

Energy Security: Trends and Challenges
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Based on the definition of the energy security it can be said that Bangladesh has to walk a long way to secure its energy sector.

1. INTRODUCTION

The current issue of the Bangladesh Economic Update attempts to reveal current nature of power and energy situation to evaluate the energy security in the country. Shortage of power supply, depletion of gas reserve, and frequent price hikes in energy are not only exerting immense pressure on current production, but also posing a serious threat to energy security.

Energy security is simply defined as the uninterrupted supply of energy from available sources at a reasonable price with even distribution (IEA, 2014; EU 2014). Diversification in power generation capacity, stable price level and infrastructure development determine the secure supply of energy .On the other hand, dependence on concentrated suppliers, lack of expertise, and unfavorable political situation, both the internal and the international can peril the energy security of a country.

Based on the definition of the energy security, it can be said that Bangladesh has to walk a long way to secure its energy sector. Increase in population, expansion of production in agriculture and industry, fast urbanisation, and development in road and transportation have increased the demand for energy but the supply is not sufficient to satisfy the demand. So, shortage in energy supply is persisting for a long time. Energy supply is neither available nor affordable to all and its sources are not reliable. Electricity is the most typical form of energy in the country which is exceedingly depends on gas for production. On the other hand, gas is not a reliable source as its reserve is limited and its extensive use will deplete the reserve. Hence, the economy largely depends on the imported petroleum for which a large amount of foreign exchange is spent. Frequent power tariff hikes during last five fiscal years have caused the entrepreneurs in both agriculture and industry to face the challenge of cost-push in production. Unavailability, unaffordability and lack of access to reliable sources of energy have been exerting immense adverse impact on the economy through hindering agricultural and industrial production and development.

Energy security can be defined as the uninterrupted supply of energy from available sources at an affordable price (IEA, 2014).

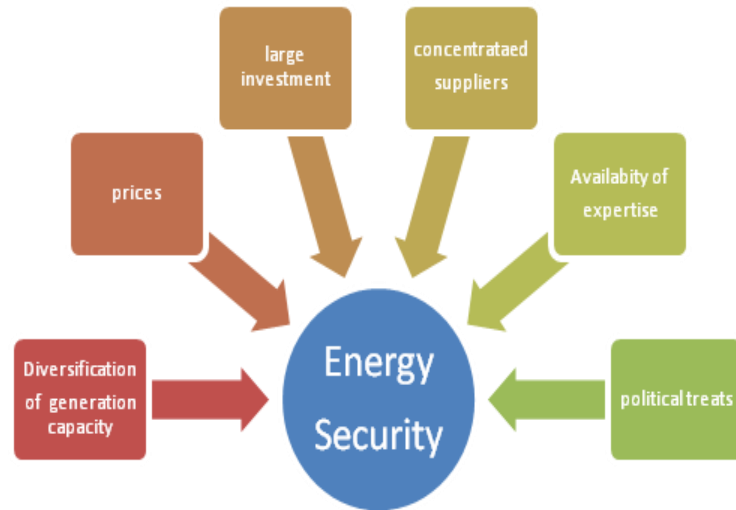
As it is not possible to include all the energy sources, the current trends of the two main energy sources- power and gas will be discussed on the basis of three indicators i.e. availability, affordability and sources of energy. Next section focuses on future prediction or projection to assess the energy security.

2. DEFINITION OF ENERGY SECURITY AND ENERGY-GROWTH LINKAGES

Having a secure supply of energy is crucial for the well being of the citizen and growth of an economy. Energy security became a major concern all over the world mainly after the oil crisis in 1973. Energy security can be defined as the uninterrupted supply of energy from available sources at an affordable price(IEA,2014). Broadly, when energy is readily available, affordable and provided from a reliable source (now and for the future) at a stable price without vulnerability to any economic and political disruption; the security of energy is ensured (WCA, 2014). Energy security has many aspects: long-term energy security mainly deals with timely investments to supply energy in line with economic developments and environmental needs. On the other hand, short-term energy security focuses on the ability of the energy system to react promptly to sudden changes in the supply-demand balance (IEA,2014).

There are some drivers that ensure the security of energy. Diversification in power generation capacity and ensuring the energy supply available to all at a reasonable price are the two salient conditions of energy security. Significant amount of investment, developed infrastructure and well trained expertise group are needed for transmission and the distribution of the energy. There are no countries in the world which encompass all types of energy needed. So, both domestic and global suppliers are important, however the excessive reliance on imported fuels from a limited number of suppliers may increase the risk of adverse market influence. Last but not least, the political instability can disrupt the supply of energy which is a common picture in the developing countries (WCA, 2014).

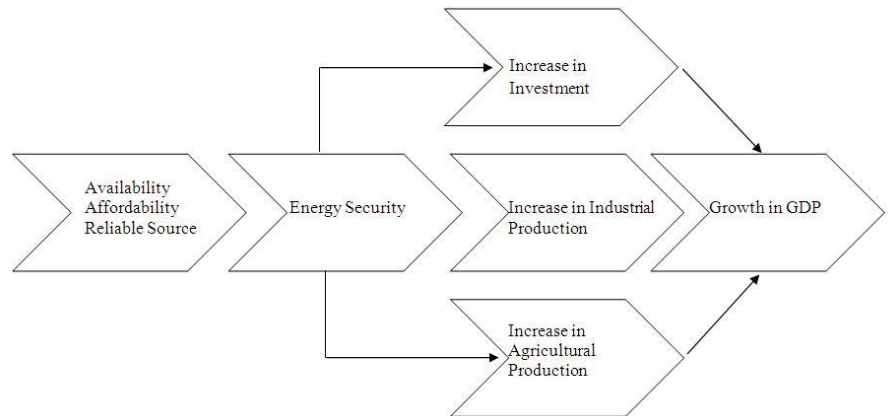
Figure 1: Determinants of energy security



Energy security drives the growth of a country by facilitating the production of a country. Every 1% of GDP growth is estimated to lead to a growth of 1.4% in electricity demand in a typical developing country.

