Report Number: ICRR0023008

1. Project Data

Project ID	Project Name
P129920	BD: Rural Electricity T and Distribution
Country	**Practice Area(Lead)**
Bangladesh	Energy & Extractives

L/C/TF Number(s)	Closing Date (Original)	Total Project Cost (USD)
IDA-53810	30-Jun-2020	516,952,498.76
Bank Approval Date	**Closing Date (Actual)**	
27-Feb-2014	30-Jun-2021	

	IBRD/IDA (USD)	Grants (USD)
Original Commitment	600,000,000.00	0.00
Revised Commitment	584,370,005.44	0.00
Actual	516,952,498.76	0.00

Prepared by	Reviewed by	ICR Review Coordinator	Group
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2. Project Objectives and Components

a. Objectives

The project development objectives were to reduce system losses and enhance capacity in the rural distribution network of primarily the Eastern part of Bangladesh (Financing Agreement, Schedule 1, dated June 19, 2014 and Project Appraisal Document, para. 21).

The project development objectives (PDOs) remained unchanged during project implementation.

For the ICRR, the original PDOs are parsed as follows:

Objective 1: To reduce system losses in the rural distribution network of primarily the Eastern part of Bangladesh.

Objective 2: To enhance capacity in the rural distribution network of primarily the Eastern part of Bangladesh.

b. Were the project objectives/key associated outcome targets revised during implementation?

No

c. Will a split evaluation be undertaken?

No

d. Components

(Reference PAD, paras. 24 to 29 and ICR paras. 15 and 16).

The project components at appraisal are indicated below. Any changes in these components during project implementation are discussed later in Section 2 under the respective restructurings.

Component A: Rural Grid Augmentation and Rehabilitation: (appraised cost - US$485.1 million; actual cost - US$425.6 million).

This component was to consist of construction of new transmission and distribution lines and substations as well as upgrading of existing lines, including re-conductoring and pole replacement, covering 39 PBSs (Palli Bidyut Samities or Rural Electricity Cooperatives) out of a total of 80 PBSs in Bangladesh.

Component B: Transmission Enhancement: (appraised cost - US$106.0 million; actual cost - US$88.0 million).

This component was to include: (i) investments in six new 132/33 kV substations; (ii) rehabilitation of five existing grid substations with large sized transformers; (iii) construction of new transmission lines (230 kV and 132 kV); and (iv) upgrading of 132 kV lines, including re-conductoring and rehabilitation.

Component C: Institutional Strengthening: (appraised cost - US$9.00 million; actual cost - US$8.00 million).

This component was to include support for institutional strengthening as follows: For BREB (Bangladesh Rural Electricity Board), technical assistance and capacity building to support:(i) development of a Master Plan; (ii) improvement of system reliability and operational performance; (iii) standardization of specifications; (iv) financial management, including design and implementation of an Integrated Financial Management Information System; (v) development of a GIS (Geographical Information System) framework for BREB and PBSs; (vi) environmental and social management; (v) development of a tariff methodology; and (vi) training and capacity building of staff. For PGCB (Power Grid Company of Bangladesh), technical assistance and capacity building to support: (i) project management; (ii) contract and procurement

management; (iii) financial management; (iv) safeguards management; and (v) grid planning, operation, and maintenance.

e. Comments on Project Cost, Financing, Borrower Contribution, and Dates

Project Cost: At appraisal, the total project cost was estimated at US$837 million. During project restructuring, the total cost was revised to US$821.37 million. At project completion, the total cost was estimated to be US$641.52 million. (ICR Data Sheet). The estimated actual cost was lower by about US$195.5 million (23 percent) than the appraisal estimate.

Financing: At appraisal, the Project was financed by an IDA grant of US$600 million. During project restructuring, the grant amount was reduced to US$584.37 million. At project completion, the total amount disbursed was US$516.95 million (about 86 percent of the original amount). The unutilized balance was cancelled.

Borrower Contribution: At appraisal, the planned contribution was US$237 million. At project completion, the actual Borrower contribution was US$124.57 million (about 53 percent of the originally planned amount).

