coping era. Lastly the paper will discuss about the need of shifting in policy and relevant legislation in compliance with the trend of the world. Now going with this emerging view this paper is attempting to meet the highly demanding needs of this energy legislature as well as regulatory activities from the very root.

Keywords: Paradigm, Amenability.

* Lecturer, Department of Law, East West University.

** Lecturer, Department of Land Management & Law, Jagannath University.

Research Methodology

The researchers wanted to assess the visions, policies and laws of the Government of the People's Republic of Bangladesh, as it is pursuing the goal of becoming an upper middle income country in every aspect. In this context, the moot question becomes whether the government is in consonance with the international standards? The Paris Agreement of 2015 was specially considered as the benchmark of standards. The rationale behind setting the Paris Agreement as the benchmark is that the agreement is considered to be the first instrument that brings all nations to a common platform to undertake the challenge of combating the climate change and to adapt to the problems that are caused by it.¹ The aim of the agreement is to keep a global temperature rise this century well below 2 degree Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degree Celsius.² As Bangladesh is a signatory party of this convention, the country has obligations to maintain the standards to fulfill the goals of the same convention. The researchers have taken a qualitative approach to find the answer of this question. The Vision 2020, Energy Policies and Laws that regulate the energy sector were considered as the primary source. To have a better understanding different books, journals, news-papers and reports of international organizations were gone through as well. In this aspect, Government reports and reports of international authorities were preferred than other secondary materials. The documents and data were examined to identify any shift in the paradigm of energy mix, i.e. from Gas to Coal and then to the renewables. Analysis of the vision, policies and laws will provide a clear picture of the ruling paradigm in the energy sector and its shift. Moreover, compliance and intention of the Government to comply with the global standards will become visible from the analysis. In this study almost all the pieces of legislation were considered which may led to a more general depiction of the scenario rather providing a concrete specification. The aim of the researchers was to cover the overall paradigm and its compliance. The researchers face difficulties to interpret primary data as there was shortage of authentic secondary data. Even though, the researchers take full responsibility for any kind of unintentional errors.

Introduction

In its Vision 2021 Bangladesh in the south-Asian raising economy declared its ambition to become a Middle-Income country by 2021. In its perspective plan the Government of Bangladesh improvised certain

¹ <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>

² <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>

policies. One of the main sector under this vision is the energy sector where the government undertook ambitious aims and paradigm shifting polices. Moreover the Paris Agreement entered into force on 4th November 2016, which will make the whole world bound to shift its energy paradigm from a highly CO₂ generating energy strategies to a less CO₂ generating renewable energy strategies. So the situation becomes complicated for Bangladesh. Now it is time to check that whether policies regarding energy sector of the Bangladesh are supporting its economic ambition and also to check the coherence of the laws regarding the energy sector with the Paris Agreement. This paper is also designed from a need to make the review of policies whether they are enough to meet the actual energy demand in constant to advancement of the world's energy policies.

Compatibility of the Energy Laws and Policies with the Economic Goals of Vision 2021

Status of Bangladesh as a Middle Income Countries

The World Bank (WB) have categorizes all the countries of the world by dividing them into three major categories on the basis of Gross National Income (GNI)³ namely,

- i) Low income country,
- ii) Middle Income Country,
- iii) High Income Country.

For the current 2017 fiscal year, low-income economies are defined as those with a GNI per capita, calculated using the World Bank Atlas method, of \$1,025 or less in 2015; middle-income economies are those with a GNI per capita between \$1,026 and \$12,475; high-income economies are those with a GNI per capita of \$12,476 or more.⁴ The WB further divided the MIC's into two categories namely the Lower Middle Income Country and Upper Middle Income Country. Lower middle-income economies are those with a GNI per capita between \$1,026 and \$4,035; upper middle-income economies are those with a GNI per capita between \$4,036 and \$12,475.⁵ The Middle income countries are home to 71% of the world's population and 73 percent of the world's poor people.

³ Gross national income (GNI) is defined as the sum of value added by all producers who are residents in a nation, plus any product taxes (minus subsidies) not included in output, plus income received from abroad such as employee compensation and property income.

⁴ *World Bank Country and Lending Groups*. Retrieved November 17, 2016 from Daffodil International University, Web site: <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups>

⁵ *ibid.*

At the same time, these countries are the core of global growth by providing one-third of the global GDP.⁶ On July 1, 2015 Bangladesh was declared as a lower-middle income country by the WB.⁷ As Bangladesh have been declared as a lower-middle income country, it can surely be said that the country is aiming to become an upper-middle income country having a GNI of \$ 4,036 by 2021.

Aims of Bangladesh in terms of Energy Sector to become a Middle Income country

Bangladesh will celebrate its 50th anniversary of independence by the year of 2021. To attain certain goals of development, the Government designed a Vision named Vision 2021 which is associated with the Perspective Plan 2010-2021 where solid development targets have been set. These targets if achieved will transform the socio-economic environment of Bangladesh from a low income economy to the first stages of a middle income economy.⁸

The Perspective Plan of 2010-2021 also sets its goal in the field of 'Energy security'. The plan at first identified the causality between the growth and energy consumption in Bangladesh. The causality according to the plan is a growth to energy consumption causality, because in its executive summary the plan have stated that the country is suffering energy crisis because the demand for energy has grown with higher economic growth while the growth of energy supply is sluggish.⁹ Which means the country managed a consistent Gross Domestic Product (GDP) thought the energy infrastructure failed to provide sufficient support. The urged demand of energy and still growing economy depicts that the causality between growth and energy consumption is a growth to consumption scenario.

The perspective plan identified the solution to be as an urgent but well-crafted sustainable long term strategy to address the energy crisis and increase the energy supply to support Bangladesh's development which can be ensured by a comprehensive energy development strategy

⁶ Overview. Retrieved November 17, 2016 from Daffodil International University, Web site: <http://www.worldbank.org/en/country/mic/overview> , visited 17 November, 2016

⁷ *WB Update Says 10 Countries Move Up in Income Bracket*, Retrieved November 17, 2016 from Daffodil International University, Web site: <http://www.worldbank.org/en/news/press-release/2015/07/01/new-world-bank-update-shows-bangladesh-kenya-myanmar-and-tajikistan-as-middle-income-while-south-sudan-falls-back-to-low-income>,

⁸ General Economic Division, Planning Commission, Government of the Peoples Republic of Bangladesh, *Perspective Plan of Bangladesh 2010-2021, Making Vision 2021 A Reality* April (2012, April), p. 2.

