



Program Information Document (PID)

Concept Stage | Date Prepared/Updated: 19-Nov-2020 | Report No: PIDC235312



BASIC INFORMATION

A. Basic Program Data

Country Bangladesh	Project ID P174650	Parent Project ID (if any)	Program Name Electricity Distribution Modernization Program
Region SOUTH ASIA	Estimated Appraisal Date 08-Jun-2021	Estimated Board Date 30-Sep-2021	Does this operation have an IPF component? No
Financing Instrument Program-for-Results Financing	Borrower(s) Government of Bangladesh	Implementing Agency Bangladesh Rural Electrification Board, Bangladesh Electricity Regulatory Commission, Ministry of Power, Energy and Mineral Resources	Practice Area (Lead) Energy & Extractives

Proposed Program Development Objective(s)

The PDO is to improve the delivery, reliability and efficiency of electricity supply in selected areas in Bangladesh and strengthen institutional and regulatory capacity.

COST & FINANCING

SUMMARY (USD Millions)

Government program Cost	3,213.00
Total Operation Cost	1,194.00
Total Program Cost	1,194.00
Total Financing	1,194.00
Financing Gap	0.00

FINANCING (USD Millions)

Total World Bank Group Financing	500.00
World Bank Lending	500.00



Total Government Contribution	332.00
Total Non-World Bank Group and Non-Client Government Financing	362.00
Multilateral and Bilateral Financing (Concessional)	242.00
Trust Funds	120.00

Concept Review Decision

The review did authorize the preparation to continue

B. Introduction and Context

Country Context

- Bangladesh has experienced a long period of rapid growth, job creation, and poverty reduction.** GDP growth averaged more than 6.5 percent annually in the 2010-2019 period, accelerating to above 8 percent in FY2019. Poverty declined from 44.2 percent in 1991 to less than 14 percent in 2016 and other social indicators on gender, education and maternal mortality also improved. Rapid growth in the ready-made garment sector, whereby Bangladesh became the world’s second-largest exporter after China in 2018, helped the economy to diversify away from the agricultural sector. Large inflows of remittances helped strengthen its external position and support private consumption. Bangladesh is emerging from a low-income to lower-middle income status.
- The COVID-19 pandemic is severely impacting the Bangladeshi economy, threatening decades of hard-won development gains.** GDP growth in FY2020 is projected to be in the range of 1 to 1.6 percent, and 1.0 to -3.0 percent in FY21 – significantly below pre-COVID projections. COVID-19 has heavily affected the ready-made garment sector, with reported cancellations of more than US\$ 3 billion of garment orders and shutdowns in many factories. Slower GDP growth, the income losses of informal workers, and lower international remittances may add 8 to 12 percentage points to what the 2020 poverty rate would have been without COVID-19. The COVID-19 outbreak is expected to worsen the fiscal position, as weaker tax revenues and higher spending related to COVID-19 increase the fiscal deficit. The recovery is expected to be gradual, with some increase in export demand and higher public spending amid potential economic disruptions and increasing fragilities in the banking system.
- Climate change presents risks to the country’s economic recovery efforts.** Bangladesh was ranked as the seventh most climate change affected country during 1999-2018 in the Global Climate Risk Index. Rising temperatures are increasing the probability of catastrophic cyclones and could lead to estimated economic losses between 1.5 and 3.0 percent of GDP by 2031 and 13.3 million internal climate migrants by 2050¹. This would have significant consequences

¹ World Bank (2018) Groundswell: Preparing for Internal Climate Migration



for reliability of electricity supply and other essential infrastructure services. Addressing climate risks is increasingly becoming urgent to ensure sustainable economic development.

4. **Bangladesh must focus on policies, institutions and investments that will address structural challenges and climate risks and accelerate its economic transformation.** Bangladesh must find ways to diversify into complex and higher value-added products and services, pursuing enabling improvements to business environment and infrastructure. Digitalization can be a key enabler, helping make its infrastructure and economy more efficient and resilient to climate change. Investments in climate adaptation and resilience and decarbonization of its energy mix with the assistance of international community can help Bangladesh manage its climate vulnerability. Phase out of expensive energy subsidies can help Bangladesh make fiscal room for green investments as well as targeted social assistance for poor and vulnerable groups.

