THE INTERNATIONAL REC STANDARD

Country Assessment Report

Country/Region name:
Bangladesh

Country Background:
Bangladesh is situated in South Asia, with a land area of 147,570km^2 and a population of 159 million people. It is surrounded by India on all sides except for a small border with Myanmar to the far southeast and the Bay of Bengal to the south (un.org). The population of Bangladesh ranks seventh largest in the world, but its land area is ranked ninety-fourth, making it one of the most densely populated countries in the world. (internetworldstats.com)

Economic Structure and Activity:
Bangladesh's economic expansion has been robust over the past decade and in fiscal year 2019 the economy grew by 8.2%, the highest in the Asia and Pacific region (ADB Factsheet). GDP is expected to reach 275 billion by the end of 2020. The country graduated to a lower-middle-income nation in 2015. (moderndiplomacy.eu)

The apparel sector is a key driver of growth. Bangladesh is the second largest apparel exporting country in the world (bangladeshapparelexchange.com). Its $28 billion textile and apparel industries are vital to its economy—generating 20% of GDP and over 80% of export earnings, while employing 4.5 million people, mostly women (IFC PDF online).

Top Private Companies with RE Commitments

The majority of RE demand in Bangladesh is from the apparel sector. In the apparel sector, much of the demand for RE is driven by RE100 members and brands with approved Science Based Targets. However, load is primarily attributed to supply chain stakeholders, rather than to the brands. Apparel brands with approved Science Based Targets are requesting, on average, 30%-50% carbon reductions of its supply chain stakeholders. The following list indicates the annual value of goods ordered by apparel brands from Bangladeshi suppliers (tbsnews.net)

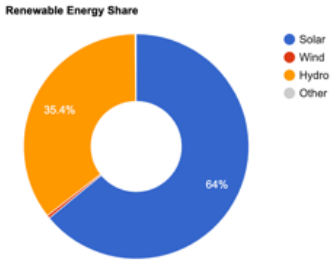
1. H&M Group –$3.5 billion (RE100 member)
2. M&S (Marks & Spencer) - $1 billion (RE100 member)
3. Inditex (Zara, Bershka) - $1 billion (RE100 member)
4. Primark - $900 million (not RE100, but reports to CDP)
5. Kiabi - $500-$700 million (not RE100, but has a goal to be 100% "sustainable" by 2030)
6. Benetton - $400-500 million
7. Other brands with supply chains in Bangladesh include: adidas, Walmart, Gap, JC Penney, PVH, Esprit, Reitmans, Oshkosh, American Eagle Outfitters, and Ralph Lauren.

Although the breakdown of suppliers that sell to each brand (and their respective RE demand) are not easily ascertained, this list from the Bangladesh Garments Accessories & Packaging Manufacturers & Exporters Association (BGAPMEA) shows 1,500 of the local manufacturers contracted by international brands; and this list from BGMEA shows member names, contact people, and email addresses. This list identifies the top 10 local garment manufacturers (2020).

Generation and demand: (type, MW, TWh)

Total Generation Capacity: 23,548 MW
RE Generation Capacity: 650.06 MW
Total Consumers: 38.4 Million
Per Capita Generation: 512 KWh
Access to Electricity: 98% of population
(powercell.gov.bd)

Techlology	Off-grid (MW)	On-grid (MW)	Total (MW)
Solar	327.98	88.15	416.13
Wind	2	0.9	2.9
Hydro	0	230	230
Biogas to Electricity	0.63	0	0.63
Biomass to Electricity	0.4	0	0.4
Total	**331.01**	**319.05**	**650.06**



Breakdown of RE by Fuel Type (November 2020):
Solar: 64% (mostly off-grid. See table below)
Hydro: 35.4% (single project)
Wind: 0.4%

Source: renewableenergy.gov.bd
NOTE: the above link also provides a list of most RE generation units, including on- and off-grid.