⁹ *ibid*, p. 6.

with approach of supply increase and demand management for a long term period.¹⁰

Aims in short

The long-term strategies that have been identified by the Government to meet the goals of 2021 are as follows:

- Maintaining the supply of energy in equilibrium with the demand is the first priority as the demand of energy supply is growing rapidly.
- The Government is determined to construct new power plants which makes such construction an integral part of the vision.
- Involvement of private sectors in terms of generation of electricity is incorporated in the plan but this step will be taken only on a viable cost price aspects and such a step is also identified as a scope to generate a healthy amount of revenue.
- A decision of paradigm shift in the energy mix from gas to coal is taken. To ensure such shifting the option of using imported coals is considered also.
- Exploring the option of nuclear energy was considered as a must.
- Import of electricity is directed to be ensured by improving regional cooperation.
- A deliberate policy of energy conservation will be considered and effectively used in future.
- Pragmatic approach will be taken for exploration, production and utilization of natural gas and accordingly implement short, medium, and long term programmes.
- As the energy sector is highly import-oriented, transparency must be assured, including through parliamentary oversight. Energy efficiency and performance auditing will be promoted.

Adopted Strategies

Bangladesh has developed an energy strategy up to 2030, by formulating the Power System Master Plan 2010. Fuel diversification is the basis of this Master Plan. It deals with three vital concerns and the issues are namely the economy, the environment, and energy security.

In the economic front the plan aims to solve the issue of power shortages and to establish as well as renovate energy infrastructure as the first set of tasks. The environmental front is facing a complicated scenario where the energy mix of the country is going to shift from gas to

¹⁰ *ibid.*

coal, thus suffering an allegation of sustaining significant damage to the environment. The solution for this problem sorted out by the Government is to use Japan's clean coal technology by improving the thermal efficiency of the power plants. To ensure energy security the plan preaches on an effort to lowering the dependence on imported oil. This is another key factor of shifting energy mix to coal according to which the electricity generation will be transformed from gas to coal. Currently, the main source of energy is gas (60-70 per cent) and oil is in second place (15-30 per cent). This composition is determined to be changed by the plan in a dramatic way. The share of coal in power generation will increase from less than 5 per cent in 2012 to about 50 per cent in 2030. Gas will account for 25 per cent and oil for 5 per cent. Nuclear and hydroelectric—domestic and imported, including wind and solar renewables—will account for 20 per cent. The main reason behind the choice of coal as the main source of energy is its comparatively low and stable price and the discovery of high-quality coal deposits in the northern part of the country.¹¹

Overall Observation on the Compatibility of the Energy Policies and Economic Goals

Successful identification of the causality between growth and consumption

From the outlook of the energy plans and strategies adopted by the Government it is eminent that the country considers itself an economy where the causality runs from economic growth to energy consumption. A study shows that in the case of Bangladesh economic growth leads to higher energy use because economic growth leads to industrial expansion as well as commercial development which in turn causes increased energy consumption.¹² Other Studies depicts that productivity is significantly suffering a negative blow due to power losses in Bangladesh and many other lower middle income countries like Pakistan, Nigeria and others.¹³ Moreover the study also shows that lower middle income

¹¹ Department of Economic and Social Affairs, *World Economic and Social Survey 2013, Sustainable Development Challenges*, E/2013/50/Rev. 1 ST/ESA/344 ISBN 978-92-1-109167-0, New York, United Nations, (2013), p. 153.

¹² Bin Amin, S & Aatur Rahman, AFM (2011), *Energy-Growth Nexus in Bangladesh: An Empirical Study*, International Review of Business Research Papers, Vol. 7, No.2.

¹³ Research And Statistics Branch Working Paper, United Nations Industrial Development Organization, (2010), *Energy Infrastructure and Industrial Development*, Vienna, p.10.

countries also suffers a negative impact on private investment, employment and probability to export due to power interruptions, except when firms own their generators.¹⁴ Therefore the first set of aims and strategies are in exact footing for the achievement of the goals of 2021.

Investment in the Energy Infrastructure: Ambitious projects can boost the economy

Investments on energy infrastructures are not positively related to the industrial and economic growth for all groups of countries. Moreover a positive co-relation between energy infrastructure and economic growth only works for lower-mid income ones. This can be interpreted as a sign of convergence in the sense that energy infrastructure is important for catching up of lower-mid income countries to become an upper-mid income country.¹⁵ Therefore it can surely be said that Bangladesh requires ambitious projects in the energy infrastructure sector to become an upper-middle income country. In its vision the Government considered construction of new power plants and at least one nuclear power plant as a must.

Accordingly, Bangladesh have taken a super ambitious the Rooppur Nuclear Power Plant (RNPP) project. The largest ever undertaken in the country, in terms of cost, technical complexity and risk profile containing two large output (1,200 MWe ~ 3,000 MWth) plants. Bangladesh Atomic Energy Commission (BAEC), on behalf of the Bangladesh government, and Atomstroy Export, on behalf of the Russian government, have signed a contract whereby Russia will provide 90 percent of the anticipated cost of \$12.65 billion for the construction of these two reactors in Rooppur, Pabna. The legal position of the contract is that Bangladesh will be solely responsible for the repayment of the loan with interests. The Nuclear Power Company of Bangladesh (NPCB) was set up under the Nuclear Power Plant Act 2015 to run the plant, though the ownership remains with the BAEC and thereby, with the government of Bangladesh.¹⁶

This earnest effort of Bangladesh Government shows that Bangladesh is betting all its resources in developing its energy infrastructure. The action of the Government is in compliance with the goals but the question remains on the viability of such ambitious projects. Simply, investment in infrastructure leads to contemporaneous growth only if the country is

¹⁴ Reinikka, Ritva and Jakob Svensson (2002), *Coping With Poor Public Capital*, Journal of Development Economics, Vol. 69(1), p. 51-69.

¹⁵ Supra Note, p. 35.

¹⁶ A Rahman, (December 31, 2015), *Ruppur Nuclear Power Plant: Bangladesh's Potential Blackhole*, Retrieved December 4, 2016 from Daffodil International University, Web Page: <http://www.thedailystar.net/op-ed/politics/ruppur-nuclear-power-plant-bangladeshs-potential-blackhole-194017>, visited 4 December.

poised for growth. Investing a huge amount of money in energy infrastructure may not seem viable because there are other sectors having a capability to provide instant growth in GDP. This implies that governments should make such investments in order to relieve the economy from infrastructural bottlenecks.¹⁷ Moreover there is a long-run causality running from GDP to EC for low income countries and bidirectional causality between EC and GDP for the lower middle and upper middle income countries.¹⁸ So the Government shall check this issues before taking more ambitious projects.

Shifting of the Energy Mix: A Complex Decision

Shifting the energy mix of the country to coal can be termed as a complex decision. USA and Europe are jointly using one sixth of the global coal production, which is going to face a 40% and 60% decline by the year 2040 while India and Southeast Asian countries are relying more on coal as an energy source to meet their national growth. On the other hand worlds large producer and consumer of coal China is on a process to shift its energy mix from coal to lower carbon emission technology due to Paris agreement, which caused a cut in coal production resulting a rise of price of coal in the global market after a consecutive four year price decline.¹⁹ Therefore transforming the energy mix from gas & oil to coal may have a negative impact on the presumed growth as the price of electricity will surely maintain coherence with the price of coal in the global market.