Energy security drives the growth of a country by facilitating the production of a country. Every 1% growth of GDP is estimated to lead to a growth of 1.4% demand for electricity in a typical developing country. For a 5-6% typical annual economic rate of growth, this would imply a need for close to 7-8% growth in electricity supply (6th five year plan, 2011). Energy security is essential to guarantee the food security in the country by securing the production in agriculture. The industrial production is not possible without the ceaseless supply of electricity or gas. Investors eager to invest in those countries which have more strong energy infrastructures that ultimately facilitate the growth process. So, the common facet is that the developed countries have a high rate of growth because they are enriched with energy sources or efficient energy management system whereas poor country are poor because they have less secure energy system like concentrated sources, lack of investment etc.

Figure 2: Diagrammatic presentation of the influence of the energy on economic growth



Increase in population, urbanisation, expansion of economic activities has been raising the demand for energy but the supply cannot meet this demand.

3. ENERGY SECURITY IN BANGLADESH

Increase in population, urbanisation, and expansion of economic activities have been raising the demand for energy but the supply cannot meet this demand. Hence, energy deficiency is existing for a long time which is causing short run insecurity in the country. A lot of people do not have the access to energy and the per capita consumption is low compared to other neighboring countries. Paucity of sources of energy, lack of investment and contemporary technologies are impeding the achievement of the long run security. The existence of short run and long run insecurity in energy may affect the production in agriculture and industry, thus will slow down the rate of growth in GDP. Achieving the goal of being a middle income country by 2021 will be difficult unless the continuous supply of energy at a reasonable price that all the people are brought under energy coverage is ensured.

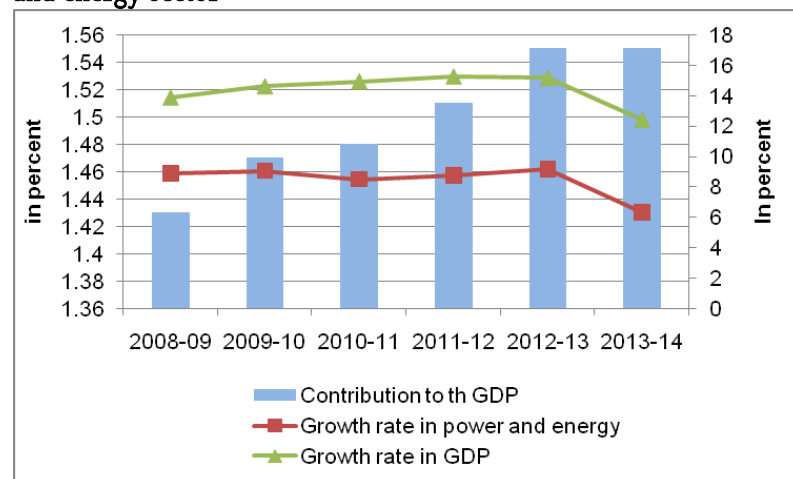
3.1 Power and Energy Sector: Contribution to GDP

By ensuring the food security, alleviating poverty and propelling rate of growth in GDP, power and energy guarantees the inclusive and sustainable development in a country. In developing countries like Bangladesh, low rate of growth in GDP (around five to six percent) is associated with poor physical infrastructure facilities such as shortage of power and energy supplies. Power and energy represents a very tiny share in the GDP of the economy. In Fiscal Year (FY) 2013-14, and FY 2012-13, the contribution of power and

In FY 2013-14, the rate of growth in power and energy decreased to 6.31 percent from 9.17 percent and 8.76 percent in FY 2012-13 and FY 2011-12 respectively.

energy sector was only 1.55 percent which was 1.51 percent in FY 2011-12; presents only a 0.02 percentage point increase in two years. The contribution, although is increasing, the rate is so diminutive that implies an inconsequential development in this sector. Of late, the rate of growth in this sector has decreased. In FY 2013-14, the rate of growth in power and energy decreased to 6.31 percent from 9.17 percent and 8.76 percent in FY 2012-13 and FY 2011-12 respectively presenting that the growth rate decreased by 2.86 and 2.45 percentage point respectively in this fiscal year than the previous two corresponding fiscal years. By the meantime the rate of growth in GDP has also decreased. In FY 2011-12, the rate of growth in GDP was 6.52 which decreased to 6.03 and 6.12 in FY 2012-13 and FY 2013-14 respectively which represents a .49 and .40 percentage point decrease. So, along with the political unrest and poor investment scenario, the shortages of gas and electricity supplies play a vital role impeding the growth in GDP.

Figure 3: The contribution in GDP and the rate of growth in power and energy sector



Source: Ministry of Finance, 2014

3.2 Power

Electricity is a vital ingredient to upgrade the socio-economic condition and to alleviate poverty. The supply of electricity has a great impact on the national economy. Proper and enough reliable supply of electricity have a great positive impact on our GDP and GDP is one of the key

measures to understand the economy of a country. For an inclusive and sustainable development, availability of power is a prerequisite. There are two ways to see the availability of power i.e. the per capita consumption of electricity and the percentage of population having access to electricity in the country compared to other countries; secondly, determining the gap between demand and supply of electricity in perspective of country's economic situation and GDP growth(MOE,2010).

