Analysis of energy consumption and indicators of energy use in Bangladesh

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Abstract

Rapid growth in the demand for commercial energy in Bangladesh poses serious development constraints in recent years. Per capita energy consumption of Bangladesh is one of the lowest in the world (252 kgoe in 2005). This paper undertakes an empirical investigation to find out the trends in energy intensities by comparing the energy consumption per capita and energy consumption per GDP for agriculture, industry, commercial, and transport sectors of Bangladesh and investigate their conditions over the long run. Only 43% of total population has access to electricity facility. Though natural gas provides two-third of the nation’s commercial fossil fuel supply, only 4% households have access to natural

gas networks. Biomass fuels are estimated to account for about 73% of the country's primary energy supply. The daily electricity output totals around 3800 MW against the demand of 6000 MW, leaving a supply crunch of 2200 MW. Natural gas has so far fuelled more than 90% of the power plants of the country. Hydro-electricity contributes only 3% of the total energy supply in Bangladesh. More than 90% of the oil and petroleum products are imported. The country has a substantial potential for coal, most of which has yet to be explored. Overall energy intensity increased approximately twofold from 1980 to 2005. The findings of the study show that change in energy intensity is due to structural effect, while increase in aggregate energy consumption is due to both the activity effect and structural effect. Renewable energy sources will largely mitigate the dire energy crisis in rural areas of Bangladesh. Over 400,000 Solar Home Systems (SHSs) have been installed so far, benefiting over 4 million rural people. More fiscal and other incentives should be included in the recently formulated Renewable Energy Policy to investors for rapid development of clean energy. In addition, regional cooperation should be enhanced specially in case of hydro-power and natural gas. Finally, coal based power plant should be set up as early as possible.

Notes

1. More formally, the elasticity of total natural gas demand with respect to its price is $\varepsilon_{PG} = \left({\frac{PG}{Qgcon}} \right) \times \left({\frac{dQgcon}{dPG}} \right)$. The elasticity of total natural gas demand with respect to income can be expressed in the following terms: $($

\varepsilon_{QY} = \left({\frac{Y}{Qgcon}} \right) \times \left({\frac{dQgcon}{dY}} \right) \) Where, Y_t = real per capita GDP in year t, PG_t = price (Taka/mcm) of natural gas in year t, and \(Q_{{gcon_{t} }} \) = natural gas consumption in year t.

2. Solar home systems consist of a PV panel that catches sun rays as directly as possible, converts solar energy to electricity and charges a storage battery (Balint 2006).

3. Clean Development Mechanism (CDM) is a flexible mechanism under the Kyoto Protocol. CDM gives industrialized nations the opportunity to finance greenhouse gas mitigation projects in developing nations with the aim of contributing to sustainable development while also helping industrialized nations meet their reduction commitments (UNFCCC 2002).

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