Energy Conservation: A Step that should have taken earlier

Lastly, It has been shown in another study that in an economy where energy consumption is determined by economic growth (a country in which the direction of causality runs from economic growth to energy consumption) an energy conservation policy will have very little effect on economic growth.²⁰ The Energy Efficiency and Conservation Master Plan up to 2030 also agrees with such proposition.²¹ Bangladesh is expecting that the gas production will rise at its pick by 2018 and from then the reserve of natural gas will decline. That is why the Government figured it

¹⁷ Supra Note, p. 35-36.

¹⁸ Ilhan Ozturk, Alper Aslan, Huseyin Kalyoncu, (2010), *Energy consumption and economic growth relationship: Evidence from panel data for low and middle income countries*, ELSEVIER, Energy Policy, Vol: 38, p. 4422–4428.

¹⁹ International Energy Agency, (2016), *Executive Summary, World Energy Outlook*, p. 7-8.

²⁰ Supra Note.

²¹ Sustainable and Renewable Energy Development Authority and Power Division of Ministry of Power, Energy and Mineral Resources of Peoples Republic of Bangladesh, (2015), *Energy Efficiency and Conservation Master Plan up to 2030*, p. ab-vi.

out as high time to design a master plan for energy efficiency and conservation till 2030. In 2030, the total primary energy consumption of Bangladesh, excluding transportation and biomass, is estimated to reach over 72 Mtoe, triple the size of 2013. The Government aims to improve energy intensity (national primary energy consumption per gross domestic product/GDP) in 2030 by 20% compared to the 2013 level: A total of 95 million toe (113 billion m³ of gas equivalent) is expected to be saved in the period. Energy savings will amount to BDT 768 billion in total, or an annual average BDT 51 billion at the current weighted average natural gas price. Under this EE&C Master Plan, three EE&C programs will be promoted, namely, Energy Management Program, EE Labeling Program and EE Buildings Program, which will be targeted at large energy consuming entities and equipment in the industrial, residential and commercial sectors. During the period between 2015 and 2030, a total of 5.3 Mtoe/ year or the energy savings of approx. BDT 100 billion/year can be achieved through the adoption and implementation of the three EE&C Programs.²²

Coherence of the Bangladesh Laws Regarding the Energy Sector with the Paris Agreement, 2015

Expansion of UN Strategies towards Efficient energy

The functioning of energy laws gawks for regulating the remaining energy resources within and outside the respective border to maintain all these in a structured way, where single amount of them could not be discarded. The laws related to energy are mostly scattered in different laws in Bangladesh. Bangladesh Energy Regulatory Commission was formed to make a proper regulation of the existing and newly made laws, but in this paper it has been identified that there is an extreme necessity to codify them or to compile all the relevant laws in a consecutive order.

On 25th September of 2015- leaders of 193 countries of the world unanimously adopted the post-2015 international development agenda through Sustainable Development Goals (SDGs) for the period of 2015-2030²³ with 17 goals and 169 targets. Its No. 7 of the beset goal²⁴ is thriving to-

1. Update energy affordable, reliable, sustainable and modern for all.
2. Make a greater Percentage of renewable energy in energy mix globally;

²² *ibid.*

²³ Sustainable Development Goals, 17 Goals To Transform Our World, Retrieved on December 10, 2016, from Daffodil International University, Web Page: <http://www.un.org/sustainabledevelopment/sustainable-development-goals/>

²⁴ *ibid.*

3. Multiply the energy efficiency improvement globally through renewable energy, energy efficiency and advanced & cleaner fossil-fuel technology, and promote investment in energy technology through expanding modern and sustainable energy services.

Dissecting the term '*affordable*' worth to have easier access in using manufactured and natural energy with less cost and less formalities. 'Affordable energy' is also used as a justification by advocates of nuclear energy, energy efficiency, combined heat and power and renewables.²⁵ 'Millions of households are being ripped off by the big energy firms'- reported by the Daily Mail²⁶ specifying the increasing of market price. The second target point is reliability means fulfilling basic consumer demand for electricity, while being flexible enough to increase output during predicted peaks.²⁷

Sustainable energy is a form of energy that meet our today's demand of energy without putting them in danger of getting expired or depleted and can be used over and over again.²⁸ Bangladesh's sustainable development activities are focusing on the United Nations Millennium Development Goals (MDG) which is made aiming to develop the middle income countries of the world. Here, modern energy includes renewable energy.

The Paris Agreement, 2015: The Convention Which Made the Whole World Bound

After all the discussions related to SDGs goals together with MDGs, the latest segment is the Paris Agreement on climate change through United Nations Climate Change Conference (COP21), 2015; which specially focuses on reduction of carbon emission of this world by the respective countries. This Agreement was made by the Conference of Parties (COP) of UN at 12 December, 2015 through UNFCCC in conjunction with COP 21 and CMP 11. Up to 9th December, 2016, among 194 Parties to the Convention, only 117 Parties have ratified it (lastly on 9th December

²⁵ Richard Black, ECIU Director, 'Affordable energy': What's that?, Energy and Climate Intelligence Unit, UK, published in 02 September, 2014.

²⁶ <http://www.dailymail.co.uk/>, 01 September, 2014; visited 5 November, 2016

²⁷ EDFENERGY, *Energy challenges: Reliability*, Retrieved on December 10, 2016, from Daffodil International University, Web Page: <https://www.edfenergy.com/future-energy/challenges/reliability>

²⁸ Rinkesh, *what is Sustainable Energy?*, Retrieved on December 10, 2016, from Daffodil International University, Web Page: <http://www.conserve-energy-future.com/SustainableEnergy.php>

Zambia has ratified). Bangladesh becomes a party of this agreement on 21 September 2016.²⁹

It has been adopted with an ambitious collective goal to hold warming well below 2 degrees with efforts to limit warming to 1.5 degrees; an aim for greenhouse gas emissions.³⁰ The agreement necessarily implies large carbon cuts around the world, with some scientists pointing to a figure of zero emissions by the year 2070.³¹ Article 4.1 of the Paris Agreement, 2015 to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century, on the basis of equity, and in the context of sustainable development and efforts to eradicate poverty.³²

A requirement for mitigation measures of individual countries is in Nationally Determined Contributions (NDCs); Each Party shall prepare, communicate and maintain successive NDCs, communicated at a minimum every five years. Developed countries should adopt economy-wide absolute emission reduction targets immediately, and developing countries should aim for this over time.³³ Through the Paris Agreement the target amount of carbon emission is to publish by the party states, and whoever wants to ratify it, Intended Nationally Determined contributions (INDCs) should be provided to the United Nations Framework Convention on Climate Change (UNFCCC). After coping with the COP21 the party intended to comply with the zero-carbon increase, it has to convert its INDCs to NDCs by formatting the former one compliant to their domestic laws and policies existing; obviously after determining the same. Countries will be expected to submit an updated NDC every five years, which will represent a progression beyond the country's then current NDC to reflect its highest possible ambition.

