

Coalition of Asian Think Tanks

Uniting for Asia's Renewable Energy Future: Case of Bangladesh

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I. Bangladesh in the Asian Energy Landscape

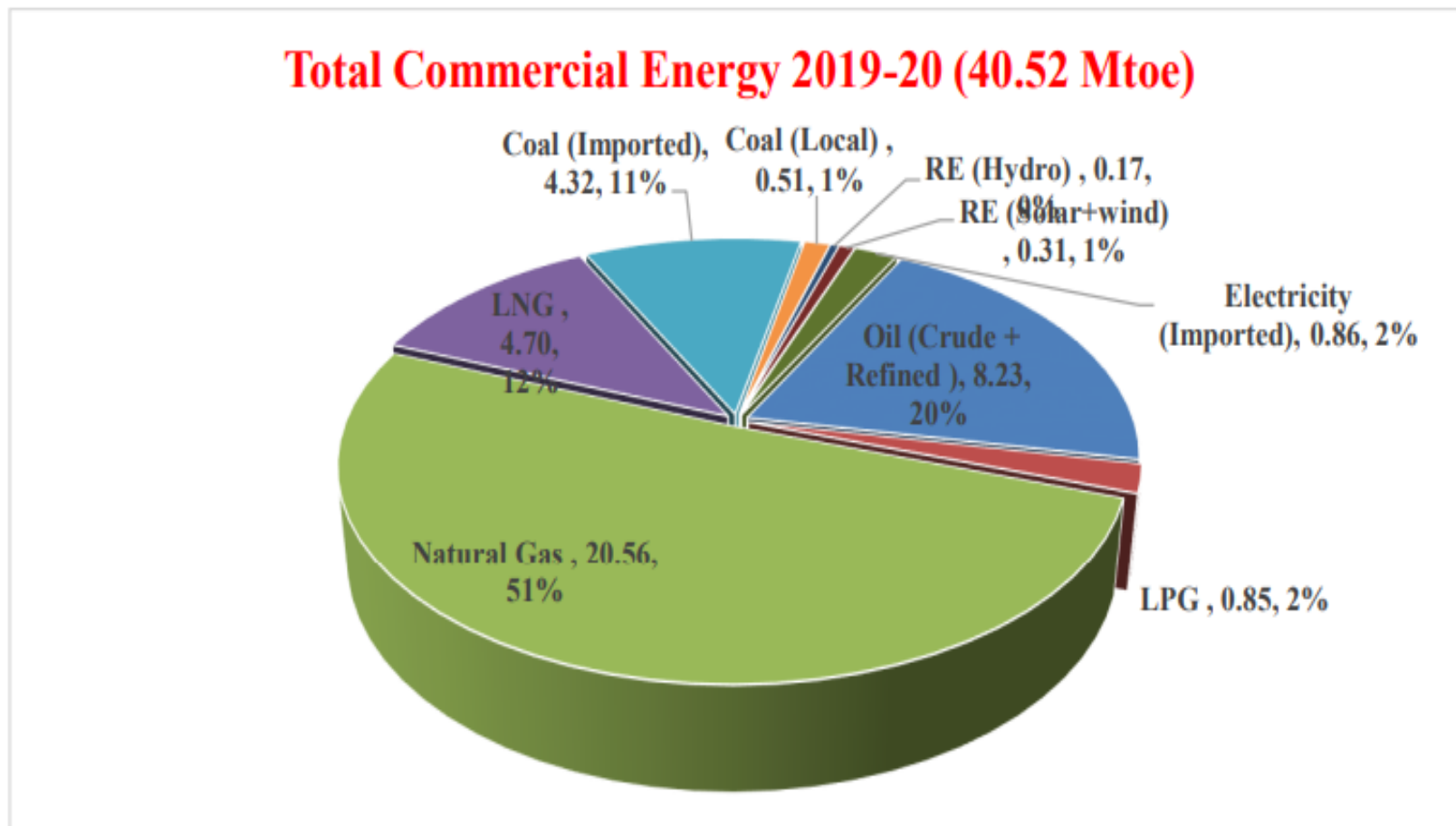


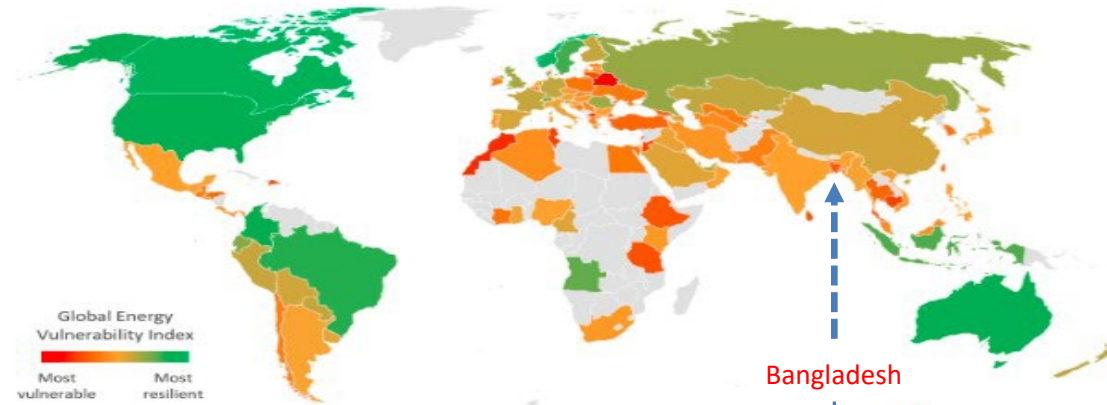
Figure 2: Share of Total Commercial Energy (2019-20)

Source: Ministry of Power Energy and Mineral Resources, GoB

I. Bangladesh in the Asian Energy Landscape

- Bangladesh is one of the **most vulnerable countries** in terms of global energy vulnerability index in Asia Pacific and Australasia region
- Euromonitor International used six groups of indicators to measure each country's level of energy vulnerability:
 1. Energy self-sufficiency
 2. Alternatives to fossils
 3. Energy reserves potential Energy accessibility
 4. Energy efficiency, and
 5. Economic resilience

Bangladesh in Global Energy Vulnerability Map



Note: The Index ranks the performance of 100 economies by evaluating their vulnerability to global energy pressures and potential energy market shocks