Dates: The Project was approved on February 27, 2014 and became effective on September 16, 2014. The original closing date was June 30, 2020. It was extended once by 12 months to June 30, 2021.

Mid-Term Review (MTR): A Mid-Term Review was carried out in April 2019.

Restructurings: The Project underwent three Level 2 restructurings. The original PDOs, as well as the PDO indicators and intermediate results indicators (IRIs), were not changed under the restructurings.

First Restructuring (June 27, 2018 - disbursed amount US$294.54 million). This was to reallocate amounts between disbursement categories to reflect changes emerging during implementation. A resulting surplus in the amount of US$2.5 million was reallocated from Component A (Rural Grid Augmentation and Rehabilitation) to Component C1 (Institutional Strengthening of BREB) to cover an increase in the estimated costs for this component.

Second Restructuring (May 27, 2020, disbursed amount US$445.37 million). This was to extend the closing date by 12 months from June 30, 2020 to June 30, 2021 to allow for completion of additional substations and distribution lines by BREB utilizing cost savings realized during implementation.

Third Restructuring (June 23, 2021, disbursed amount US$496.30 million). An unutilized amount of US$15.63 million was cancelled from the original loan amount.

3. Relevance of Objectives

Rationale

(Reference PAD paras. 1 to 9 and ICR paras. 1 to 9).

Country Context: Bangladesh, with a population of about 150 million and a land area of 147,570 square kilometers (kms), is among the most populated countries in the world. More than 60 percent of the population live in rural areas. Agriculture contributes about 20 percent of the Gross Domestic Product (GDP). Since the country's independence in 1971, economic growth had been accelerating. At the time of appraisal in 2013, GDP per capita was about US$830. Poverty had declined from about 49 percent in 2000 to about 31 percent in 2010. The sustained economic growth led to higher demand for infrastructure services, including electricity, transport, and telecommunication. Infrastructure deficits widened as the demand rose faster than the investments. In 2013, Bangladesh ranked 118th (out of 144 countries) on the Global Competitiveness Index and 134th on the quality of electricity supply. Nevertheless, at the time of appraisal, Bangladesh was judged to be on track to achieve the Millennium Development Goals (MDGs) for poverty reduction; infant and child mortality; primary school enrolment; and gender priority in education.

Sectoral and Institutional Context: The Bangladesh Power Development Board (BPDB) was set up in 1972 as a vertically integrated utility with responsibility for power generation, transmission and distribution. In 1977, the Bangladesh Rural Electricity Board (BREB) was established, with responsibility to supply electricity in rural areas. BREB was made responsible for planning, financing and constructing the rural electrification network of the country, and to expand access to electricity through rural electricity cooperatives called Palli Bidyut Samities (PBSs) which provide retail service to the rural consumers, as well as operate and maintain the rural network. The transmission system is operated by a single transmission company Power Grid Company of Bangladesh (PGCB). BPDB acts as the single buyer of electricity in Bangladesh and sells it to the distribution companies. Tariffs for electricity are set by the Bangladesh Electricity Regulatory Commission (BERC).

At the time of appraisal in 2013, the electricity sector in Bangladesh faced insufficient generation capacity coupled with dependency on expensive liquid fuel; inadequate transmission and distribution capacity; and an electricity access rate of 60 percent. Although Bangladesh had a low per capita electricity consumption rate (270 kWh per year), electricity demand was rising induced by strong economic performance. However, electricity supply additions did not keep pace, leading to acute power shortages. As an interim measure, the Government of Bangladesh (GoB) contracted over 2.3 GW of expensive liquid-fuel based generation plants which increased the cost of electric power. The GoB also made substantial investments in extension of low-voltage grids to support new connections. However, significant gaps remained in the medium voltage (33-11 kV) network, particularly the construction of substations, primary distribution lines, and associated transmission lines. This led to system overloading and frequent load-shedding. The required investments involved complex technical issues and large investment outlays which BREB and the PBSs were unable to mobilize. Despite a decrease in the rural electricity system losses over time, including reduction in commercial losses, the overall rate remained at about 13.5 percent which was higher than the rate of about 10 percent achieved by some of the urban area distribution companies in Bangladesh. In addition, the institutional capacity in BREB and the PBSs needed to be strengthened for them to operate and maintain a rapidly growing network. The financial situation of the PBSs was poor due to insufficient revenues to cover their costs caused by weaknesses in the tariff system that did not fully cover the taxes that the PBSs had to pay as a part of purchasing power. In 2013, only nine out of 72 PBSs were profit-making. These financial constraints left BREB and the PBSs incapable of financing the investments needed to enhance the capacity of the medium-voltage distribution system.