Through 5-8 November, the first session of the Conference of the Parties serving as the Meeting of the Parties to the Paris Agreement takes

²⁹ *Paris agreement short glossary*, (2015), Paris, Retrieved on November 17, 2016, from Daffodil International University, Web Page: <http://www.cop21.gouv.fr/en/les-mots-de-laccord/>

³⁰ Climate Focus, (December 28, 2015), *The Paris Agreement Summary, Climate Focus Client Brief on the Paris Agreement III*, Retrieved on November 17, 2016, from Daffodil International University, Web Page: <http://www.climatefocus.com/sites/default/files/20151228%20COP%2021%20briefing%20FIN.pdf>

³¹ Jyotsna Venkatesh, (December 17, 2015), *COP21: Summary and Review*, Canadian International Development Platform, Retrieved on November 13, 2016, from Daffodil International University, Web Page: <http://cidpnsi.ca/cop21-summary-and-review/>

³² Article 4.1 of Paris Agreement, 2015

³³ Article 4.4 of Paris Agreement, 2015

place in Marrakech in conjunction with COP 22 and CMP 12 thus on 5 October 2016, the threshold for entry into force of the Paris Agreement was achieved.³⁴

Amenability of Bangladeshi Laws and Their Application with UN Standard:

The followings are the relevant authorities for the energy management in Bangladesh:

- Power Division, Ministry of Power, Energy & Mineral Resources (MPEMR) is at the leading position to deal with all the collaborative actions regarding power and energy sector. MPEMR is supervising the followings:

A) Regulating bodies:

- i) The Bangladesh Energy Regulatory Commission (BERC),

B) Developing bodies:

- i) Bangladesh Power Development Board (BPDB).
- ii) Electricity Generation Company of Bangladesh (EGCB),
- iii) North West Power Generation Company Ltd. (NWPGL),
- iv) Independent Power Producers (IPPs),
- v) Transmission Power Grid Company of Bangladesh Ltd (PGCB);

C) Distributary bodies:

- i) Bangladesh Power Development Board (BPDB),
- ii) Dhaka Power Distribution Company (DPDC),
- iii) Dhaka Electric Supply Company Ltd (DESCO),
- iv) West Zone Power Distribution Company (WZPDC),
and
- v) Rural Electrification Board (REB).

The Bangladesh Environment Conservation Act of 1995(amended in 2011), the Environment Policy of Bangladesh, 1992; and the major step taken in fifteen amendment of Bangladesh's constitution in Article 18A stating that "the state shall endeavor to protect and improve the environment and to preserve and safeguard the natural resources, biodiversity, wetlands, forests and wildlife for the present and future

³⁴ United Nation, *Framework Convention on Climate Change*, Retrieved on December 11, 2016 from Daffodil International University, Web Page: http://unfccc.int/paris_agreement/items/9485.php, visited 11 December, 2016

citizens” hiking to ensure sustainable development through limiting carbon emission.

Fuel intake from energy efficiency improvements evades Green House Gas emissions. Cumulative savings since 2000 were 13 GtCO₂ greater than the 2015 emissions of all International Energy Agency (IEA) countries. This effect emphasizes the importance of seemingly small efficiency improvements such as in appliances and building envelopes; stacked together, they can significantly reduce GHGs over the medium term.³⁵

Bangladesh people need more energy for better and convenient life, where the drive is not “reduction of energy”, rather “rational energy use”.³⁶ Government of Bangladesh is trying to achieve the motto through the mentioned strategy given at the National Investment Plan, 2015, to provide energy security by tapping all conventional and non-conventional sources of energy. The existing laws can be traced out consecutively:

Bangladesh Energy Regulatory Commission Act, 2003 (Amended in 2010)

Through establishing an independent regulatory body for the energy sector to determine the energy efficiency and to conduct energy audits, this Act ensures the efficient use of energy. It has the aim of renewable energy constituting 5% of total generation by 2015 and 10% by 2020, of which produce will be done 50% from coal. Bangladesh is facilitating public and private sector investments for renewable energy, encourage efficient and sustainable use of renewable energy, and promote clean energy through this said Act.

The Electricity Act, 1910 (Amended in 2012)

Coming into force at the golden era of electricity dispersion this Act has been doing tremendous tasks. But later on proper modification or what we call amendment was done hardly up to dated. Requirements of new tariff plan and renewable energy policy were lacking in this said Act. Proper authority to check and develop of this sector need to be certain and local investigators be defined to ensure the dispersing of electricity through the most accessible mode. Though our government has already taken steps for the compilations by passing the National Energy Policy 1996 (amended in 2008) and the Renewable Energy Policy of Bangladesh, 2008; the notable Electricity Act is lacking its upshots being

³⁵International Energy Agency, (2016), *Energy Efficiency Market Report*, p.33.

³⁶Sustainable and Renewable Energy Development Authority (SREDA) and Power Division M inistry of Power, Energy and Mineral Resources Government of the People’s Republic of Bangladesh, (March 2015), *Energy Efficiency and Conservation Master Plan up to 2030*, p.23.

so neglected whereas our neighbor country India has already make a successful amendment of their Electricity Act in 2003 with a broader modification, later on it has been taken into consideration to make an amended version at 2014. Lastly in 2012 it has come into operation with different level stakeholders' concerned words with a large modification with insertion of its executing extent and putting the themes of power of modern era.

The National Energy Policy 1996 updated in 2008

This policy made by a respective authority³⁷ is playing a significant role as a complied policy which was aiming to meet the energy demands of different spheres along with some major development strategies. Even with a high ambition to ensure total electrification that said policy is still not enough for implementation. Where the electricity demand both in public and private sector is around 13000 MW, then the maximum served demand is only 9036 MW as on June 06, 2016 which is 69.51% of the demand.³⁸ Only 55.26 percent of the households have access to electricity with 90.10 percent households in urban and 42.49 percent households in rural areas³⁹. Being relatively poor in supply the demand can be fulfilled through increasing production through power grid which is regulated by the Power Grid Company of Bangladesh (PGCB) as well as by Bangladesh Energy Regulation Commission Electricity Grid Code (Grid Code), 2012⁴⁰ along with a regulative distribution method BPDB, EGCB and NWPGL, DESA, DESCO.