Source: Euromonitor International

Energy Vulnerability in the Asia Pacific and Australasia Region

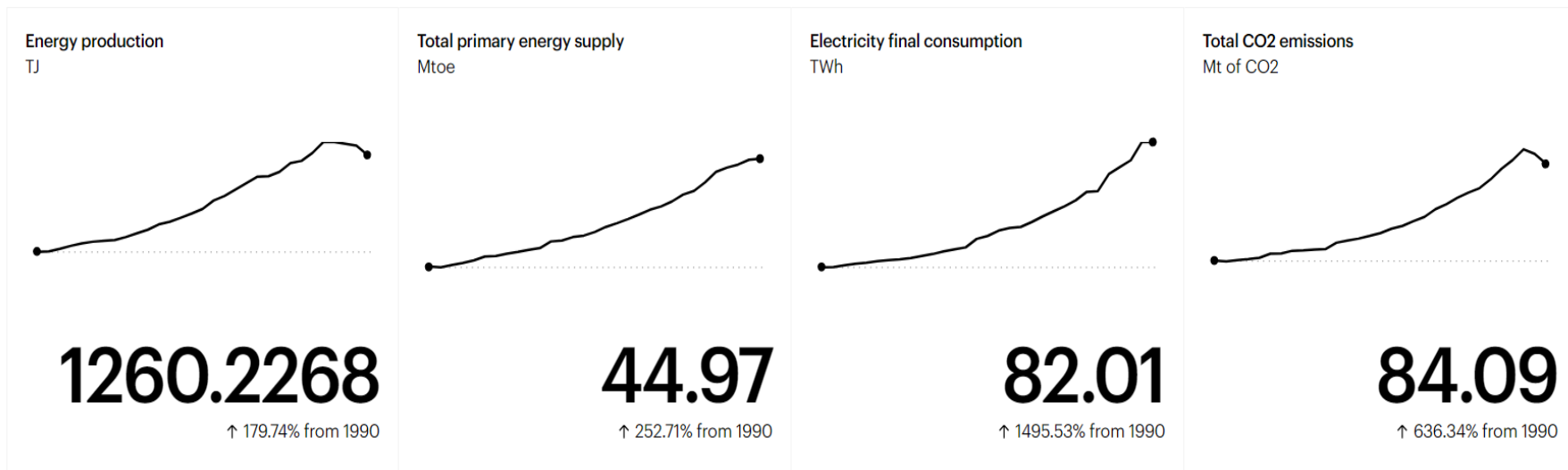
Asia Pacific and Australasia



Source: Euromonitor International

II. Carbon Emission and the Power and Energy Sector of Bangladesh

Key Energy Statistics, 2022

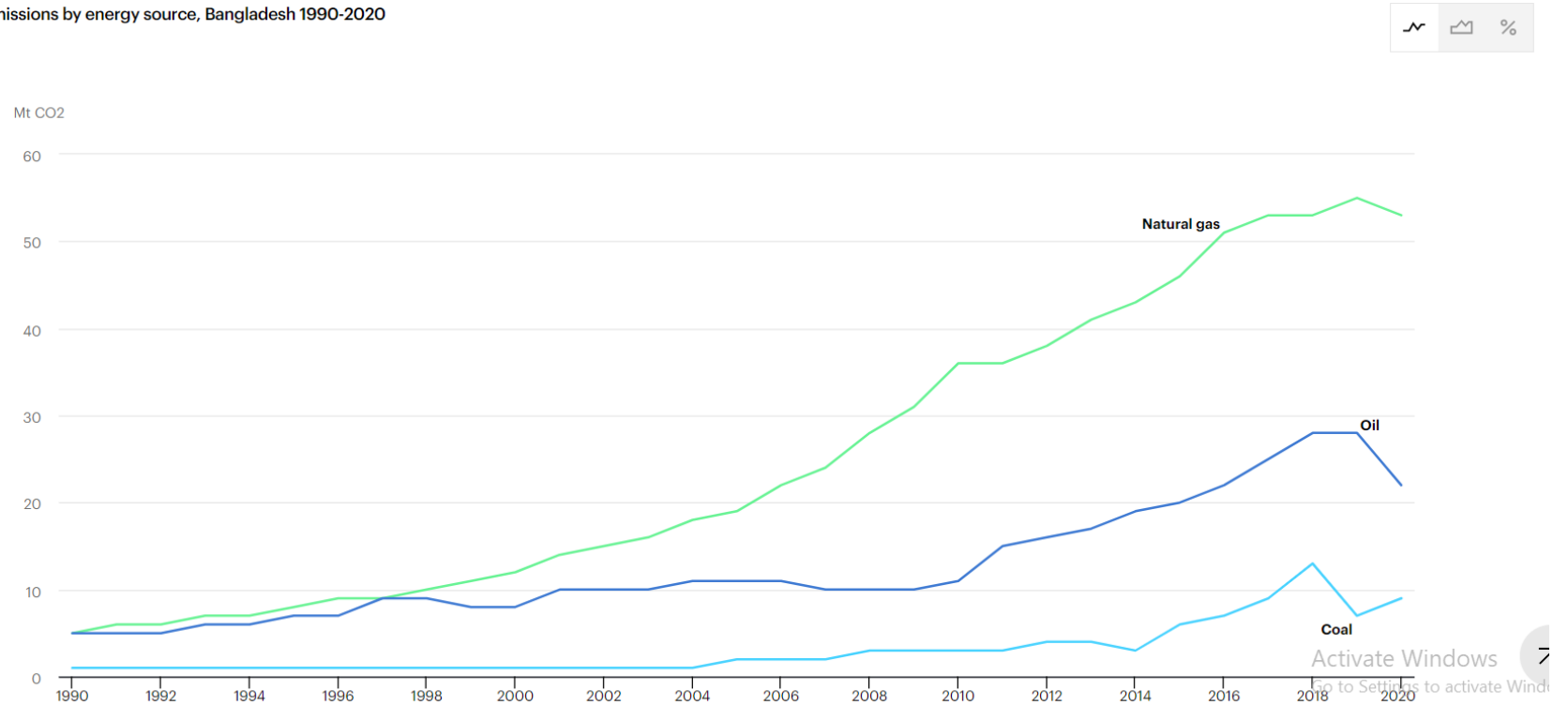


Source: IEA website, 2023

II. Carbon Emission and the Power and Energy Sector of Bangladesh

CO2 Emissions by Energy Sources

CO2 emissions by energy source, Bangladesh 1990-2020



Source: IEA website, 2023

III. Energy Transition and Bangladesh's National Policies on Energy and Power

- A number of policies/plans have direct/indirect relation with the energy and power sector
 - Bangladesh Delta Plan 2100
 - Perspective Plan of Bangladesh 2021-2041
 - 8th Five-Year Plan July 2020-June 2025
 - **Mujib Climate Prosperity Plan (MCP) 2023**
 - Bangladesh National Building Code, 2015
 - Net-metering Guidelines, 2018
 - Sustainable Finance Policy for Banks and Financial Institution
 - Gas Sector Master Plan 2017
 - Bangladesh Wind Map
- A number of Policies/Plans are currently in the process of drafting/finalization
 - Integrated Energy and Power System Master Plan 2022
 - Renewable Energy Policy 2022
 - National Solar Energy Roadmap 2021-2041
- **Integrated Energy and Power System Master Plan 2023 is just published.**

IV. Integrated Energy and Power System Master Plan 2023

- The Ministry of Power, Energy and Mineral Resources (MoPEMR) **has published** the master plan for the energy and power sector titled ***Integrated Energy and Power Master Plan (IEPMP)***