3.2.1 Availability

High per capita consumption, universal electricity coverage and synchronisation between supply and demand of electricity ensure the availability.

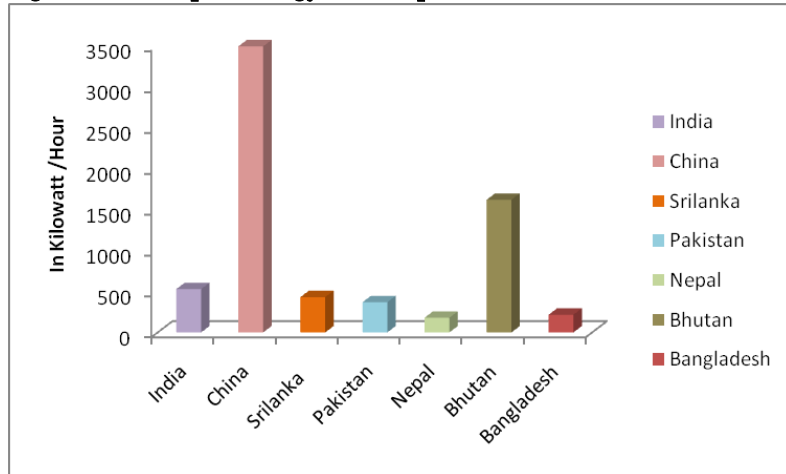
Availability of electricity is one of the main indicators to measure the security in power. High per capita consumption, universal electricity coverage and synchronisation between supply and demand of electricity ensure the availability.

3.2.1.1 Per capita consumption of electricity

Per capita electricity consumption is increasing which is a good sign for the economy but not increasing according to the demand. In FY 2013-14, the per capita generation of electricity was only 321 kw/hour which was 285 kw/hour in FY 2012-13 and 265 kw/hour in FY 2011-12. Compared to other Asian countries, per capita consumption of electricity in Bangladesh is much lower. In 2013, the per capita consumption of electricity was 217 Kwh in Bangladesh when the per capita consumption of India, Pakistan and Bhutan was 529.1 kw/hour, 368.38 Kwh and 1619.48 kw/hour respectively. The consumption of electricity per person in China was 3493 kw/hour in the same year. The low per-capita energy consumption level indicates that energy demand still has a long way to reach saturation. Target has been set to generate 600 kw/hour by 2021 but that seems to be difficult to achieve.

Per capita electricity consumption is increasing which is a good sign for the economy but not increasing according to the demand.

Figure 4: Per capita energy consumption in different countries



Source: CIA World Fact Book, 2013

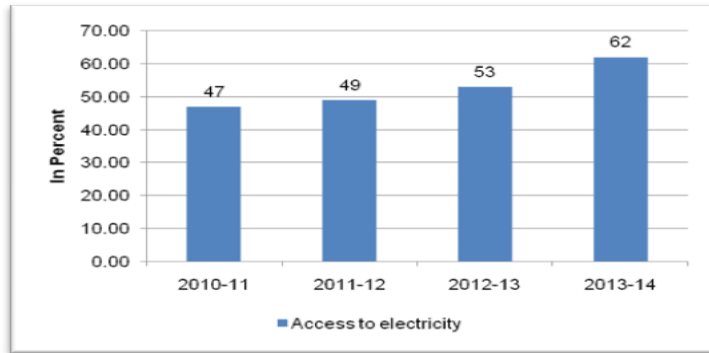
The more people have access to electricity, the more they will be able to participate in expanding economic activities both at national and international level.

3.2.1.2 Access to power

The more people have access to electricity, the more they will be able to participate in expanding economic activities both at national and international level. In our country, the number of the people under the coverage of electricity is increasing but still there exist a lot of people remaining outside the coverage.

About 62 percent people have the access to electricity in current year that is 38 percent which indicates 59.204 million people have no access to electricity. Up to April 2012, the 53 percent of total population got the electricity where it was 49 percent and 47 percent in 2011 and 2010 respectively. From 2010 to 2014, the rate in access to electricity has increased by 32 percent at an annual rate of 8 percent. This rate must be 10 percent to ensure electricity to all by the year 2021.

Figure 5: Percentage of population having access to electricity in Bangladesh



Source: Ministry of Finance, 2014; World development Indicator, 2014

3.2.1.3 Electricity demand, generation and load shedding

The recent scenarios of the performance of power sector tend to present serious challenges before the viability of development projects underway in the country. Against the backdrop of current high demand for power, an increasing gap between installed capacity for power generation and maximum generation of power has been noticed since FY2008-2009. Both the installed capacity and maximum generation, although have been increasing, the increasing gap between this two has offset the possible benefits of increased installed capacity. In FY2008-2009, the gap between installed capacity and maximum generation was 1004 megawatts, the gap nearly doubled within three years and became 2034 megawatts in FY2011-2012 (16.04 percent), and 2175 megawatts (33.75 percent) and 3271 megawatts in FY2012-2013 and FY2013-2014 (until March 25, 2014) respectively. The target was set to increase the generation to 8500 MW by 2013 which could not be achieved. This gap results mainly due to poor productivity of the old power plants, shortage of gas supply and lack of proper maintenance and renovation of the power plants.