Industries and Energy Division , Bangladesh Planning Commission by its two wings a) Oil, Gas, and Natural Resources Wing & b) Power Wing plans for identifying comparative advantages of the economy through growth of locally produced energy, establishment of national gas grid, development of mineral resources. The Power Wing works towards producing an additional 3,319 Mega-Watt to meet local demands allotting of Tk. 8,836,10 core in Fifth Five-Year Plan and lastly by up gradation of private sector ventures.⁴¹

³⁷Power Cell, Power Division, Ministry of Power, Energy and Mineral Resources

³⁸ Bangladesh Power Development Board, *Present Installed Generation Capacity (MW) as on 01 December, 2016*, Retrieved on December 2, 2016 from Daffodil International University, Web Page: http://www.bpdb.gov.bd/bpdb/index.php?option=com_content&view=article&id=5&Itemid=6

³⁹ Bangladesh Bureau of Statistics, *Household Income and Expenditure Survey 2010*, (2010), p.24.

⁴⁰ Approved in 02 January, 2012; by Bangladesh Energy Regulation Commission.

⁴¹ <http://www.plancomm.gov.bd/industries-and-energy-division/>, visited in 3 November, 2016

The 7th Five Year Plan Core Targets provides a broad outline underlying the Perspective Plan to promote sustainable development, focusing on globalization, ensuring supply of energy, and pursue sustainable development⁴². In that Plan Bangladesh is planning for productive forest coverage to 20%, improve air quality in Dhaka and other large cities and enact Clean Air Act, promote Zero discharge of industrial effluents, environmental, Climate Change and disaster risk reduction considerations.⁴³ After some remarkable achievements mentioned below these targets are made reasonably to meet the Vision 2021.

Achievement after the Sixth Five Year Plan FY2010-FY2015 is here remarkable for-

- To go nearby the targeted 24000 MW power generation by 2021 according to Vision 2021 program is going to be achieved where we have attained to 13095 MW till December 2016.
- Reduction of system loss up to 13.03% whereas it was targeted to 13.70%;
- And the most remarkable was access to electricity for overall population has been achieved 72% that is more than the targeted 71%.
- Consumption level by mass people has been minimized to 16.4% where the target percentage was 14.⁴⁴

This 7th Plan is equipped to make a sustainable environment to live in a compoundable era. To make it happening, this said Plan looks for remaking the ‘Energy and Infrastructure’⁴⁵ sector through-

Installed Generation Capacity

Increasing installed Generation Capacity of electricity to 23,000 MW by 2020 and by the end of 2030 the target is 40,000 MW which is 13,540 MW after completion of the 6th Five Year Plan. Also it is to be noted that the said target is deemed to be achieved 50% through generating electricity from coal, which may be assumed as 20,000 MW. The objective of the power sector is to meet projected by 2021 which will ensure electricity for all in the country.⁴⁶

⁴² General Economics Division (GED), Bangladesh Planning Commission, (December, 2015), *Seventh Five Year Plan FY2016-FY2020*, p.23.

⁴³ *ibid*, p.307-338

⁴⁴ General Economics Division (GED), Bangladesh Planning Commission, (December, 2009), *Sixth Five Year Plan FY2010-FY2015*.

⁴⁵ *ibid*, Pg-27

⁴⁶ The Ministry of Environment and Forest, (2013), *National Sustainable Development Strategy 2010-21*, p.67.

Energy Laws of Bangladesh

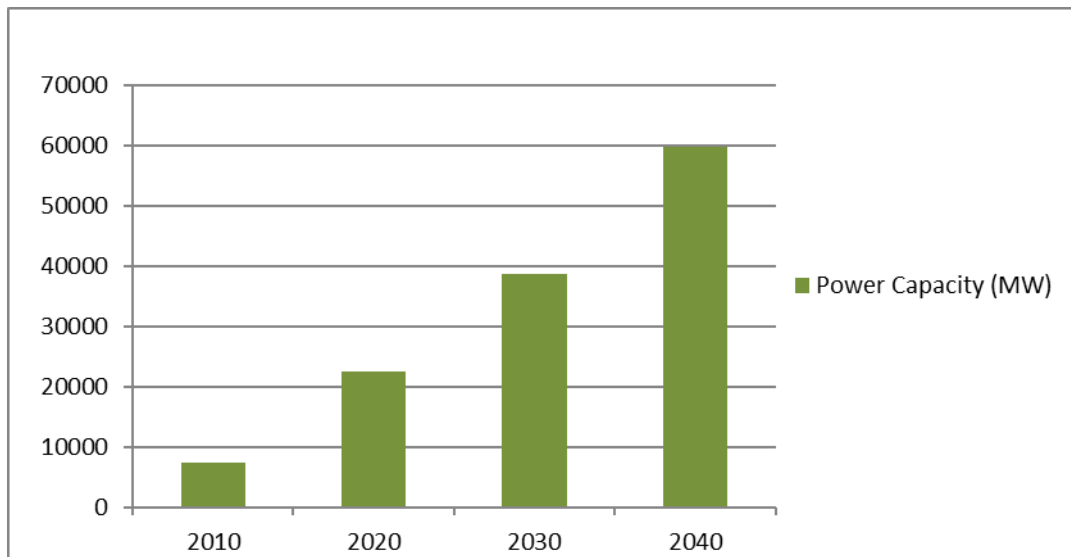


Figure: Development to power generation capacity of Bangladesh Government⁴⁷

Energy Mix:

In line with the motive to increase substantially the share of renewable energy in the global energy mix by 2030, through United Nations Sustainable Development Goals this Seventh Five Year Plan FY2016-FY2020 includes ensuring such for energy security.