 - This is the **first time** the government of Bangladesh prepared an integrated master plan for the energy sector
- The Ministry of Power Energy and Mineral Resources (MoPEMR) has **led** the formulation of the IEPMP
- Technical support was provided by the Japan International Cooperation Agency (**JICA**)
 - Previous **3 master plans (PSMPs)** (2005, 2010 and 2016) were also supported by JICA
 - Institute of Energy Economics, Japan (IEEJ) **an academic institute**, has undertaken the assignment
- The **new integrated plan aims** to set forth a long-term energy plan
 - **Covering every sector** and **energy source** in consideration of the present conditions in Bangladesh and the **global momenta toward low-carbonization and/or decarbonization**

IV. Integrated Energy and Power System Master Plan 2023: Six Major Concerns

- There are a number of concerns with regard to the IEPMP 2023
 - a) Faulty demand projection for power
 - b) Problematic low estimates of reserve capacity
 - c) No shift from fossil fuel dominance
 - d) Little importance given on renewable energy; focusing on so called 'clean energy'**
 - e) Concerns regarding hydrogen (H₂) and ammonia co-firing as the future options**
 - f) Rising dominance of imported LNG
 - g) Faulty estimates regarding the LCOE showing coal and natural gas (LNG) are the options for future**

IV. Integrated Energy and Power System Master Plan 2023: Six Major Concerns

IV.IV Little importance given on renewable energy; focusing on so called 'clean energy'