Table 1: Installed capacity and maximum generation (Target and Actual)

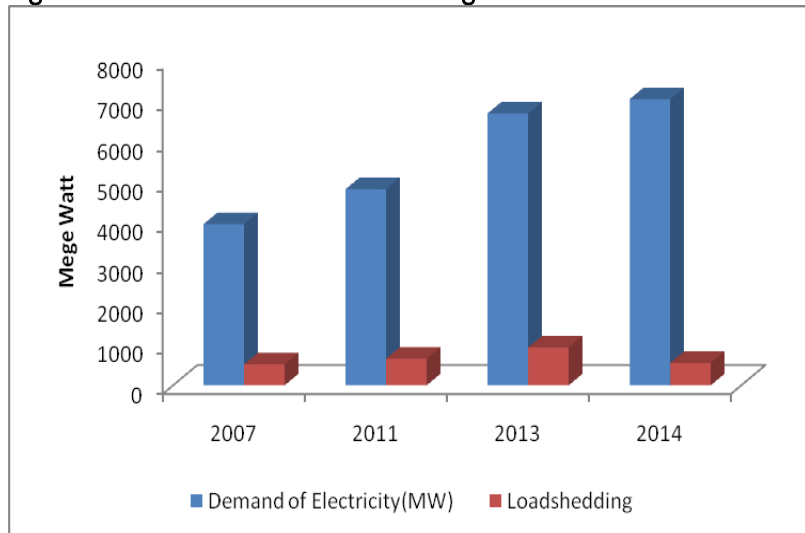
Year	Installed Capacity	Maximum generation	Gap(installed capacity-maximum generatio)	Increase in Gap(in percent)
2007-08	4130	4130	0	
2008-09	5166	4162	1004	100
2009-10	5271	4606	665	-50.97
2010-11	6639	4890	1749	163.00
2011-12	8100	6066	2034	16.30
2012-13	9151	6434	2717	33.57
2013-14	10341	7356	2985	9.86

Source: Ministry of finance, 2014

Due to the shortage of gas supply, some power plants are unable to utilise their usual generation capacity.

The real demand for electricity could not be met due to the shortage of available generation capacity. A good number of generation units have become very old and have been operating at a much-reduced capacity. As a result, their reliability and productivity are also poor. Beside this, due to the shortage of gas supply, some power plants are unable to utilise their usual generation capacity. Therefore, there is an increase in the load-shedding over the years. The average maximum demand for electricity was 3970 MW in 2007 which increased to 4833 MW in 2011 (May, 2011) with an average increasing rate of 216 MW per annum. In May 2014 the peak demand increases to 7050 MW which was 6700 MW in 2013. This increased demand over generation has resulted in increased load shedding (Figure 2). Additionally, the average load shedding increased to 656 MW in 2011 (May, 2011) with an average increasing rate of 35 MW per year starting from 2007. In May 2013, the load shedding increased to 932 MW which has decreased to 670 MW in May 2014. The demand for electricity has been increased with a rate of 5.43 percent per year whereas; the generation of electricity has been increased with a rate of 5.37 percent per year between 2007 and 2011.

Figure 6: Demand and the load shedding



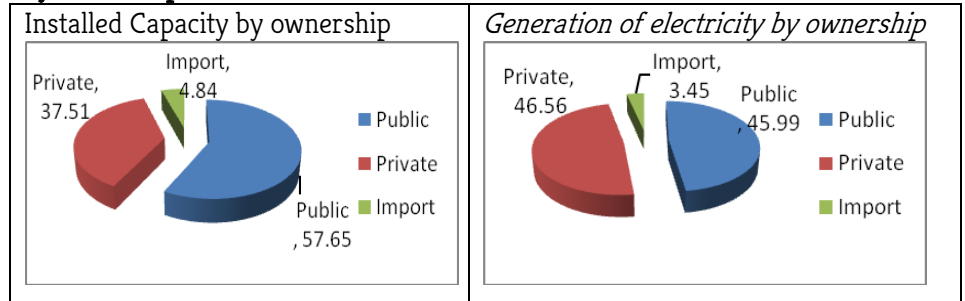
Source: Bangladesh Power Development Board, 2014

3.2.2 Reliable Sources of electricity production: Ownership and use of fuel

In Bangladesh the electricity is produced under public and the private ownership. Demand is also met up by importing electricity from India and Myanmar. The production under private ownership is increasing because of the poor productivity in the old public power plants and the shortage of gas supply, public sector cannot utilise its full capacity of power generation. As a result, the government has to rely on the private sector power plants that generate power mainly using oil (furnace and diesel) leading to high cost of power generation. The following figures show that in FY2013-14 (up to March, 2014), public sector had 57.65 percent of total installed generation capacity, while the private sector comprised 37.51 percent. Generation of power, however, shows that due to public sector's inability of utilising full installed capacity, private sector comprised 49.99 percent of net power generation and public sector comprised only 46.56 percent and 3.45 percent of total generation is imported.

Generation of power, however, shows that due to public sector's inability of utilising full installed capacity, private sector comprised 49.99 percent of net power generation.