Sectoral (or multi-sectoral) and Institutional Context of the Program

5. **Bangladesh has in the last decade made impressive progress in increasing access to electricity and power generation capacity.** In 2010, the country's electricity access rate was 55 percent. Its installed generation capacity of 5 Gigawatt (GW) met less than 75 percent of peak demand and shaved off an estimated 3 percent of GDP growth. Annual per capita electricity consumption of 160 Kilowatt hours (Kwh) was about one-fourth of India's and one of the lowest in the world. The government's prioritization of generation and electrification during the last decade has led to impressive achievements in these areas. Access to grid electricity has increased to 95 percent by 2019. Installed generation capacity, aided by non-competitive emergency generation schemes from expensive oil-based plants, has quadrupled to 20 GW in the same period and now comfortably exceeds the 12 GW peak demand in the country. Annual per capita electricity consumption more than doubled to 320Kwh.

6. **There hasn't been a similar improvement in reliability of electricity supply, which is adversely impacting its economic competitiveness and the business environment.** This reflects inadequate investment in the transmission and distribution network. Bangladesh ranked 176 out of 187 countries in the electricity sector rankings of 2019 Doing Business. Reliability of electricity supply is the lowest among regional peers due to outages. A recent International Finance Corporation (IFC) study shows that unreliable power supply is a major challenge for the expansion of medium size enterprises in sectors with export potential (e.g., footwear, plastics, light engineering goods); the study also estimates that the annual loss to production due to power disruption has been over 0.5 percent of GDP.² Businesses continue to rely on expensive and environmentally polluting back up and captive generation. Underpricing of electricity - losses of the power sector State Owned Enterprises for FY2019 are estimated at about US\$1.2 billion, or 0.9 percent of GDP - serves as a disincentive to investments and undermines the sustainability of the sector. The IMF estimates the total direct energy subsidy at 2 percent of GDP; this number doubles if implied tax is added to reflect environmental and other externalities.

7. **Bangladesh faces significant challenges in securing sustainable and affordable electricity to support its rapidly growing economy, as it pursues its aspirations to become a developed nation by 2050.** Electricity demand in Bangladesh is projected to more than double to 32 GW by 2030. The availability of low-cost domestic gas reserves has historically enabled Bangladesh to generate electricity at relatively low cost and keep electricity tariff affordable. However, with the expected depletion of gas reserves by 2028 and phase out of generation from emergency rental plants, the government's Power System Master Plan (PSMP) leans heavily on imported coal alongside imported Liquefied Natural Gas (LNG), renewable energy and imports. Increasing the share of coal to 30 percent of the total energy mix from a low base as planned in the PSMP will be damaging to the climate. It will also face social opposition to domestic coal extraction, import

² Building Competitive Sectors for Export Diversification: Opportunities and Policy Priorities for Bangladesh, IFC 2019



capacity constraints of foreign coal and prohibitions from major commercial banks and export credit agencies from financing coal fired power generation. Furthermore, coal-fueled power plants are increasingly losing financial and economic competitiveness with other generation options in many parts of the World. Against this backdrop, the government has recently shown a willingness to limit the development of coal plants and consider alternate options as part of an ongoing update of the least cost plan.

8. **The Bangladesh Rural Electrification Board (BREB) will need to play a central role delivering reliable and affordable electricity.** BREB was established in 1977 as a means of extending the benefits of electric service to the rural areas of Bangladesh through its associated rural electric societies called Palli Bidyut Samities (PBSs). BREB and its associated 80 PBSs provide electricity to more than 90 percent of the country's districts, three fourths of the population and account for close to half of the electricity sales. BREB purchases power in bulk from Bangladesh Power Development Board (BPDB), which is the single buyer in the sector that also owns its own generation and distribution companies and purchases electricity from other generators. BREB is regulated by the Bangladesh Energy Regulatory Commission (BERC). The Power Grid Company of Bangladesh is responsible for transmission and includes the National Load Dispatch Center. Besides BREB and BPDB, there are three other distribution utilities - Dhaka Power Distribution Company (DPDC), Dhaka Electric Supply Company Limited (DESCO), and West Zone Power Distribution Company Limited (WZPDCL) – that supply electricity to consumers. Ministry of Power, Energy and Mineral Resources, assisted by its technical arm Power Cell, sets the policy directions for the sector and provide oversight to sector agencies.