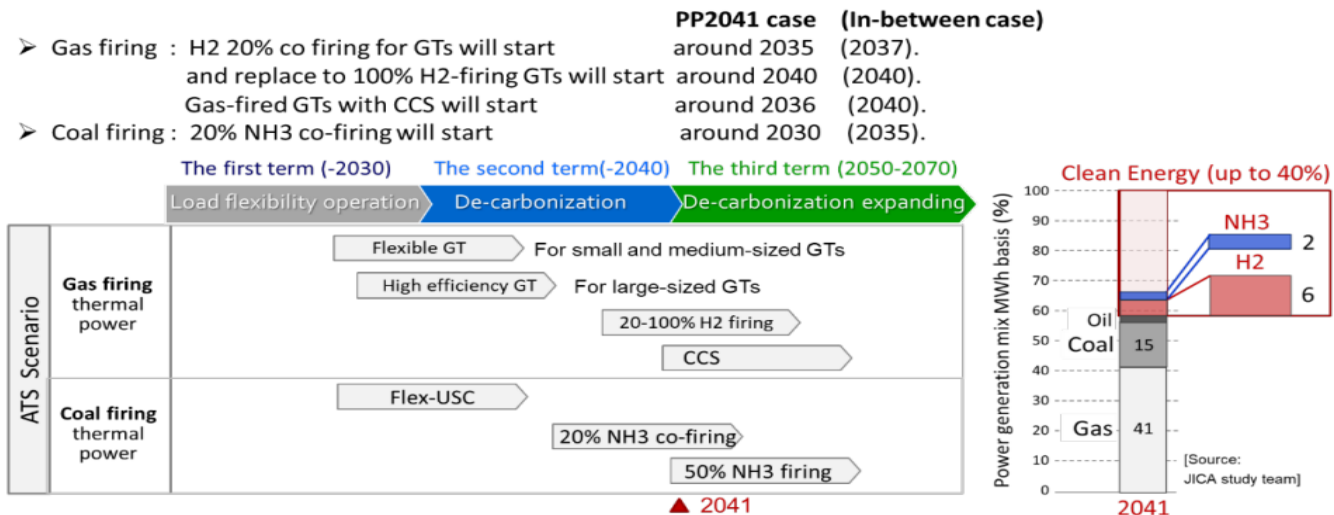
Table 5.3-1 Renewable energy generation deployment plan

Item (Unit: MW)	Availability	Advanced Technology Scenario		
		2030	2041	2050
Solar PV	-	5,061	9,500	18,000
→Solar-park solar PV	20%	3,061	3,500	6,000
→Rooftop solar PV	18%	2,000	6,000	12,000
Wind Power	-	750	7,575	20,000
→On-shore wind	25%	750	1,575	5,000
→Off-shore wind	30%	0	6,000	15,000
Traditional biomass	80%	10	15	20
Modem biomass (Waste to Energy)	80%	93.5	150	230
Hydropower	By 2030: 49.6%	230	230	230

IV. Integrated Energy and Power System Master Plan 2023: Six Major Concerns

IV.V Hydrogen (H2) and Ammonia co-firing as the future options

- Figure 5.3-2 shows timeline for introduction of **hydrogen (H2) by 2035** and **ammonia (NH3) co-firing** in gas and coal-fired thermal power systems **by 2030**.
- The graph on the right shows the ratio of electricity generation in Bangladesh as of 2041, and the goal is to have up to 40% of electricity generated from **clean energy** sources.
- To achieve this goal, it will be necessary to introduce **H2 at 6%** and **NH3 at 2%**.