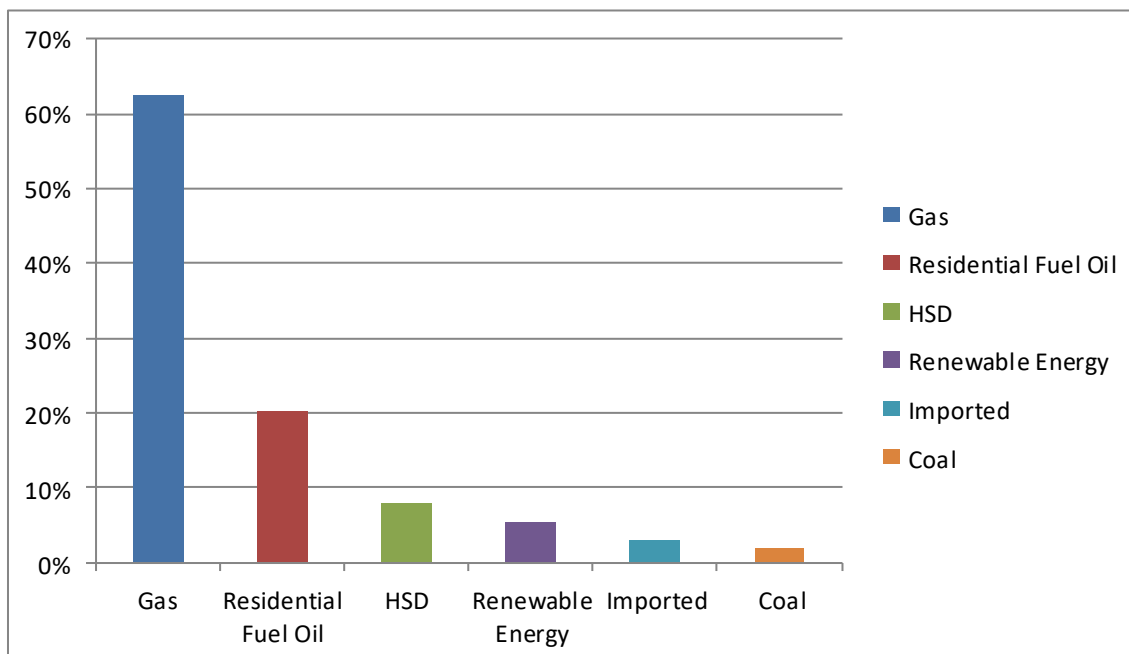


Figure 1: Shares of Total Generation of Energy from Fuel (present)⁴⁸

⁴⁷ The chart has been made by the authors from the data of BPDB.

⁴⁸ Sustainable & Renewable Energy Development Authority, Power Division Ministry of Power, Energy and Mineral Resources, Government of the Peoples Republic of Bangladesh, Retrieved on November 20 from Daffodil International University, Web Page: <http://www.sreda.gov.bd/>

Though having this recent statistics Bangladesh is trying to put emphasis on coal and renewables rather than the limited stock of gas. For implementing them the power sector strategies includes-

- Enhancing power supply,
- Reducing dependency on gas for power generation through switching over to coal, nuclear power and other cleaner technology,

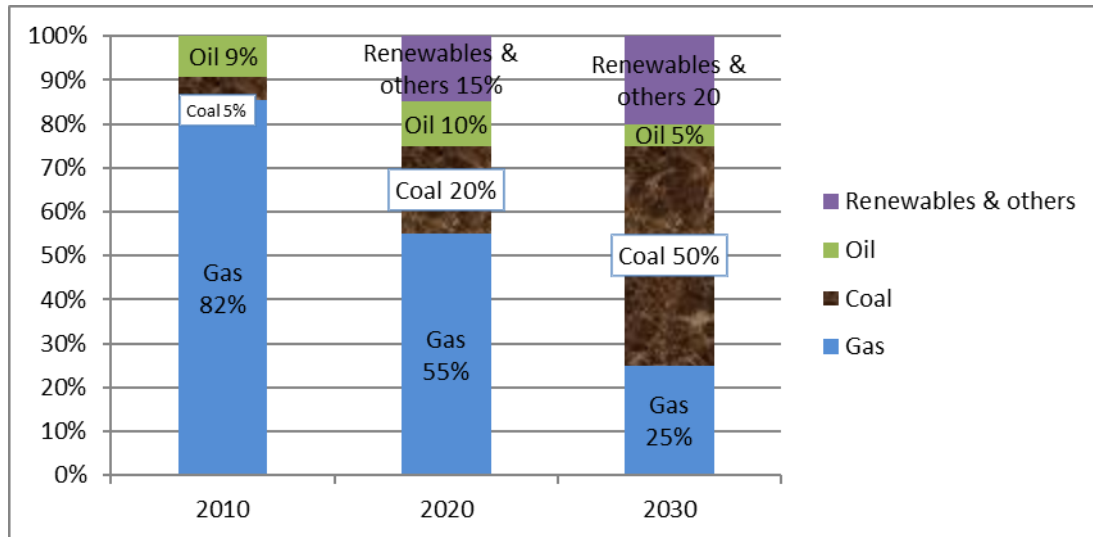


Figure: Action Plan for less dependency on Gas gradually⁴⁹

- Adjusting prices of electricity and liquid fuel to reflect cost of production
- Improved service delivery and system loss reduction,
- Use of environment friendly technologies in power generation.⁵⁰

Exposure of Electricity

Electricity coverage to be increased to 96 from 74 percent with uninterrupted supply to industries after the completion of the Sixth Five Year Plan complying with reduction of system loss from 13% to 9% by improving energy efficiency and conservation. Further at the latest stage Bangladesh is going to celebrate the Power & Energy Week 2016 on achievement of the generation capacity of electricity at the level of 15,000MW.⁵¹

⁴⁹ Department of Economic and Social Affairs, United Nations, (2013), World Economic and Social Survey, *Sustainable Development Challenges*, E/2013/50/Rev. 1 ST/ESA/344 ISBN 978-92-1-109167-0, p.153.

⁵⁰ Sustainable & Renewable Energy Development Authority Power Division Ministry of Power, Energy, & Mineral Resources Government of the People's Republic of Bangladesh, (October 2015), *Investment Plan for Bangladesh*, p.2.

⁵¹ Aminur Rahman Rasel, *Power and Energy Week begins on Wednesday*, Retrieved on December 8, 2016, from Daffodil International University, Web page:

In natural gas sector our daily production up to 2015 was 2770 million cubic feet per day where the daily demand is 500 MMCFD which is amounting less up to 3200 MMCFD. We have already consumed 48.01% of our total recoverable natural gas till 2015, the rate of consumption where escalating to a faster motion.⁵²

Renewable Energy Policy of Bangladesh, 2008

This Policy targeted for 5% of total energy from renewable energy by 2015, 10% of total energy by 2020; 500 MW Solar Program and Wind Resource Mapping Program will facilitate to reach the goal.⁵³ Upgrading the usage of renewable sources Bangladesh has initiated more ventures to utilize solar products, such as- solar panel, solar cooker, solar light etc.; whereas solar cooker or improved cooking stove is one of the most appropriate way to make it environment friendly with the motive to save energy. The gap between having access to it and saving energy lies into levying of more import tax and duties on Improved Cooking Stove, reduction of which can led to have a greater access to have it for the domestic users.

There are six categories of renewable energy sources: hydraulic, wind, solar, marine, biomass and geothermal where the 7th plan will focus on two main areas of renewable energy: solar and wind power. For the 7th Plan the Government has adopted the 500WM Solar Program broken down into 340MW of Commercial projects including Solar Park, Solar Irrigation, Solar Mini-grid/micro-grid, and (d) Solar rooftop and 160MW of social sector.

Government has initiated process⁵⁴ to carry out Wind Resource Assessment (WRA) at five different places⁵⁵ and a 15 MW Wind Power Plant will be installed at six places.⁵⁶ The recent steps are showing the walk towards such target by inaugurating Rooppur Nuclear Power Plant Project; Rampal Coal Power Project; Matarbari Coal Power Project. The cabinet recently approved the draft of "The Joint Venture Agreement between Bangladesh Power Development Board (BPDB) and Consortium

<http://www.dhakatribune.com/bangladesh/power-energy/2016/12/07/power-energy-week-begins-today/>

⁵² General Economics Division(GED), Bangladesh Planning Commission, (December, 2015), *Seventh Five Year Plan FY2016-FY2020*, p.310.

