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Evaluating the Energy (Power) Security in Bangladesh

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Abstract

This study uses the most recent past data to evaluate Bangladesh's energy (power) security situation. The discussions based on descriptive features suggest that the country's power sector is not sufficiently secured in line with the ongoing development processes and the inclusive development of a rapidly growing economy. Although the coverage of electricity has been increasing in recent years and it will cover the whole population very soon, the quality of the electricity supply is not at a satisfactory level. The efficient and sound quality electric power installation, generation, and distribution processes should be ensured to supply the uninterrupted electric power. Therefore, the policymakers should find out how to establish sustainable sources of electric power supply that would meet the huge demand for infrastructure development and universal coverage of electricity.

JEL Classification *O13 and Q01.*

Keywords *Energy Security · Inclusive Development · Bangladesh*

1. Introduction

Energy, especially power, is the primary driving force of any country's economy and is the most critical tool in fostering rapid economic development. To ensure the well-being of the nation and sustainable growth of an economy, a secure supply of energy must require. Mainly, after the oil shock in 1973, energy security has always been a significant concern in every country all over the world. According to the International Energy Agency (IEA), energy security refers to an uninterrupted supply of energy with even distribution from available sources at a reasonable price. In a broad sense, the energy security for a country is established when energy is easily accessible, affordable and supplied from a readily available source at a stable tariff without any political and economic disruption.

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Long-term energy security mainly focuses on regular investments to supply energy following economic activities and environmental demands. On the other hand, short-term energy security indicates the energy system's efficiency to support the sudden changes in the supply-demand situation. A secure energy supply mainly relies on diversification in power generation, infrastructure development, and a stable price level. On the contrary, the dependence on concentrated power suppliers, lack of expertise and an unstable political situation (both internal and external) can disrupt energy security.

2. Background

Energy security facilitates the development of a country by fostering production. A 1% increase in GDP growth is associated with a 1.4% growth in demand for electricity in a typical developing country. Hence, a 5-6% annual GDP growth is implied with demands for an around 7-8% growth in electricity supply[1] . Energy security is essential for promoting a country's food security by facilitating agricultural production. Without an uninterrupted supply of power or gas, the optimal level of the country's industrial production is impossible. Investment (local or foreign) in a country readily depends on the available energy infrastructures that ultimately enhance the overall growth activities. Bangladesh's short-term and long-term energy insecurity negatively impacts general economic developments that slow down the GDP growth as a whole.

3. The Literature

Like other developing countries, energy security is a primary concern in Bangladesh. There were several studies, such as Islam et al. (2014), Uddin et al. (2016), and Gunatilake and Holst (2013) are remarkable that have been conducted on the energy security issue in Bangladesh. All of these studies more or less have drawn the same conclusion that energy security has to be ensured for sustainable development. The present study is only a modest attempt to revisit the energy (power) security issue by considering the most recent experiences.

4. The Objective of the Study

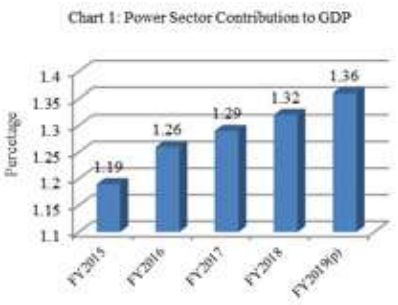
The uninterrupted power supply is essential for inclusive economic development in every country worldwide. Considering the importance of secured power supply coverage in inclusive growth, this study aims to assess the power security in Bangladesh by comparing the power sector's performance in terms of accessibility, affordability and readily available source using the most recent data.

[1] See 6th Five Year Plan, FY2011-FY2015 (Part-2, Page-126).

5. Descriptive Features and Discussions

5.1 Power sector contribution

The low rate of GDP growth (around 7% per annum) in Bangladesh is closely associated with the limited supplies of power and energy. Power and energy contribution to GDP is tremendously low. In fiscal year (FY) 2019, the power[2] sector share of GDP was only 1.36%, and it was only 1.19% in FY2015. Compared to FY2015, the power sector's contribution increased by only a 0.17 percentage point in FY2019. The increment was significantly low, which reflected an unremarkable development in this sector. Although, in FY2019, the growth rate in the power sector increased to 11.57% from 6.09% in FY2015, while in the same period, the GDP growth rate also increased to 8.13% from 6.55%; however, the shortage of power supplies along with poor investment and political unrest situation play a vital role hindering the output growth.