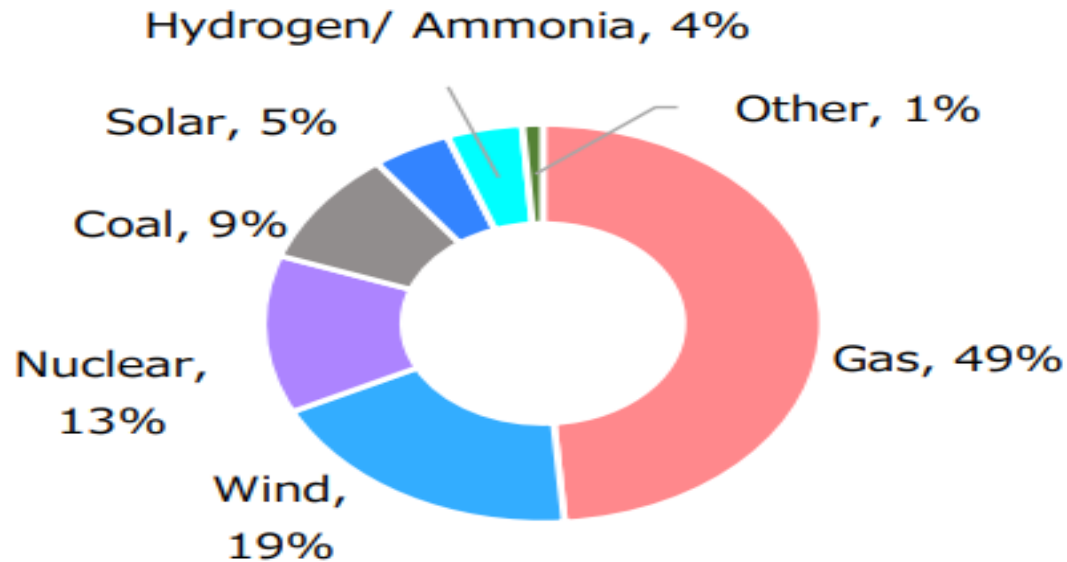


Source: IEPMP Study Team

Figure 5.3-2 Proposals for introducing H₂ co-firing and NH₃ co-firing

IV. Integrated Energy and Power System Master Plan 2023: Six Major Concerns

IV.V Hydrogen (H₂) and Ammonia co-firing as the future options

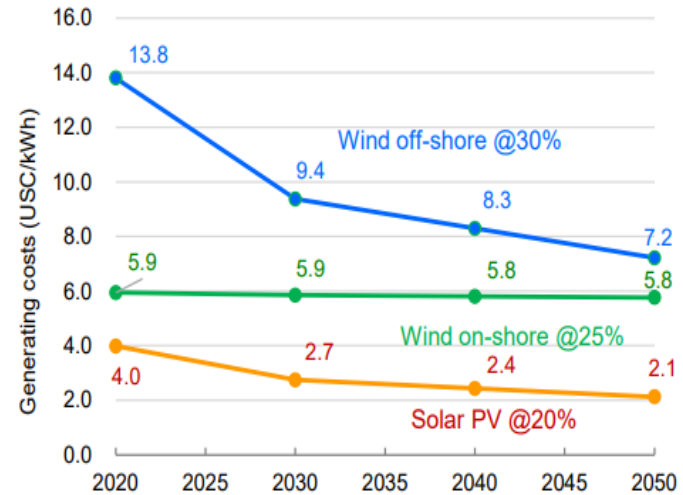
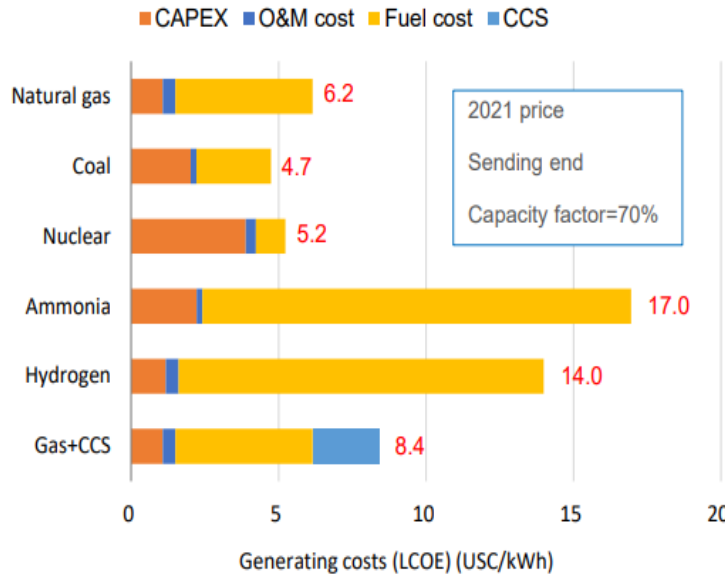


Source: IEPMP Study Team

Figure 7.1-1 Required Investment for Power Generation Capacity (ATS-PP2041)

IV. Integrated Energy and Power System Master Plan 2023: Six Major Concerns

IV.VI Faulty estimates regarding the LCOE showing coal and natural gas (LNG) are the options for future



Source: Prepared by the IEPMP Study Team from various materials (WEO2021: IEA etc.)