⁵³ Md. Tarikul Alam, Dr. Md. Rafiqul Islam, (November 17, 2015), *A Paradigm Shift in Bangladesh Energy Sector towards SDG-7: A Few Insights of Energy Statistics in Bangladesh*, presented in Incheon, South Korea, p.43.

⁵⁴ Supra Note, p.333.

⁵⁵ Feni, Chittagong, Cox's Bazar, Barguna and Kurigram.

⁵⁶ Anowara, Inani, Sitakundo, Chandpur, Rajshahi, Gaibandha & Kuakata.

of two Malaysian companies to set up 1320 MW capacity Ultra super Critical Coal-based thermal power plant at Moheshkhali of Cox's Bazar.⁵⁷

Sustainable and Renewable Energy Development Authority Act (2012)

With a clear objective to mitigate climate change issue Sustainable and Renewable Energy Development Authority (SREDA) has the motto to increase the share of renewable energy in energy mix of our country though having lack of standard feed-in tariff⁵⁸, slow implementation⁵⁹ and limited technical capacity to design, install, operate, manage and maintain renewable energy. Beside the regulation concerned with regulative use of existing limited energy, renewable energy is creating more opportunities for the stakeholders as well as consumers. Assessing all them may be one of the most useful sectors in Bangladesh.

Through Sustainable and Renewable Energy Development Authority Act (2012), Bangladesh is trying to cope up with this paradigm shifting method to make a sustainable energy bank. SREDA has already initiated 42 projects in co-operation with 10 leading private and public energy developing bodies of Bangladesh including Bangladesh Power Development Board, Bangladesh Rural Electrification Board, North West Power Generation Co. Ltd., Rural Power Company Ltd., and DESCO.

Specialization

- Exemption from Corporate Income Tax for 10 years has been made for generating electricity from renewable energy projects
- 5% VAT has been exempted for renewable energy equipment
- Duty exemption on solar projects.

⁵⁷ Bangladesh Awami League, (at 14:20, May 30, 2016), *Cabinet Approves Draft 'BSTI' Law, 2016*, Retrieved on November 13, 2016 from Daffodil International University, Web Page: <https://www.albd.org/index.php/en/updates/news/3747-cabinet-approves-draft-of-bsti-law,-2016>

⁵⁸Sustainable and Renewable Energy Development Authority (SREDA) of Bangladesh, Role and Responsibility, Retrieved on 7 December from Daffodil International University, Web Page: https://d335hnnegk3szv.cloudfront.net/wp-content/uploads/sites/837/2015/06/Siddique-Zobair_SREDA-Activities-Copy.pdf

⁵⁹ Michal Nachmany, Sam Fankhauser, Jana Davidová, Nick Kingsmill, Tucker Landesman, Hitomi Roppongi, Philip Schleifer, Joana Setzer, Amelia Sharman, C. Stolle Singleton, Jayaraj Sundaresan and Terry Townshend, (2015), *Climate Change Legislation In Bangladesh, An Excerpt From The 2015 Global Climate Legislation Study A Review Of Climate Change Legislation In 99 Countries*, p.7. Retrieved on November 30, 2016, from Daffodil International University, Web Page: www.lse.ac.uk/GranthamInstitute/legislation/

- Calling for Energy managers, who should be a cadre to run Energy Efficiency & Conservation actions in the factory and buildings including in-house energy audits.⁶⁰

The Remarkable Projects of Bangladesh Government in Energy Sector:

Being highly climate vulnerable country with carbon emissions of less than 0.35% of global emissions⁶¹, Bangladesh's timeframe for implementing INDC is 2020-2030, which has an aim to contribute to limit some gases liable for climate change, i.e. Carbon dioxide, methane, nitrous oxide, Hydro fluorocarbons, per fluorocarbons and Sulphur Hexafluoride. Bangladesh projected to reduce its Green House Gas emissions in the power, transport, and industry sectors by 12 MtCO₂e by 2030 solely and with collaborative support aims to meet 36 MtCO₂e by 2030.⁶²

In Bangladesh existing laws and plans to implement INDC can be traced out from-

- Electric Generation Regulation & Methodology 2007
- The Bangladesh Petroleum Act, 1974
- The Bangladesh Petroleum Corporation Ordinance, 1976
- The Gas Act, 2010
- Bangladesh Energy Regulation Commission Electricity Grid Code (Grid Code), 2012
- BERC Disputes Settlement (Amendment) Regulations, 2016
- Bangladesh Energy Regulatory Commission Electricity Distribution Tariff Regulation, 2008.
- Bangladesh Energy Regulatory Commission Gas Transmission Tariff Regulation, 2008.
- Bangladesh Energy Regulatory Commission Natural Gas Transmission, Tariff Regulations, 2010
- The Bangladesh Climate Change Strategy and Action Plan (BCCSAP), 2009

⁶⁰ Sustainable and Renewable Energy Development Authority (SREDA) and Power Division Ministry of Power, Energy and Mineral Resources Government of the People's Republic of Bangladesh, (March 2015), *Energy Efficiency and Conservation Master Plan up to 2030*, p.48.

⁶¹ Ministry of Environment and Forests (MOEF), Government of the People's Republic of Bangladesh, (September, 2015), *Intended Nationally Determined Contributions (INDC)*, p.2.

⁶² *ibid*, p.8.

- The Renewable Energy Policy 2008,
- The Energy Efficiency and Conservation Master Plan (EE&C Master Plan),
- Vision 2021
- The Seventh Five Year Plan, 2015 by Ministry of Planning
- The National Disaster Management Plan and
- The Disaster Management Act, 2012
- Private Sector Power Generation Policy, 1996
- The Bangladesh Atomic Energy Commission Order, 1973 (President's Order).

These projects and plans are looking for better energy efficiency through a large number of programs at different spheres. The objectives behind them can be summarized as-

- 100% of new coal based power plants use super-critical technology by 2030
- 1000 MW of utility-scale solar power plant
- 10% energy consumption reduction in the industry sector compared to the business as usual
- 70% market share of improved biomass cook stoves, reaching 20 million households in 2030
- Converted use of LPG to biogas.⁶³

The latest step taken by Bangladesh in May, 2016 is approval of "The Bangladesh Atomic Energy Commission Law, 2016" in principle through revisiting The Bangladesh Atomic Energy Commission Order, 1973 (President's Order) to this end to make the law a full-fledged one.⁶⁴

Recommendations

Using the Emission Cap and Carbon Taxing

The concepts of Carbon Taxing and Emission Cap are in favor of Bangladesh. The MARKAL model simulations depicted that a policy package of mandated reductions in CO₂ emission and carbon taxes directly decreases the use of high-carbon fossil-based technologies in

⁶³ *ibid*, p. 8.