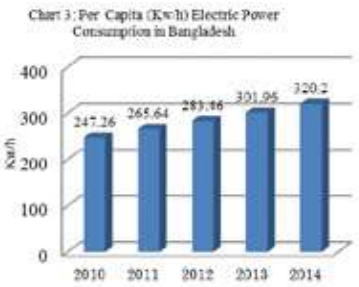
Source: *Bangladesh Bureau of Statistics. Note: P denotes provisional.*

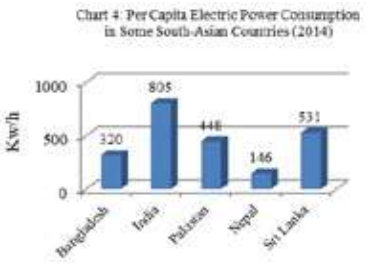
5.2 Electric power consumption

The proper and reliable supply of electricity can positively stimulate the national economy. Nationwide access to electricity is the main ingredient in alleviating poverty and improving socioeconomic conditions. The availability of electricity is necessary to ensure sustainable and inclusive economic development. In general, the availability of electricity is one of the key indicators to measure energy security. The availability of electricity largely relies on high per capita electricity consumption, universal coverage and mitigating the gap between supply and demand. In Bangladesh, per capita electricity consumption is increasing daily, which is a good sign for the economy, but the increasing rate is insufficient according to demand. In 2014, the per capita electricity consumption was 320 Kw/h, which was 302 Kw/h in 2013. Compared to neighbouring countries, the per capita consumption is much lower, whereas, in 2014, the per capita consumption

[2] In this paper, power means electric power or electricity.

of electricity in India, Pakistan and Sri Lanka were 805 Kw/h, 448 Kw/h, and 531 Kw/h, respectively. Bangladesh's low per capita electricity consumption level indicates that the country's power demand is far behind the saturation stage.

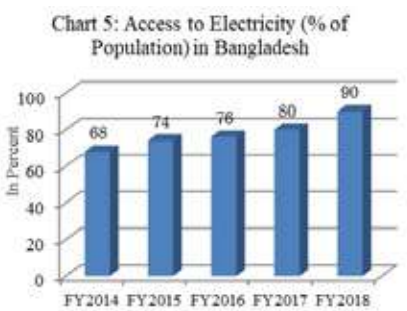


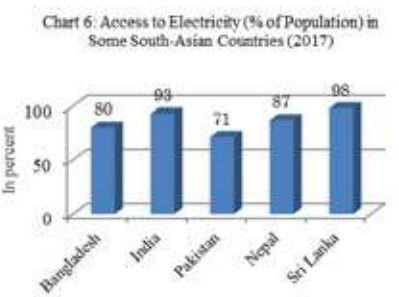


Source: *World Bank Data. Note: Kw/h means kilowatt per hour.*

5.3 Access to electricity

Universal electricity coverage is a prerequisite for expanding the nationwide economic activities, where people can fully participate in the development works. In Bangladesh, people's access to electricity is frequently increasing, but several citizens still do not have access to electricity. In FY2018, 90% of the total population has access to electricity (including renewable energy). The electricity coverage was 80% in FY2017 and 68% in FY2014. Compared to neighbouring countries, the electricity coverage in Bangladesh is much lower. In 2017, the percentage of the total population with access to electricity was 93, 71, 98 and 87 in India, Pakistan, Sri Lanka, and Nepal, respectively. In the same period, the electricity coverage in Bangladesh was 80%. From FY2014 to FY2018, electricity coverage increased by 22%. Within five years, such an increase in electricity coverage shows the hoping improvement. However, the country's access to power coverage is not at a satisfactory level for achieving the status of electricity for all by 2021, as per the government announcement.





Source: *Bangladesh Economic Review and World Bank Data.*

5.4 Installed and generation capacity

Recently, the viability of ongoing development projects in the country has been facing severe challenges that mainly come from the worse performance of the power sector in managing the demand-supply gap. In contrast to the high demand for electricity, the increasing gap between the installed capacity for electricity generation and the maximum generation of electricity has been remarkable year by year. Although both installed capacity and power generation have increased, the rising trend in the gap has offset the possible benefits of increased installed capacity. The following table shows the most recent (last five years) scenarios of electric power installed capacity and maximum generation in Bangladesh.