At appraisal in 2013, Bangladesh had seven divisions (Barisal, Chittagong, Dhaka, Khulna, Rajshahi, Rangpur, and Sylhet). BREB and its associated PBSs provided electricity to more than 90 percent of

Bangladesh's districts covering all the divisions. The World Bank financed Rural Transmission and Distribution Project (RTDP) was to support grid augmentation and rehabilitation in three divisions (Dhaka, Chittagong and Sylhet) covering 39 PBSs in the Eastern part of Bangladesh. A similar project was being implemented with support from the Japan International Cooperation Agency (JICA) that covered three divisions (Rajshahi, Khulna and Barisal) with 33 PBSs in the Western part of Bangladesh. The RTDP was to cover about 2 percent of the distribution lines, 20 percent of the distribution substations, and 5 percent of the transmission grid in Bangladesh at the time of appraisal.

Alignment with national priorities: The Project Development Objectives (PDOs) were aligned, and remain aligned, with national priorities at the time of appraisal as well as the priorities at the present time. The PDOs were consistent with the GoB's Perspective Plan for 2010 to 2021 which included among its objectives ensuring energy security, increasing the electricity sector's efficiency, and improving reliability and quality of electricity supply by 2021. These priorities continued under the GoB's Sixth Five Year Plan (2011 to 2015) and Seventh Five Year Plan (2016 to 2020). Both these plans included specific and progressive targets to achieve increased electricity access rates and reduce electricity system losses. (ICR para, 25).

Alignment with Country Assistance Strategy/Country Partnership Framework: The PDOs were aligned, and remain aligned, with the World Bank Group (WBG) CAS (Country Assistance Strategy) for FY 2011 to FY 2014 at the time of appraisal and with the latest Country Partnership Framework (CPF) for FY 2016 to FY 2020. Regarding the CAS for FY 2011 to 2014, under Pillar 1 of the CAS, the Project contributed to Outcome 1.3: increased infrastructure provision, access, and efficiency. The CPF for FY 2016 to FY 2020, provides, under its Focus Area 1: Growth and Competitiveness, that WBG (World Bank Group) activities will seek to remove barriers to growth through increasing electricity supply and improving transport connectivity, among other areas. (CPF Table 7: Key Priorities for Action). The CPF also states that the WBG will seek to help Bangladesh to narrow the growing gap between demand for, and supply of, power (which is one of the transformational priorities under the CPF). This will include strengthening of rural transmission and distribution networks to reduce losses and to increase carrying capacity in rural areas, and supporting efforts to improve the financial capacity and operational efficiency of PGCB (Power Grid Company of Bangladesh). (CPF, para. 49).

Prior Bank Experience: The World Bank has been involved in Bangladesh's electricity sector over several years, including financing of investment projects as well as sector work. The RTDP was preceded by the Siddhirganj Transmission Line Project implemented by PGCB and the Rural Electrification and Renewable Energy Development Project (RERED) which was carried out in two phases and implemented by BREB. In 2009, the Bank supported preparation of a sector study that identified areas with potential for improvement, including strengthening the institutional capacity of BREB and PBSs. Experience under these interventions fed into the design and preparation of the RTDP.

Relevance of Project Development Objectives: Given the context described above, the PDOs were consistent, and remained consistent, with the priorities in the national programs and the WBG Country Assistance Strategy/Country Partnership Framework. The PDOs were pitched at the right level taking into account the development needs and the country's capacity for implementation.