9. **BREB in the last decade successfully implemented one of the largest rural electrification programs in the world, delivering access to more than 90 million people.** As of 2008, BREB served approximately 8 million consumers, and while impressive this still only reflected about 30 percent of the rural households. With government and development partner backing for its plans to provide universal access to electricity for all Bangladeshis by 2021, BREB provided electricity to an additional 19 million households, putting the government on the cusp of meeting its electrification goals. The World Bank has been supporting BREB through its *Rural Electricity Transmission and Distribution Project* that is closing in June 2021. The program is on track to complete universal electrification by 2021.

10. **With the access agenda nearing completion, the government is keen to focus on BREB's modernization and network transformation.** The accelerated efforts to achieve universal electrification has increased the pressure on BREB's distribution network and increased network congestion and disruption. Electricity demand in areas served by the BREB is expected to increase significantly from 7GW to 16GW by 2030, as the consumer mix of BREB changes to encompass 42 economic zones. The penetration of distributed solar needs to increase many folds to meet the government's renewable energy targets alongside increased integration of electric mobility.

11. **The government is preparing program for *Modernization and Capacity Enhancement of BREB* to respond to these challenges.** The program envisages investments of more than US\$3.2 billion between 2021-2025. The government and BREB are considering network capacity and technology investments as part of the program and have requested the Bank to support the implementation of the program in the Dhaka-Mymensingh division. The program will strengthen BREB's ability to meet rapidly growing electricity demand while also supporting the decarbonization of the sector and improving climate resilience of the electricity system.

Relationship to CAS/CPF

12. **The proposed program is aligned with the World Bank Group's (WBG) Bangladesh Country Partnership Framework (CPF) for FY2016-20, which has been extended to FY2021 after the Program Learning Review.** It directly supports the CPF's transformational priority in energy and contributes to the achievement of foundational priorities –



macroeconomic stability, human development and strengthened institutions and business environment. The program is consistent Program Learning Review's emphasis on climate resilience and digital transformation. The program will improve delivery of electricity services to the rural poor, facilitating higher levels of economic activity and poverty reduction in rural areas. Similarly, it will improve the reliability and efficiency of electricity services delivered to industries and special economic zones, improving their competitiveness and enabling diversification into more complex and higher value-added products.

13. **This program falls under the “Rebuilding Better” phase activities of the World Bank’s Bangladesh engagement in the current COVID crisis.** It has the objective of achieving resilient, inclusive and sustainable recovery by strengthening policies, institutions and investment in a world transformed by the coronavirus. The crisis has shown the importance of reliable electricity services for an effective response to the crisis across different sector including health and education as well as the means to bridge the digital divide faced by the poorest and vulnerable groups. The program maintains the focus on climate change by supporting climate resilience and distributed energy resources which will support the achievement Nationally Determined Contributions.

Rationale for Bank Engagement and Choice of Financing Instrument

14. **There is a strong development rationale for public sector support and Bank engagement in the proposed operation.**

- **Rationale for Public Finance.** Public finance is needed because private and commercial finance is not expected to be available to BREB/PBSs to undertake investments in the country's rural and peri-urban distribution network. BREB/PBSs have taken up high levels of debt from the government to meet universal electrification mandates and to subsidize electricity to poor and marginal consumers. BREB/PBSs are hence are significantly dependent on concessional resources to finance capital expansion requirements as well as to support achievement of positive financial results and cash flow and would not in the near term be able to attract private investment or qualify for commercial financing.
- **Bank's Value Added.** The Bank has supported BREB's rural electrification agenda since 1981 through multiple operations. The Bank is well positioned to help BREB with the next phase of its development by helping it access global knowledge and experience in new and emerging technologies in electricity distribution while also helping mobilize technical assistance funds and climate financing for climate mitigation and adaptation activities.

15. **The proposed program will help create enabling conditions for private sector investments in electricity generation and distributed energy resources.** It will allow generation developed by Independent Power Producers (IPPs) to be evacuated efficiently and strengthen BREB's capacity to integrate distributed energy resources, making way for private investments in areas such as rooftop solar and electric mobility. The program will support the government's efforts to improve the financial viability and commercial orientation of the electricity sector and make the sector more attractive to private sector investors. BREB will be assisted in its efforts to strengthen the financial performance of poorly performing PBS's and explore options to mobilize commercial and private sector financing to meet its large investment needs.

16. **The PforR instrument is appropriate for the program because it will strengthen sector institutions and link disbursements to achievement of results.** The instrument (i) provides stronger focus on accountability for results and outcomes while incentivizing the government's ownership and implementation of critical reforms and initiatives in electricity distribution; (ii) improves the capacity of BREB and other agencies to deliver the program through their own



systems and procedures and (iii) provides flexibility and efficiency in supporting a large program. The traditional investment approach, with focus on project-based implementation, is less suited to achieving the transformational objectives of the program.