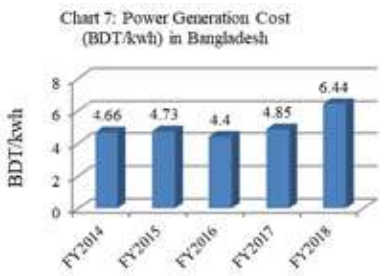
Table 1: Electricity Installed Capacity and Maximum Generation in Bangladesh

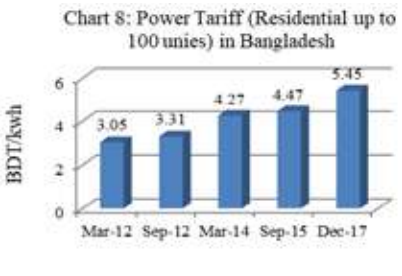
Period	Installed Capacity (Megawatt)	Maximum Generation (Megawatt)	Gap (Installed Capacity- Maximum Generation)	Percentage Change in Gap
FY2014	9821	7356	2465	17.21
FY2015	10939	7817	3122	26.65
FY2016	11770	9036	2734	-12.43
FY2017	12771	9479	3292	20.41
FY2018	15953	10958	4995	51.73

Source: *Bangladesh Economic Review.*

5.5 Generation cost and tariff

The people's affordability to get electricity also measures power security. The price of electricity and the cost of producing electricity are the indicators of affordability in getting electricity. The cost of power generation has increased in the last couple of years because the government has purchased electricity from the oil-based rental power plants to mitigate the increasing electricity demand. Due to a gas shortage, the government relies on imported petroleum-based rental power plants and purchases electricity at a higher cost. As a result, increasing power generation costs frequently hike the power tariff even though the government allocates a considerable subsidy that raises the indirect tax burden on the public. The increased price of electricity adversely impacts the economy, especially as a barrier to the development of the agriculture and industrial sector.

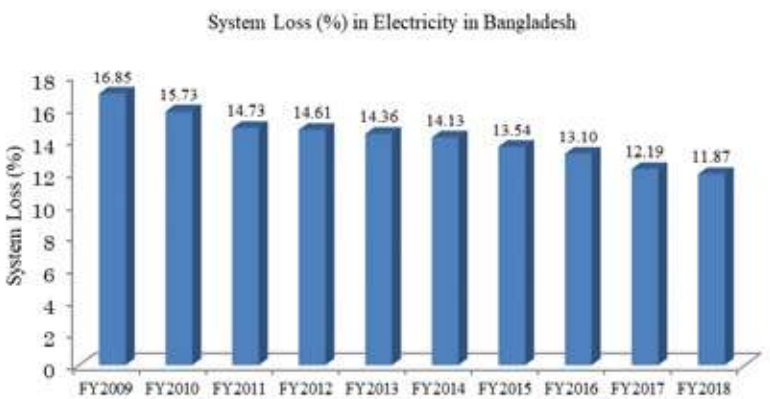




Source: *Bangladesh Power Development Board.*

5.6 Efficiency

The efficiency in the power sector can be measured by observing the system (distribution and transmission) loss situation in electricity management. In Bangladesh, the system loss in electricity is decreasing yearly because of more involvement of private entities in the power sector.



Source: *Bangladesh Economic Review.*

6. Suggestive Measures

Electric power is the most typical form of energy in Bangladesh that mainly depends on gas for production. Due to the limited reserve of gas, it is no longer a reliable source for electricity production. Furthermore, the extensive use of gas in power generation is depleting the reserve of gas day by day. Currently, the economy substantially depends on imported liquid fuel for electricity production, which is the cause of spending a considerable amount of foreign currency. On the other hand, excessive reliance on imported petroleum for power generation frequently hiked the power tariff in the last couple of years. Rising power tariffs increase production costs in both the agriculture and industry sectors. Inadequate

energy supplies, depletion of the gas reserve, and rapid hikes in power tariffs have immensely an adverse effect on agricultural and industrial production, posing a severe threat to energy security. Therefore, the government, including policymakers, should think about sustainable solutions to ensure a universally secured power sector for inclusive economic development.

7. Conclusion

In Bangladesh, the fast-rising population, frequent urbanization and rapidly growing economic activities have been increasing the energy demand, but the insufficient energy supply cannot satisfy this demand. The country has been suffering from a persistent energy shortage for a long time. Such a deficiency of energy has created short-run insecurity in the energy sector. Compared to other neighbouring countries, many people do not have access to energy and the per capita consumption of energy is too low. Inadequate energy sources, insufficient investments and lack of advanced technologies are also hindering the long-run security in the energy sector. Since the supply of energy is not readily available and affordable, and the sources of energy are unreliable, Bangladesh has to improve its energy sector a long way to achieve energy security.

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