Electrical interconnection and import/export:

Domestic: The Padma-Jamuna-Meghna river system divides Bangladesh into two zones, East and West. The East contains nearly all of the country's electric generating capacity, while the West, with almost no natural resources, must import power from the East. Electricity interconnection from the East to the West was accomplished in 1982 by a 230-kilovolt (kV) power transmission line. The vast majority of Bangladesh's electricity consumption takes place in the East, with the entire region west of the Jamuna River accounting for only 22% of the total. Greater Dhaka alone consumes around half of Bangladeshi electricity. (geni.org)
Transmission Line: 12,293 Ckt. km
Grid Sub-station Capacity (MVA): 47,304
Distribution Line: 5,86,000 km
Distribution Loss: 8.73% (June 2020)
(powercell.gov.bd)

Regional: In 2017, the India-Bangladesh Power Interconnection was used for the first time. In 2021, Bangladesh expects to achieve universal electricity access for the country's 160 million people, only half of whom had electricity a decade ago. The government expects to

boost imports fivefold, to 5 GW, by 2030.[1] Importing more electricity will provide access to relatively low-cost and renewable hydropower. A deal struck with Nepal should provide 500 megawatts, and more interconnections to India, as well as Bhutan, China, and Myanmar, are under discussion. (spectrum.ieee.org)

Map of Bangladesh Showing Cross Border Electricity Connections:

Source: https://spectrum.ieee.org/energy/fossil-fuels/bangladesh-scrambles-to-deliver-electricity-to-its-160-million-residents-in-2021

Electricity market structure:
The power sector is unbundled into generation, transmission, and distribution segments. The Bangladesh Power Development Board (BPDB) serves as the single buyer, and supplies power in bulk to distribution utilities. Off-grid generation, particularly from solar installations, plays an important role in the country's overall renewable energy landscape, with off-grid installations accounting for more than three times the amount of grid-tied solar (327.98 MW vs 88.15 MW, respectively). The remainder of this section considers specifically on-grid systems.

Generation comprises: Independent Power Producers (utility scale, corporate/industrial/ and home systems); and several state-owned generation firms including Ashuganj Power Station Company, Electricity Generation Company of Bangladesh, North-West Power Generation Company, and Rural Power Company.
Transmission: is owned and managed by the Power Grid Company of Bangladesh Limited
Distribution: is managed by BPDB (urban centers, except for Dhaka); the Dhaka Power Distribution Company and Dhaka Electric Supply Company; the West Zone Power Distribution Company (Khulna), and the Bangladesh Rural Electrification Board (rest of the country).

Responsible government department: (include key contacts)

The Ministry of Power, Energy, and Mineral Resources (MPEMR) oversees the power subsector through multiple subdivisions (see organigram below). [redacted] general contact: [redacted] | [redacted]

1. **Power Division** is responsible for all policies and matters relating to electricity generation, transmission, and distribution from conventional and non-conventional energy sources including hydroelectricity.
2. **Power Cell** is unbundled into various sub-entities, comprising: six generation entities, one transmission entity, and five distribution entities. Power Cell also acts as a think tank and provides policy support.
   [redacted]

[1] While RE100 guidelines generally define market boundaries in Asia in terms of country borders, the growing role of electricity imports from India may have implications for REC use and trading in the future.

b. **Website: http://www.powercell.gov.bd/ (click on top rightmost for English)**
c. **Tel:** [redacted]
d. **Fax:** [redacted]
e. **E-mail:** [redacted]

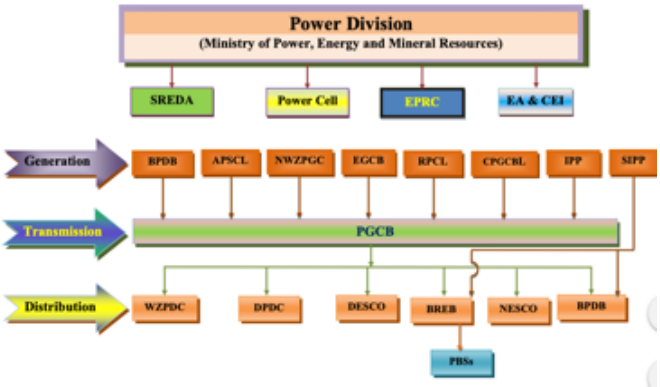
Bangladesh Power Development Board (BPDP) is the single buyer of power for all grid connected electricity. It holds the PPAs with IPPs as well as with state owned generation entities. BPDP own the rights to 50% of revenue generated through the sale of carbon credits, starting with PPAs signed in 2019 or after (see attribute ownership section below).[2]

