

Energy security in Bangladesh perspective—An assessment and implication



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ABSTRACT

Energy is a key indicator of the nation's overall economic as well as social development. Looking at the present energy demand scenario in Bangladesh, electricity demand has significantly increased over the past years. Most of the Bangladesh's power plants are heavily dependent on expensive imported fossil fuel energy resources. Thus, the power failure has become an acute problem for the country and adversely affects the socio-economic development of the country. Consequently, the shortage and constraint in availability of fossil fuels appeal to boost up the renewable energy sector in Bangladesh in order to bring down the gap between demand and supply. Hence, decisive steps to reform the power sector with a mandate to oversee these sectors urgently need to overcome current energy crisis facing in the country. In this paper, efforts have been made to summarize the availability, current status, strategies, perspectives, promotion policies, major achievements and future potential of energy options in Bangladesh.

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1. Introduction

Currently, the world's growing thirst for oil amounts to almost 1000 barrels a second [1]. In consequence, the inadequacy of fossil fuel and the increase in demand of energy are the driving force concerning the future energy security around the world. According to the Ludwig Boltzmann, the important issue of the 21st century is the energy security.

"The struggle for existence is the struggle for available energy" [1].
Ludwig Boltzmann

As forecasted by International Energy Agency [2], the reserves of coal, oil and natural gas will be exhausted by 122, 42 and 60 years, respectively. Further, the projections of the International Energy Outlook [3] highlighted that the price of oil on the international market will reach US\$133 per barrel in 2035. The trend of on-going high prices for oil is likely to aggravate the imbalance in the trade balance of countries which are dependent on the import of oil and its derivatives [4].

Bangladesh has been facing an extreme shortage of electricity over the past decade. The production status of energy in Bangladesh has not been match to the power requirements of various categories of consumers [5–7]. Hence, there was a power failure in the industrial as well as agricultural sector, which means food insecurity and less production. These in turn, leads to lesser income; lessen capital formation, lesser exports and slow economic growth [8,9]. However, it is not possible to any of the reasons causing scarcity of energy in Bangladesh. A combination effect of financial, structural, and socio-political is responsible for the acute shortage of electricity in Bangladesh; none of them can be mutually exclusive. It was highlighted by Islam et al. [10] that infrastructure in energy sector has become supremely important for a nation's economic development, as it provides the basic structural foundation for it. This infrastructure is like the wheels of economic activity [11]. Hence, it is reasonable to state that the economic progress depends very much upon how successfully and profitably a country manages its power sector.

The energy conservation through improved energy efficiency, a reduction in fossil fuel use and an increase in environmentally friendly energy supplies are the prime movers ensuring the country's future energy security [12]. Several technologies are

available for the production of clean, efficient and reliable energy, such as wind, sun, water, biomass and biogas, tides and waves, hydrogen and geothermal energy [5,13,14]. Jacobson [15] ascertained that the flourishing of renewable energy resolved the environmental pollution and global warming problem. A conclusion has been reached by Jean-Baptiste et al. [16] who reported that the nuclear energy have a low impact on climate change. Further, the development of renewable energy could be one of strategic approach of the country to reduce the dependency on oil exploration country [17]. However, the challenge is how to harness further energy services in sustainable, adequate, affordable ways. Specifically, appropriate strategies, in terms of policies, mechanisms and institutional setting for the advancement in energy sector are important for the country. This paper focuses current status of primary energy, power sector, power generation strategies, promotion policies and major achievements in Bangladesh. It also presents potential of renewable energy options for power generation to improve energy security in Bangladesh.

2. Primary energy supply in Bangladesh

The supply of energy is the major social challenges which amplify the provision of basic services in life. The high degree of uncertainty in the resources for power production and the cost of

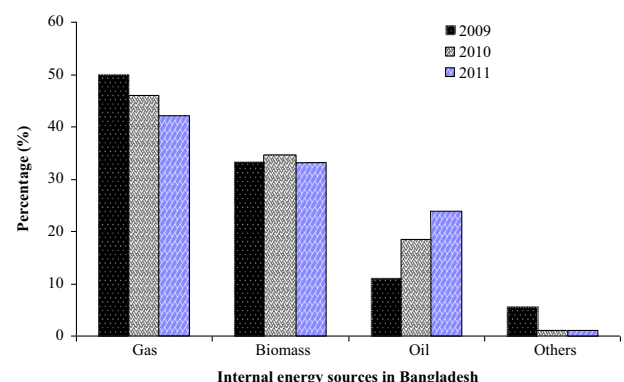


Fig. 1. Share of total internal energy resources in Bangladesh [18].

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