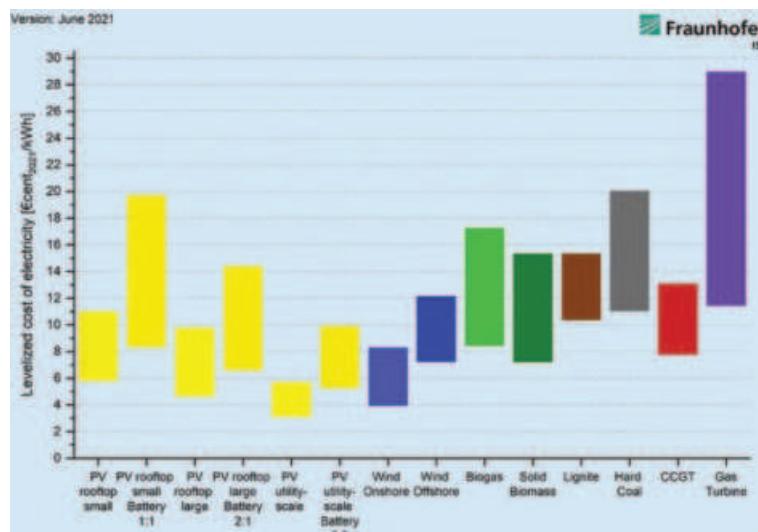


The future of renewable energy in Bangladesh

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Solar combined with Battery Energy Storage System (BESS)
Solar PV electricity is already the cheapest source of electricity in many places, but it is only available when the sun is shining. To make solar PV electricity available at other times and make it a source that can truly replace fossil fuels, one has to store the electricity for later use. At the present time, the most promising technology is battery. BESS is one of several technology options that can enhance power system flexibility, reliability, and enable high levels of renewable energy integration. Due to technological innovations and improved manufacturing capacity, lithium-ion chemistries have experienced a steep price decline of over 70 percent from 2010-2016, and prices are projected to decline further.



Technological advancements and cost reduction

Fraunhofer Institute for Solar Energy Systems ISE has presented the newest edition of their study on the leveled cost of electricity (LCOE) of renewable power plants as shown. Even though the information contained is applicable for

SOURCE: FRAUNHOFER INSTITUTE FOR SOLAR ENERGY SYSTEMS

Germany, where wind and solar are very cheap and coal is expensive because of a carbon tax, it nevertheless provides good indications of how renewables especially solar PV is gaining in cost advantage against conventional fuel-based electricity.

In Germany, the cost of electricity from Combined Cycle Gas Turbine (CCGT), the technology of choice in Bangladesh, is more than electricity from PV Utility Scale Battery. The average cost electricity from PV Utility Scale Battery in Bangladesh would be around Tk 15, which is nearly 100 percent more than in Germany, while electricity from LNG based CCGT would be approximately Tk 10.

At the present time, therefore, PV Utility Scale Battery is much more expensive than one of the cheaper electricity options for Bangladesh, but this 100 percent cost difference is expected to disappear by 2030, making solar electricity comparable in cost to any conventional electricity. Therefore, it is important to revise the country's Power System Master Plan (PSMP) and integrate solar options in a meaningful way by taking into consideration the

Solar energy is the single most dependable RE resource that can be resourced on a large scale.

PHOTO: COLLECTED

fast-changing reality of utility scale solar power plants with storage.

The country experiences peak power demand on average 3 hours a day, i.e., from 7 PM to 10 PM. A BESS project may be designed such that during daytime when the sun shines it charges a battery pack and discharges the stored power at that time. That, this is a financially viable solution, can be verified from Figure 3; the cost of electricity for PV Battery is much lower than Gas Turbine. Therefore, the peaking Gas Turbine power plants (assuming those to be fired by LNG) and the oil-based (HFO and diesel) power plants can immediately be retired in favour of PV Battery power plants.

Administrative measures and regulatory reforms

Bangladesh has announced bold plans around renewable energy adoption in COP26. The Nationally Determined Contribution (NDC) talks about a target of 4,100 MW Renewable Energy by 2030. However, these plans would be hard to mobilise from a private sector perspective unless substantive changes to the grid and regulatory reforms are implemented.

Numerous obstacles for RE companies in the private sector are hampering the widespread use of renewable energy. Some of the major challenges are enumerated below:

1. Lack of strategic direction: The RE sector in Bangladesh lacks a clear strategic direction in terms of setting targets from specific technologies. Shifting government priorities have seen some technologies (Solar Home Systems, Mini-grid) being hamstrung. Different competing energy sources and power systems are also shifting the government's focus from RE. Fuel Oil-based Quick Rental Power Plants from small independent power producers are still a major and costly portion of the power mix, and these need to be gradually phased out to make room for RE.

2. Failure of the early unsolicited utility-scale solar projects: The major points of contention were land availability and land acquisition, securing the Right of Way (ROW), and challenges surrounding grid interconnection.

3. Lack of proper studies, bankable data, regulatory checklist in the wind energy sector: The private sector is exposed to a lot of risk in terms of acquiring reliable and authenticated data. There is a dearth of data in terms of land availability, substation load capacity, site specific data, etc.

4. Investor/lender interest surrounding uncertainties: Foreign investors/lenders are deterred over project timelines, interagency navigation, contract lock-ins (e.g., a local partner and their foreign partner need to be a part of the project for at least 6 years), and lack of clarity over various regulations.

5. Utility distribution companies' upgradation: The distribution utilities in its current state are inadequate to support mass RE adoption to serve the local electricity market.

The underlying problems are two-fold, first, in the infrastructure readiness and planning level, and second, in terms of capacity and preparedness of many local level offices.

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