Sustainable Renewable Energy Development Authority (SREDA) is the nodal agency for supporting sustainable and renewable energy development. SREDA came into being in 2014 and is now fully functional as a government agency. SREDA aims to promote renewable energy and energy efficiency by:

- Coordinating renewable energy and energy efficiency efforts of the government.
- Standardizing and labelling the renewable energy and energy efficiency products.
- Piloting new technologies, and taking initiatives for their expansion.
- Creating conducive environment for the investors.
- Conducting research and development.
- Developing capacity.
- Creating awareness for renewable energy and energy efficiency.
- Establishing linkages with regional and international organizations.

SREDA also acts as a regulator with respect to sustainable energy. It oversees initiatives related to renewable energy and energy efficiency, with separate wings designated to support administration, finance, and policy and research. (SREDA website).
Chairman: Mohammad Alauddin.

Organogram for the Power Sector



Source: http://www.powercell.gov.bd/site/page/a3daca9f-e274-4f5e-b581-19f7c27c2e56/-

[2] Note: while the contract language specifies "carbon credits", there is some ambiguity as to whether this clause covers all environmental attributes, or only those associated with carbon. As such, there is a need to clarify this with domestic stakeholders, and in particular either BPDP and/or SREDA.

Note: abbreviations not listed in original source.

Existing/Planned energy legislation: (is there a CPO)

The key energy policy documents in Bangladesh are as follows:[3]

1. National Solar Energy Action Plan 2021-2041 (draft status as of October 2020)[4]
2. Power System Master Plan 2016 (download here). No English version of 2019 update.
3. 2017 Net Metering Guidelines (download here)
4. Electricity Amendment Act 2012 (download here)
5. Renewable Energy Policy of Bangladesh 2008 (Download here)
6. Energy Efficiency and Conservation Master Plan up to 2030 (download here)

A 2019 overview of RE policy can also found at this link.

Environmental legislation for RE:

Bangladesh is targeting 40GWp of renewables by 2041 (source) or 17% of electricity generation from renewables by 2041 (source).. Bangladesh provides a preferential tariff rate for power generated by utility scale solar and wind projects, and has a net energy metering scheme for rooftop solar installations. Both are designed to support the introduction of more RE generation. The preferential tariff rate for solar projects has been modified, and little information is available on the current mechanism. Anecdotal evidence suggests that the tariff rate for utility scale renewable projects is not fixed, and to date has been determined through direct negotiation with BPDB. An original tariff rate was allegedly set at $.18/kwh, but has been renegotiated due in part to delays in commissioning dates for associated projects (source).

Environmental attribute ownership: The template power purchase agreements (PPA) for utility scale renewable energy projects prior to 2019 does not mention carbon credits or RECs. Project owners for assets commissioned prior to 2019 have issued carbon credits and RECs, claiming full ownership and retaining full revenue.

A revised template PPA, issued in 2019 adds a clause on carbon credits, which indicates that the tariff rate does not include the value of carbon credits; and mandates that if a project owner registers a project and sells the associated carbon credits, then it must declare the value of and share the revenue with BPDB (50/50%, after issuance/transactional costs). The language on carbon credits is in the 2019 template PPA for utility scale solar projects is as follows:

"Section 3.4: Carbon Credits

The Company and BPDB acknowledge that registration of the Project for Carbon Credits marketing and distribution of benefits of Carbon Credits generated by the Facility shall be in

[3] Note, links to documents hosted on servers/websites in Bangladesh are intermittently inaccessible.

[4] The contact details for the author are listed in the document and are as follows: Shahriar Ahmed Chowdhury Chairman, Center for Renewable Energy Services Ltd. (CRESL) & Director, Centre for Energy Research, United International University Dhaka, Bangladesh
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accordance with [the GOB's relevant policy for development of renewable energy for power generation, as amended or replaced from time to time, which shall govern the matters related to carbon credits for the Project]. Such registration shall be carried out expeditiously and the Company shall pursue the sale of the Carbon Credits diligently. For avoidance of doubt:

a) the amounts to be realized from the sale of Carbon Credits have not been included in the Tariff Rate;

b) the reasonable and verifiable expenses incurred by the Company to register the Project for Carbon Credits and to administer the Certified Emission Reduction management mechanism have not been included in the Tariff Rate;

c) the net revenue from the sale of Carbon Credits for each Contract Year shall be calculated as (i) the amount under Clause (a) above less (ii) the amount under Clause (b) for the relevant Contract Year or for a prior period if not already taken account of in such calculation for any previous Contract Year (along with interest accrued at the Bank Rate from the time of incurrence of such amount in the prior period); provided, that the amount under Clause (ii) shall not in any Contract Year exceed the amount under Clause (i); and

d) the net revenue calculated as per Clause (c) shall be shared equally between the Company and BPDB.