Figure 7 : Installed capacity and maximum generation of electricity by ownership

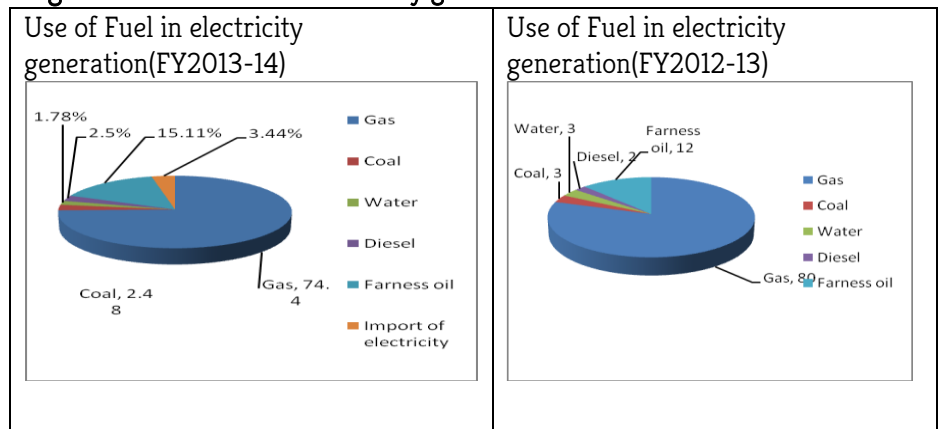


Source: Ministry of finance, 2014

The use of diesel or farness oil increases the cost because it is imported from foreign countries.

Power generation in Bangladesh was almost mono-fuel dependent, i.e. indigenous natural gas considering its apparent huge availability. About 74.40 percent of power generation comes from natural gas, 15.11 percent from farness oil, 1.77 percent from water, 2.48 percent from coal and 3.44 percent is imported. The present share of renewable energy in producing electricity was only 2.5 percent. Excessive use of gas squeeze the use of gas in other sector like industry and the domestic use but it is the cheapest fuel. The use of diesel or farness oil increases the cost because it is imported from foreign countries.

Figure 8: Use of Fuel in electricity generation



Source: Ministry Of Finance, 2014

3.2.3 Affordability

Price of electricity and the cost of production determine the affordability of people to get the access. Power tariff has been increased in the country for several times which is

creating pressure on the production. Government allocates a large amount of subsidy in power sector which indirectly increase tax burden on public.

3.2.3.1 Power Tariff and subsidy

Moreover, overall electricity price is increasing especially in case of different industries (small industry, heavy industry, medium industry and commercial sector). The higher price of power is adversely affecting the industrial production of local manufacturing industries like drugs and pharmaceuticals, steel, cement, paper, chemicals etc. and specially lowering the export capacity of RMG sectors. The latest increase came into force in march 2014 in which power price of electricity for heavy industries (132KV), heavy industries (33KV), medium industries (11KV) and commercial have increased to Tk. 6.96, Tk. 7.20, Tk. 7.32 and Tk. 9.58 per unit respectively which were Tk. 3.1, Tk.3.92, Tk. 4.17 and TK. 5.58 respectively in February 2010. From 2010 to 2014, the price of power increased by 124.52 percent, 83.67 percent, 75.53 percent and 71.68 percent in the heavy industries (32KV), heavy industries (33KV), medium industries (11KV) and commercial sector respectively. Generally, price of electricity is found the highest in the commercial area. In case of small industry and agriculture, electricity price were Tk. 4.35 and 1.93 per unit in March, 2010 but (after five times increase) in March 2014, the price has increased to Tk.7.42 and Tk.3.96 per unit respectively which indicates a 70.57 percent and 105.18 percent increase in power price in small industries and agriculture. This increased price of electricity has impacted negatively on industrial and agricultural production especially on small industries as well as on economic development.

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Table 2: Power Tariff

Category/Year	March 2010	Feb 2011	March 2012	'Sep 2012	March 2014	Increase in tariff(March 2010-March2014)
Residential(0-100Units)	2.6	2.6	3.05	3.31	3.87-5.01	92.69
Residential(101-400Units)	3.3	3.46	4.29	4.73	5.01-5.42	64.24
Agriculture	1.93	1.93	2.26	4.93	3.96	105.18
Small industries	4.35	4.56	6.02	2.51	7.42	70.57
Heavy industries(32KV)	3.1	3.25	5.33	6.95	6.96	124.52
Heavy industries(33 KV)	3.92	4.11	5.61	6.16	7.20	83.67
Medium industries(11 KV)	4.17	4.37	5.9	6.48	7.32	75.53
Commercial	5.58	5.85	7.79	6.81	9.58	71.68

Source: Bangladesh Power development Board, 2014

The huge amount of subsidy is sanctioned in power sector to cover the increased cost of power generation. It has a negative impact on investment situation.

The huge amount of subsidy is sanctioned in power sector to cover the increased cost of power generation. It has a negative impact on investment situation. In FY 2013-14 the power subsidy was TK. 15686 crore where in FY 2011-12 and FY 2012-13, power subsidy increased to Tk. 6357 and TK. 6400 crore respectively compared to Tk. 4000 crore in FY 2010-11.. Moreover, despite the increase of subsidy, the gap between installed production capacity and maximum generation capacity of electricity is increasing rapidly. Highest amount of subsidy goes to quick rental power because it is very expensive. In 2012, about 76 percent and in 2014 (March'2014) 96.82 percent of total subsidy went to quick rental power(Dhaka Tribune,2014). This huge amount of subsidy to quick rental creates a pressure on government subsidy burden. The World Bank has recommended phasing out the quick rental power plants and stopping payment to firms out of production to ease the government's subsidy

burden as it has started renewing the contracts with the firms (The Daily Star, 2014).