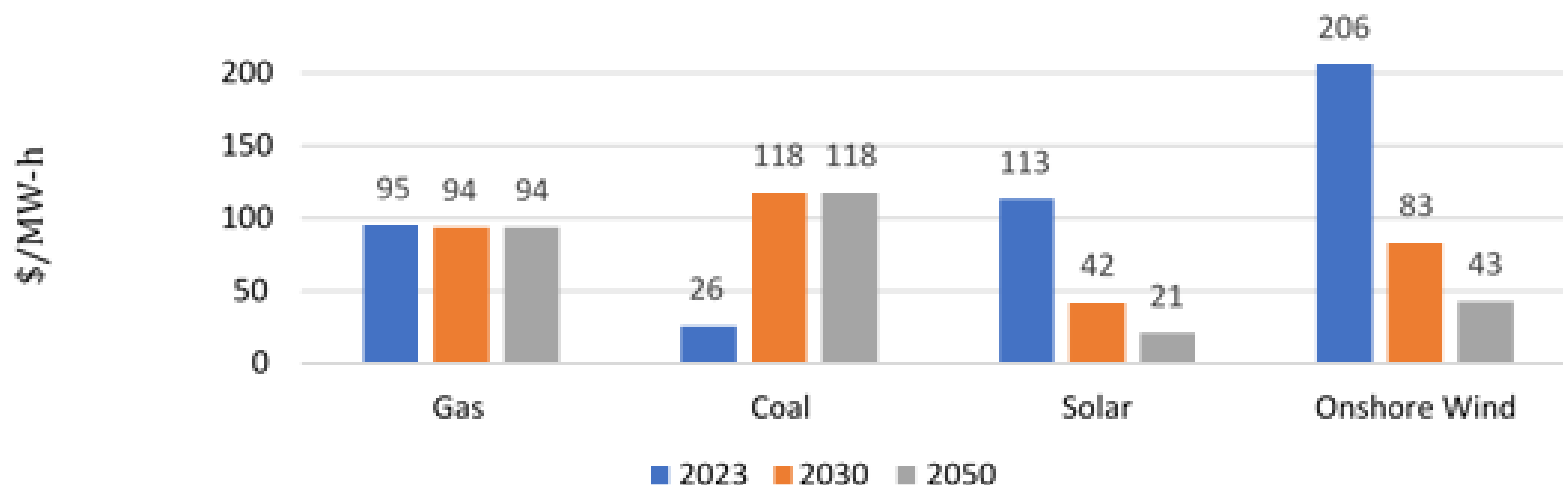
Figure 5.3-1 Generating costs of various power generation options

IV. Integrated Energy and Power System Master Plan 2023: Six Major Concerns

IV.VI Faulty estimates regarding the LCOE showing coal and natural gas (LNG) are the options for future

Energy Generation Cost from Various Sources: Bloomberg (2023) has conducted an analysis of levelised cost of electricity generation (US\$/MWh) of different energy mix in the context of Bangladesh. According to a report by Bloomberg, building more thermal power plants in Bangladesh and incorporating co-firing ammonia or blending hydrogen by 2030 is unlikely to be cost-effective for emission reduction compared to alternative renewable energy solutions like solar or wind. By 2025 and 2030, the levelised cost of electricity from renewable sources will fall drastically if Bangladesh continues to progress at the current pace.

Figure 9: Levelised Cost of Electricity as a measure of energy generation



V. Endorsement

- CPD endorses the Joint Statement of the Coalition of Asian Think Tanks.

Thank you.