The Company shall keep BPDB informed not less than quarterly on the progress of selling the Carbon Credits from the Project and its efforts in relation thereto, and the Company shall inform BPDB immediately upon the occurrence of such sale and the amount received and/or expected to be received from such sale." (
Source: https://www.bpdb.gov.bd/bpdb_new/d3pbs_uploads/files/PPA%20for%2050-60%20MW%20Solar%20Project%20at%20Rangunia.pdf

Further, Clause 21.1 of the 2018 Net Metering Guidelines state that " 21. Sharing of CDM Benefits or Other Carbon Crediting Mechanism Benefits: 21.1 The entire proceeds of carbon credit from approved CDM project, if any, shall be retained by the generating company."

Existing/Planned energy certificate systems: (purpose, extent)

The National Solar Energy Action Plan 2021-2041 makes a medium-term (2031-2041) recommends that the government of Bangladesh: "Establish and regulate a tradable RE/solar PV certificate mechanism". The full recommendation is as follows:

Rationale: The main aim of this action is to introduce a market-based scheme as an effective tool to acceleration solar PV deployment.

Details: It is not uncommon for countries with obligatory electricity quota systems to establish a tradable REC market (30 countries have by 2017) [99]. RECs are typically awarded for each MWh of RE and market players can trade such RECs to meet their annual RPO target. There are numerous studies and reports which present comprehensive discussions on such REC markets. For example, Shrimali and Tirumalachetty have reviewed the REC markets prevailing in various Indian states in details [108].

Expected outcome: This market-based scheme can generate and mobilize internal sources of funding and, if properly exploited, in the long run can help significantly to meet the national RE/solar targets.

Stakeholders: Power Division, MoF, SREDA, IDCOL, utilities, all private and public business companies, consumers, etc.
Source: page 105 of the The National Solar Energy Action Plan 2021-2041)

Extent of engagement with government:
The I-REC Standard Foundation is establishing communication with BPDP and SREDA, among other domestic stakeholders; however, travel restrictions brought on by COVID-19 have slowed initial communications. Regional representatives will meet with respective government officials to establish next steps for designating a local issuer as soon as possible.

Response from Government in relation to attribute tracking systems:
Attribute tracking in Bangladesh is in early stages, with limited domestic capacity in both the public and private sectors. Issuance will likely be initially carried out by the central issuer, in parallel to capacity building efforts to define and train a local counterpart to support long-term market growth.

Demand-side market potential or strategic nature of market development:
Bangladesh is a key sourcing country for international clothing brands. The I-REC Standard Foundation initiated this country assessment/report upon request from clothing brands, and on behalf of their supply chain stakeholders. Anticipated demand for RECs is concentrated in the clothing and apparel sector, across both international firms and domestic suppliers.

Analysis of political disruptions or market risks:
The COVID-19 pandemic poses short-term barriers to liaising with government counterparts. In the medium term, lack of clarity and transparent documentation to describe incentive mechanisms for RE and how they will impact the ownership of environmental attributes creates ambiguity for registrants and other stakeholder groups.

Mechanisms in place to support the reliable verification and issuance of I-RECs: In the short-term, grid-connected power is all purchased by a single source, and there is potential for the central issuer to review settlement data for such power. In the medium term, there may be opportunities to engage with BPDP and associated power tracking systems to access robust power sector data. In the first instance, however, it is envisaged that the central issuer will perform verification until a suitable domestic counterpart is engaged.

Local organizations of importance and their opinion on local I-REC market development: As noted above, this report was prepared upon request from a major apparel brand, which contacted the I-REC Standard Foundation to request access to the credible system it uses in multiple countries across the world.

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