⁶⁴ Bangladesh Awami League, (at 14:20, May, 2016), *Cabinet Approves Draft 'BSTI' Law, published on Monday*, Retrieved on 13 November, 2016, from Daffodil International University, Web Page: <https://www.albd.org/index.php/en/updates/news/3747-cabinet-approves-draft-of-bsti-law,-2016>

favor of clean renewable energy technologies. A cumulative CO₂ emissions reduction target of 10 and 20 per cent reduces cumulative net energy imports by 39-65 per cent, while a carbon tax of 2,500 taka/ton reduces imports by 37 per cent by 2035 which will decrease its total primary energy use by 5-22 per cent and at the same time managing economic growth at 6.8 per cent per year. Thus, the adoption of low-carbon policies could allow the country to reduce emissions, guarantee energy security, increase efficiency and expand the use of renewables, with the added well-known health benefits.⁶⁵

“Prosumption” Act

"Prosumer" emancipate the idea of merging the role of producers and consumers.⁶⁶ Continued falling costs of solar photovoltaic panels and other on-site generation technologies, sustained high retail prices, and increasingly innovative financing and product packaging from energy services companies leads to the widespread adoption of on-site generation. Residential consumers in particular are empowered by their choice to become more actively engaged in their electricity supply and call themselves ‘prosumers’.⁶⁷ The Renewable Energy Policy obligates the renewable energy share to be 10% by 2020 that means it would be 2,000 MW. To meet the target, government has already taken a number of projects. Wind resource mapping is going on in 13 locations⁶⁸ and 8 solar mini grids with a cumulative capacity of 1.62 MW has been installed and are in operation. 15 more solar mini grid projects are under implementation with a cumulative capacity of 2.8 MW.⁶⁹ In future this type of renewable energy projects can be undertaken by the private organizations. The possible situation of one home one power generation unit is not distant. This will turn the traditional energy consumers to the producers. In combination, both developments facilitated the introduction of decentralize electricity production and, even more interestingly, also

⁶⁵ A. Mondala, , J Mathur, and M Denicha, (April 2011), *Impacts of CO2 emission constraints on technology selection and energy resources for power generation in Bangladesh*, Energy Policy, Vol: 39, Issue 4, p.2043–2050.

⁶⁶ Alvin Toffler, *The Third Wave*, Bantam Book with William Morrow & Co., Inc.1980.

⁶⁷ CSIRO, (December 2013), *Change and Choice, The Future Grid Forum’s analysis of Australia’s potential electricity pathways to 2050*, Australia, p.4.

⁶⁸ Sustainable & Renewable Energy Development Authority, Ministry of Power, Energy and Mineral resources Government of the Peoples Republic Of Bangladesh, *Future plans and Target (Renewable Energy)*, Retrieved on December 13, 2016, from Daffodil International University, Web Page: <http://www.sreda.gov.bd/index.php/site/page/7b9b-49f7-69fb-40fd-45a3-9e6c-b391-7ba5-31f9-13ee>

⁶⁹ *ibid.*

led to a situation where consumers are starting to generate their own electricity and selling any surplus of electricity to their energy supplier. This phenomenon is often referred to as “prosumption”. The term “prosumption” is an artificial term constructed from the words production and consumption. Thus, the term describes persons connected to the grid, which produce electricity for their own use, thereby becoming partly self-sufficient, but still remaining dependent on electricity supply by the grid.⁷⁰ The concept of “Prosumer” and “Prosumption” is totally absent in the policies and plans of Bangladesh. Therefore the Government shall focus on these concepts. The window of “Prosumption” can lead to new legal and technological vacuum. The Government and energy experts shall work together to create the rules and regulation related to “Prosumption” to deal this non-distant situation.

Need a prospective shifting

Bangladesh is shifting to a new era with the target fixed by its planning division to meet the present and upgrading challenges of the world, but we are focusing on the point that still the existing policies are speaking for shifting on coal and renewable energy from gas, where coal is largely contributory. But here the need to shift for renewables strongly to be regarded, because in that place we are still heading back for a better plan making. China’s power generation comes from sources other than coal, whose share in the power mix falls from almost three-quarters today to less than 45% in 2040 and its energy-related CO₂ emissions is slightly crossing the lime line. In India, coal’s share in the power mix drops from 75% to 55% over the period to 2040.⁷¹ By the end of 2040 we will need a further shifting when the world is already thinking about the far future. So instead of shifting twice we may start the same from the day next.

Codification of Energy Law

Having a large amount of regulating policies Bangladesh is lacking in a fixed or we may say codified law with the concern of legislature. The existing laws are still lacking in strict regulation in energy sector to move on for a renewable energy era rather than other non-renewables which we are specifying. Having too many guardians may vitiate all the mottos still we are possessing and the possible ones. So a strict codification along with fixed regulating bodies can be nominated for the existence of energy sector.

⁷⁰ Future Learn, *Solving the Energy Puzzle, Smart grids from a legal perspective*, Retrieved on 13 December, 2016 from Daffodil International University, Web Page: <https://www.futurelearn.com/courses/energy-transition/3/steps/118817>, visited on 13 December, 2016.

⁷¹International Energy Agency, (2016), *Executive Summary, World Energy Outlook*, p.2.

Up gradation of solar energy

The roof top solar PV systems are also being introduced in the country with the current installed capacity estimated at 32 MW. Opportunely, Bangladesh is situated between 20°43' north and 26°38' north latitude, in a very suitable position in respect of the utilization of solar energy where greatest amount is available between two broad bands encircling the earth between 15° and 35° latitude north and south.⁷²

Conclusion

Energy law, the ongoing perception has a wider outlook to make the energy using efficiently. As a lower middle economic country Bangladesh has already made so many policies and plans for further development to meet the goals bequeathing to the international standard. In this paper testing of the leading laws in Bangladesh energy sector in comparison with the international strategies indicates a node to overhaul the shifting aim of our energy planners. The next phase of restructuring the mentioned policies- activation should be recommended on the basis of that advanced guidance to meet the energy demand on near and far future. Planning Commission of the Government of Bangladesh in collaboration with BERC may take the desired motion to make a wiser shifting for renewable energy sector rather than gas, coal or imported energy. Step for the better energy time be taken by interaction of the leading along with other branches. Here the notable point is there is a crying need to remark the appropriate leading authority to regulate all the affairs of energy sector and to make a codified law to implement that regulation. International collaboration and policies here need to be referred for the better implementation. Again, Bangladesh needs to make their policies up-to-date with the world's economic standard.

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⁷² Nasima Akter, , (July 1997), *Alternative Energy Situation In Bangladesh A Country Review*, Approtech Asia Philippine Social Development Center, Philippines.

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