

degradation alongside. At the same time, energy production and utilisation is the single biggest contributor to global warming. Worldwide, to reach the objectives of the Paris Agreement on Climate Change, the EU Green Deal and the Agenda 2030 for Sustainable Development, a significant effort is needed to decarbonize the energy sector through increasing the share of renewable energy and enhance energy efficiency.

In view of the country's graduation from LDC list, energy is widely seen as a strategic sector in boosting economic growth. Demand for electricity is projected to reach 50,000 megawatts (MW) by 2041¹⁶. Electricity generation has increased significantly over the last decade, despite poor transmission and distribution infrastructure, and low efficiency in a large number of aged power plants. Private power production units make up nearly half of total installed capacity, which has increased from about 5 gigawatts (GW) in 2009 to approximately 25 GW in 2021¹⁷.

The Government of Bangladesh's 8th Five Year Plan outlines as part of its main priorities: (i) energy efficiency gains, (ii) an increased share of renewable energy in the overall energy mix, (iii) financial sustainability in the energy sector and the move to a competitive, environmentally sustainable least-cost power generation, transmission and distribution system, with the overarching objective of achieving low-carbon development. It also includes (iv) greater private sector participation, (v) a more transparent tendering and procurement processes, (vi) energy imports; and a (vii) stepped-up resource mobilization so as to reduce the burden on limited fiscal resources. Furthermore, the Government has an interest in enhancing regional power trade and connectivity, and in particular, in importing hydropower (hence clean energy) particularly from Nepal, and potentially Bhutan.

The current fuel mix in Bangladesh's power plants is mainly from natural gas. As domestic natural gas fields will be depleted by 2038¹⁸, the Government plans to increase the use of imported liquefied natural gas (LNG). Prior to 2020, Bangladesh planned to shift its fuel mix toward coal. However, in 2021 the Government scrapped plans to build 10 coal-fired power plants, citing unsatisfactory progress of the projects. In addition, the Government is preparing, with the support of JICA, a new Integrated Energy and Power Master Plan (IEPMP) where the use of coal gets a lesser priority. The Government is also considering importing more electricity from neighbouring countries such as from Nepal (hydropower) as part of a larger regional power connectivity plan¹⁹ as well as expanding the use of renewable resources, including solar and wind power. Also Russia is building a nuclear power plant in Bangladesh which is expected to become operational within the next couple of years.

At present, the country's RE share within the generation mix is around 3%, despite the Government's initial target of 10% by end of 2020, and far from the targets of the Government's strategic documents mentioned above in terms of climate ambitions.

With the recent (March 2022) inauguration of Payra ultra super critical 1320 MW coal power plant, the country has proudly announced to have become the first South Asian nation to achieve 100% electrification. However, in addition to the impact on carbon emissions' increase, the overall national grid system efficiency and transmission and distribution losses remain a critical issue, higher than the regional average, with social, economic and environmental consequences²⁰. In addition, the grid infrastructure and its ancillary services are increasingly in need of flexibility and control, as well as resilience, in view of integrating the planned growing share of variable and intermittent RE sources.

While the political will to promote a sustainable energy economy by using RE and increasing EE in the power sector stands strong, the existing policy and regulatory framework remains weak in terms of enforcement and implementation. Weaknesses particularly concern lack of data availability in support to energy audit targets, absence of standard and labelling for equipment, especially when it comes to RE grid connection, need for awareness creation, lack of capacity among distribution utilities, quality, inclusiveness and diversification of offer of energy services. At the same time, there is a growing need for improved quality (including in terms of standards), offer diversification and inclusiveness (especially for women) of the current green energy services.

¹⁶ Power System Master Plan (PSMP), 2016 and BPDB, 2019-20 annual report

¹⁷ Total installed capacity includes total captive power & off grid renewable energy and amounts to 25.24GW while the peak demand barely goes beyond 14 GW. Source: [Bangladesh Power Development Board \(BPDB\), September 2021](#).

¹⁸ ADB report: Sector Assessment: Energy, CAPE Bangladesh Linked document C

¹⁹ Bangladesh signed a MoU with Nepal in 2018 to oversee investment, development and trade in hydroelectricity between the two countries. Under this arrangement, Bangladesh will import up to 9,000 MW of hydropower from Nepal by 2040.

²⁰ According to the Ministry of Power, Power Cell, in 2019-20 distribution losses were 8.73%, and transmission loss 2.91%. This is combined with a system overcapacity where 48.4% of generation capacity remained unutilized in June, 2021.