C. Program Development Objective(s) (PDO) and PDO Level Results Indicators

Program Development Objective(s)

The PDO is to improve the delivery, reliability and efficiency of electricity supply in selected areas in Bangladesh and strengthen institutional and regulatory capacity.

PDO Level Results Indicators

The PDO Level Indicators are:

- Electricity supply and/or consumption increased (Gigawatt-hour (GWh))
- System losses reduced (%)
- Frequency and duration of power outages reduced
- Improved institutional and regulatory capacity of the sector

D. Program Description

PforR Program Boundary

17. **The government's program will cover all 80 PBSs in BREB, which together supply about half of the electricity in the country and cover the entire country except Dhaka and some urban areas.** The objective of the program is to ensure reliable, affordable and efficient power supply to consumers by upgrading and strengthening the capacity of the rural distribution network and reducing system losses. The program comprises of four geographical areas: Dhaka-Mymensingh Divisions; Chittagong-Sylhet Divisions, Khulna-Barishal Divisions; Rajshahi-Rangpur Divisions as well as institutional and regulatory strengthening at the national level. The program is expected to cover the period from 2021-2025 and require approximately US\$3.2 billion of investments over the period,

18. **The proposed PforR operation will support a part of the overall government program and contribute to three results areas** (i) increased distribution network capacity, climate resilience and digitalization; (ii) increased integration of distributed energy resources and (iii) strengthened sector institutional and regulatory capacity.

- **Results Area 1** will focus on network strengthening, expansion and rehabilitation to ease existing constraints and meet the rapidly growing demand in the country. These network investments will be paired with new and transformative network elements such as System Control and Data Acquisition (SCADA), Advanced Distribution Management System (ADMS) and Advanced Metering Infrastructure (AMI).
- **Results area 2** will focus on increasing integration of distributed energy resources such as rooftop solar, BESS and EV infrastructure in selected PBS's.
- **Results Area 3** will focus on technical assistance and capacity building for electricity sector institutions – BREB, Power Cell and BEREC – to effectively respond to emerging challenges and opportunities in the sector.



19. The results framework and the Disbursement Linked Indicators (DLIs) for the operation will finalized during preparation. A subset of the program interventions, outputs, and outcomes across the three results areas mentioned above as well as risk mitigations measures highlighted as part of different program assessment will be chosen as the DLIs. Targets for each DLI, including protocols, verification mechanism, and financial allocation on respective DLI will be firmed up and agreed with counterpart agencies.

E. Initial Environmental and Social Screening

20. An initial Environment and Social (E&S) screening was carried out to identify likely E&S impacts with respect to contextual, institutional, capacity, and reputational risks/issues facing the Program. There will be minimal to no land acquisition as BREB will use own or government owned lands to the extent possible, and no resettlement is anticipated at this stage. No permanent adverse impacts are expected for augmentation of existing facilities and extension/strengthening existing distribution network. There may be construction -related impacts such as air pollution, noise emissions, waste generation, health and safety of workers and communities and exposures to electrical hazards from the use of tools and machinery. However, the expected environmental and social impacts are moderate with known mitigation measures available in the industry and can be mitigated through implementation of environmental code of practice and environmental and social management plans. The program will exclude any activity that may have significant adverse environmental and social impacts that are sensitive, diverse, or unprecedented. For BESS, contractual arrangements with solar panel suppliers will include buying back or taking back used batteries for safe disposal; this should ensure proper recycling and reduce risk of lead pollution from unplanned disposal of solar batteries. BREB has considerable experience in executing Bank-financed projects, with demonstrated capacity in managing environmental and social risk for similar activities.

21. An Environmental and Social Systems Assessment (ESSA) will be carried out by Bank in collaboration with program counterparts as an instrument to evaluate the systems, capacity and performance of the implementing agencies for managing the likely social and environmental risks and impacts associated with the program. The ESSA will follow the Bank Guidance on PforR and will be adequately consulted with representatives of government, civil society, the private sector, the development community, and energy experts and will be publicly available before appraisal. The Feedback from the different stakeholders will be reflected in the final ESSA. The findings and recommended measures for managing ES risks in the ESSA will be reflected in Program Appraisal Document (PAD), and Program Action Plan (PAP) as appropriate.

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