3.2.3.2 System loss

One of the main indicators of the efficiency in power sector is the distribution and system loss in electricity. The distribution and transmission loss is decreasing day by day because of more private attachment. In FY 2013-14 and FY 2012-13, the total system loss was 13.75 percent of the total generation which was 15.73 percent, 14.75 percent and 14.61 percent in FY 2009-10, FY 2010-11 and FY 2011-12 respectively. From FY 2009-10 to FY 2013-14, the system loss has decreased by 12.58 percent at an annual rate of 3.15 percent.

Figure 9: System loss in electricity



Source :Ministry Of finance,2014

As regards the cost of power generation, the oil-based power plants are costlier than gas-based power plants.

3.2.3.3 Power Sector: Cost

As regards the cost of power generation, the oil-based power plants are costlier than gas-based power plants. While the total cost of generating 1 kilowatt hour power by gas-based power plants is only Tk. 2.59, it becomes Tk. 20.73 and Tk. 16.37 for the diesel oil-based power plants and farnes oil-based power plants respectively. Due to the shortage of gas supply, most of public sector power plants cannot generate power up to their installed capacity; consequently the government has to rely on quick rental oil-based power plants in order to purchase power at much higher cost. As a result, frequent power tariff hikes occur, which exert adverse

impact on the economy, particularly on industrialisation in the country.

Table 3: Cost (in Tk.) of producing electricity (per unit)

Types of fuel	Fuel cost	Nonfuel cost	Total cost
Hydra gas	0	1.12	1.12
GAS	.83	1.76	2.59
Coal	4.70	2.05	6.75
Diesel oil	15.80	4.93	20.73
Farness Oil	13.30	3.07	16.37

Source: Bangladesh Power Development Board, 2014

As discussed earlier, the purchase of power from the private rental power plants by the government causes the power tariff to hike.

As discussed earlier, the purchase of power from the private rental power plants by the government causes the power tariff to hike; a comparative picture of power tariff hike for the last four fiscal years is shown in the table. The conspicuously purchase of power by the government from rental plants has been increasing at a much higher rate than that from public power plants, causing people to pay high cost of using power. Whereas in FY2009-2010, BPDB expended Tk. 936.77 crore on purchasing power from rental plants, it paid Tk. 10340.05 crore to them in order to purchase power in FY 2012-13, which was nearly 11 times higher than the amount expended in FY2009-2010. The cost of power generation was 5.6 times higher in rental plants than that in the public plants in FY 2012-2013, whereas it was 2.27 times higher in FY 2009- 2010. As a result, increased purchase of power by government from oil-based rental power plants instead of going for gas based power generation is posing serious threats for the development of agriculture and industrial sector, thus declining growth in the economy.

3.3 Natural gas

Natural gas is the main source of indigenous energy that accounts for the most profitable sources of energy of the country because of its price tawdriness and environment friendly feature. About 73% of the total commercial energy of the country is congregated by natural gas. The consumption and the production of the gas are increasing which results decreasing of reserve in every year. This will

put the country into serious energy insecurity in the future if new gas fields cannot come to production.

3.3.1 Availability: Reserve and the Production

About 26 gas field have been discovered till February'2014 but all are not under production because of lack of investment, infrastructure and expertise. At present, gas is extracted from 90 wells in which the total reserve is 27038.5 BCF (Billion Cubic Feet). Extractable reserve is 11720 BCF among which 11720.29 BCF is produced and the remaining reserve is only 15318.24 BCF which is not enough to meet up the energy demand of huge population for a long time if new gas field are not discovered.

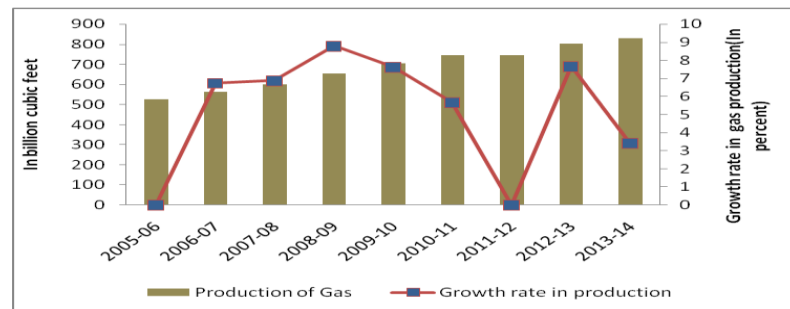
Table 4: Reserve of Gas

	January,2010	Janury'2014
Total number of gas fields	23	26
Well in production	79	90
Total Reserve		37680BCF
Extractable Reserve	26727 BCF	27038.5 BCF
Total production	10131.82 BCF	11720.29 BCF
Outstanding	16695.68 BCF	15318.24 BCF

Source: Bangladesh Economic Review,2014

The production of gas is increasing but the rate of growth in production is decreasing. In FY 2013-14, the production was 828 BCF which was 800 BCF in FY 2012-13. The rate of growth in FY 2013-14, FY 2012-13 was 3.42 percent and 7.66 percent respectively which represents a 4.42 percentage point decrease in the rate of growth in gas production. Five gas fields- Begumganj, Kutubdia, Chatak, Kamta and Feni abstained from gas production this year.

Figure 10: The production of gas and the rate of growth in gas Production.

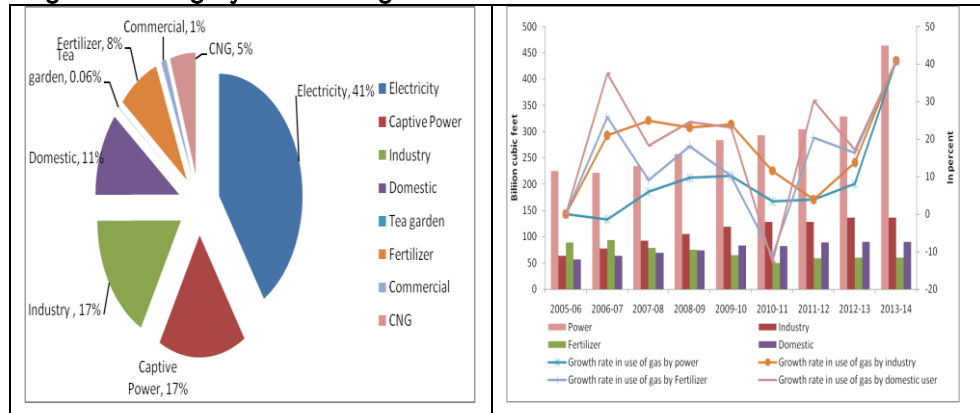


Source: Ministry of Finance,2014

3.3.2 Sources of use of gas

Among all the sectors, the production of electricity and captive power is highly dependent on gas and are the largest consumer of the gas. In FY 2013-14, about 41 percent and 17 percent of total gas (total 58 percent) went to produce electricity and captive power respectively. At the same time, 17 percent gas was used in industry and 11 percent to meet the demand of domestic user, eight percent in fertilizer and only five percent to CNG.

Figure 11: Categorywise use of gas



Source: Ministry of finance, 2014

The consumption of gas by all categories increased in FY 2013-14 except for fertilizer.

The consumption pattern of gas varies according to different categories. The consumption of gas by all categories increased in FY 2013-14 except for fertilizer. Almost all the times after FY 2005-06 till the FY 2010-11, the consumption pattern of gas at the domestic level increased with a decreasing rate. The same result was also found in the case of fertilizer; however except in the FY 2005-06, in industrial services and other services, the consumption pattern has also been increasing with a decreasing rate from the FY 2003-04. The consumption rate of gas by electricity was always highest for all the time of all the service categories. The main reason for which the consumption pattern increased with a decreasing rate was the lower production of gas over the demand. The consumption pattern of different sectors has increased over the years but it was lower than that the expected.

3.3.3 Affordability: Price of gas

An increase in gas price adversely affect the standard of living as it is most widely used energy in domestic, industry,

The Petrobangla has proposed to increase the price of gas which may be implemented from 1st January, 2015. Gas price for single burner and double burner will be Tk. 850 and Tk. 1000 respectively.

commerce and fertilizer. The increase in gas price will put up pressure on middle and lower income families and the cost of production. Inflation may rise because of increase in cost of production. The Petrobangla has proposed to increase the price of gas which may be implemented from 1st January, 2015. Gas price for single burner and double burner will be Tk. 850 and Tk. 1000 respectively where the present prices are Tk. 400 and Tk. 450 respectively that is 112.50 percent and 122.22 percent increase. In industry, the price will be increased to Tk. 220 from Tk.165.91; a 32.60 percent increase. Gas price will be increased by 102.94 percent when the price will be Tk.240 from Tk. 118.26.

Table 5: Proposed gas price

Date	Power	Fertilizer	Industry	Commercial	Captive power	Single burner	Double burner
1-08-09	79.82	72.92	165.91	268.9	118.26	400	450
1-01-15	84	80	220	350	240	850	1000
Increase in price(in percent)	5.24	9.71	32.60	30.55	102.94	112.50	122.22

Source: Bangladesh oil, gas and mineral Corporation, 2014

3.4 Import of petroleum

The economy is fully dependent on foreign sources to fulfill the demand of oil especially for the irrigation in agriculture and producing electricity. The cost of using oil is very high. A large amount of money is spent to import petroleum products every year. The fluctuation of oil price in international market is also affecting the price of products in country. Government gives a large amount of subsidy in purpose of importing oil which adversely affects the income of the public in form of tax burden.

Table 6: Import of petroleum Product (In crore)

Year	Crude oil	Refined Oil	Subsidy
2009-10	4491.41	110290.1	1500
2010-11	7037	12076.21	900
2011-12	7053.51	22570.44	4000
2012-13	8536	26354.92	13558
2013-14	5435	12426	7350

Source: Ministry of Finance, 2014

A huge amount of foreign exchange is spent for importing petroleum. In FY 2011-12, this amount was Tk.70533.51 crore and Tk.22570 crore for crude oil and refined oil respectively. In FY 2012-13, Tk.8536 crore was paid for crude oil and Tk. 26354.92 crore for refined oil; represents a 21 percent and 16.76 percent increase in expenditure crude and refined petroleum. To meet up this expenditure, government provides Tk.13558 crore as subsidy In FY 2012-13.

3.5 Nuclear Energy

The nuclear energy is considered as a reliable source all over the country mainly in the developed countries to meet the growing demand of energy .Bangladesh has recently signed a contract to set up to 2000 MW nuclear power plant at Ruppur with two units having capacity to generate 1000 MW. Construction of the first plants was supposed to start by 2013 and would take five years to complete. If it is implemented, more FDI will be attracted to invest for setting up nuclear power plant. The devastating situation experienced in Japan from nuclear power plant accident on both human being and the environment has changed the world vision on nuclear power plants. It also needs huge investment, expertise and high quality infrastructure which we lack of.

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4. Future outlook

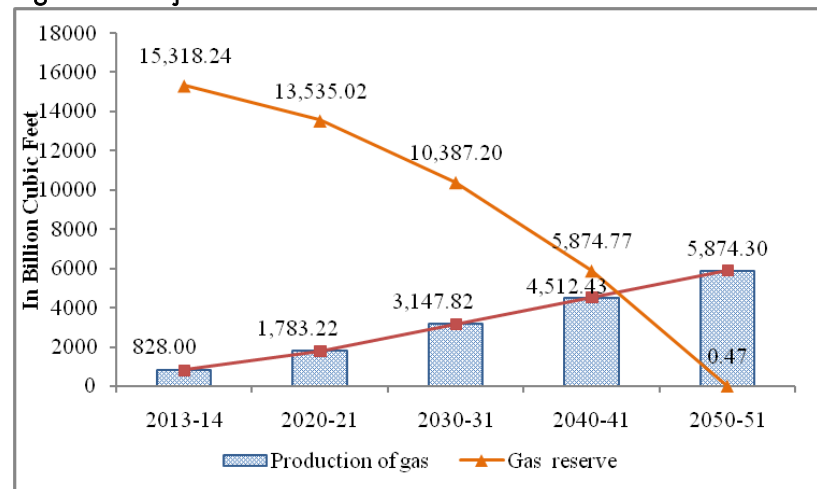
Energy security is not only related to the present but also it is to keep a connection with the future. In case of non renewable resources, the inefficient and unplanned extraction and use of energy can shrink the consumption of the future generation. So the projection on the basis of current stock and consumption is important for energy security.

The production of gas is increasing which is depleting the reserve of gas.

Population Division of United Nation has estimated that the total population of Bangladesh will be 194.353 million in 2050. With this increase in population, the demand of electricity will rise to 10283 MW by 2015 and 11405 MW by 2016. Taking into account the power generation rate for past five fiscal years, it can be said that 8314 MW, 9271 MW and 14060MW of electricity will be generated by 2015, 2016 and 2021 respectively. If the number of power plants are not increased or the capacity of existing producer like Bangladesh Power Development Board (BPDB), Ashuganj Power Station Company Limited (APSCL), Electricity Generation Company of Bangladesh (EGCB) etc is not developed, the deficit of power will increase.

The production of gas is increasing which is depleting the reserve of gas. The present production rate and annual rate of growth of 16 percent in gas production, remaining recoverable gas would be sufficient for the next 37 years (from FY2014-15 to FY2050-51). Take into account of increased demand for gas in the present and coming years it can be stated that the shortage of gas may be felt earlier.

Figure 12: Projection in Gas



Source: Author's calculation, 2014

Present shortage of electricity and gas supply will prolong in the future if government does not take the right steps. The government, although has already taken several initiatives for reducing the crisis of power and energy, the crisis persists. This is mainly due to the problems associated with

Renewable sources like solar power, nuclear energy and hydropower are more reliable and sustainable. Bangladesh has a great opportunity in using this energy in producing power.

high dependency on gas, improper privatisation policy, lack of satisfactory and timely implementation of allocated money, political reasons and over population. In the context of this backdrop some recommendations are given:

Renewable sources like solar power, nuclear energy and hydropower are more reliable and sustainable. Bangladesh has a great opportunity in using this energy in producing power. Huge amount of investment, research and expertise and public awareness are needed to increase the use of renewable resources.

At present, government is encouraging private sector highly in electricity production and is being dependent on foreign company for gas extraction. In both cases profit maximisation is the main goal which may increase the price. So, balanced growth of public and private investment in power and gas should be encouraged. Besides, government must develop infrastructure to reduce the system loss in electricity and gas production.

Above all, it is highly recommended that corruption, complexity of red tape bureaucracy and influence of political instability must be reduced for secure supply of energy both for present and future generation.

5. CONCLUSIONS

The demand of energy is increasing all over the world and it will be doubled by 2050 because of the increase in population and more industrialisation and development (Bangladesh Economic Review). So, the energy security becomes a matter of concern this day. In Bangladesh, on the basis of the current trends in power and energy sector it can be said energy insecurity is putting a pressure on the growth of the economy and hampering day to day life.

It is quite evident that the extensive dependence on electricity and gas (as a natural resource) has put the country under a strong challenge. For years, the matter of balancing the supply against the demand for energy has remained largely an unresolved matter. The country faces a significant challenge in revamping its network responsible for the

The government needs to be creative in renewing and revising strategic approaches to reduce the power crisis.

supply of energy. Therefore, such policy formulations are to be done based on the results of realistic and practical researches regarding power sector. A credible and realistic demand forecast is necessary for any country regarding its energy resources for the sake of better administration. Efficient policies should be taken to ensure a stable and healthy economy.

It is pertinent to mention that theoretically, many of the strategic documents and policy papers are sound and seem implementable, but in reality, fails to do so because of poor implementation rate of allocated money, corruption, lack of funds, poor monitoring and evaluation and so on. The government needs to be creative in renewing and revising strategic approaches to reduce the power crisis. Therefore, provisions must be formulated for programme evaluation and also for understanding the impacts of programmes. Findings are needed to be scientifically utilised in developing suitable programmes addressing the case reducing the crisis of crisis in Bangladesh. Otherwise, the target of ensuring electricity to all by 2021 may remain an elusive and a distant dream.

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