Rating

High

4. Achievement of Objectives (Efficacy)

OBJECTIVE 1

Objective

To reduce system losses in the rural distribution network of primarily the Eastern part of Bangladesh.

Rationale

Theory of Change: The ICR provides a diagrammatic presentation of the theory of change (TOC) and the results chain from activities to outcomes. The overall TOC (applicable to both Objectives 1 and 2) was that, to meet the rapidly increasing demand for electricity in Bangladesh, it was necessary to (i) increase power generation and (ii) strengthen the transmission and distribution power delivery systems. Increase in power generation and meeting the electricity needs of non-rural areas was being addressed by GoB through interventions other than the RTDP. In regard to providing increased and improved power supply in the rural areas, it was necessary to improve operational efficiency and enhance capacity of the rural transmission and distribution networks which were being overloaded resulting in frequent load shedding, poor voltage profiles, and high technical losses. The RTDP was to cover 39 PBSs (out of a total of 80 PBSs) primarily in the eastern part of Bangladesh. A complementary project, supported by JICA (Japan International Cooperation Agency) was to cover 33 PBSs in the western part of Bangladesh. The RTDP would provide inputs through investment financing and technical assistance. The inputs for investment financing would directly lead to relevant physical outputs including: For Rural Grid Augmentation and Rehabilitation (i) construction of new, and rehabilitation of existing, 11 kV and 33 kV lines; and (ii) construction of new 33/11 kV substations and switching stations. For Transmission Enhancement (i) construction of new, and upgrading of existing, 132 kV and 230 kV lines; (ii) construction of new grid substations; and (iii) installation of new transformers to augment the capacity of older substations. The inputs through financing of technical assistance would lead to capacity building outputs for strengthening the institutional capacity of BREB, the PBSs, and PGCB in regard to carrying out their responsibilities in providing improved quality and reliability of power supply services. These outputs would lead to the outcome of providing an adequate and more efficient electricity transmission and distribution system in primarily the eastern parts of Bangladesh by (i) reduction in system losses and (ii) enhancement of capacity in the rural distribution networks. The higher-level outcomes would be improved health, living conditions, and economic well-being of the rural population in the areas targeted for support.

The causal links and full results chain in the TOC in regard to Objective 1 (as well as Objective 2 below) were clear. To measure the achievement of the PDOs, three PDO indicators and ten Intermediate Results Indicators (IRIs) were used. The adopted PDO indicators and intermediate results indicators (IRIs) were generally relevant, measurable, and appropriate for assessing the achievement of Objective 1 (as well as Objective 2). One limitation was in regard to the PDO indicator related to measuring reduction in system losses. The PAD acknowledged (para. 114) that measuring actual reductions in losses was challenging as parts of the 11 kV network did not have meters to measure losses. It was therefore agreed with BREB that the losses would be measured across the entire distribution system and used as indicators to measure project performance.

Outputs and Intermediate Results Indicators: (as reported in the ICR Annex 1 - Results Framework and ICR paras. 28 to 30).

For Objective 1, the Project overachieved the targets for outputs and IRIs as follows:

- Distribution lines constructed under the Project (baseline 0; target 5,362 km; actual 5,744 km; target overachieved).
- Distribution lines rehabilitated under the Project (baseline 0; target 877 km; actual 2,147 km; target overachieved).
- Number of distribution substations constructed/rehabilitated under the Project (baseline 0; target 110; actual 117; target overachieved).

Outcomes: (as reported in the ICR Annex 1 - Results Framework and ICR paras. 28 to 30).

For Objective 1, the outcome was to be assessed based on a single PDO indicator "Electricity losses per year in the Project area". The PAD (para. 114) specified that the losses were to be calculated by dividing total electricity losses by the total net injected generation in the Project area. Because of difficulties in measuring actual losses due to lack of meters in parts of the 11 kV system, it had been agreed with BREB that losses measured across the entire distribution system would be used as indicators to measure project performance.

The targeted outcome was overachieved both in terms of quantity and timelines (ICR para. 30). All related intermediate results indicators (IRIs) relating to construction/rehabilitation of transmission/distribution lines and distribution substations were overachieved as indicated above. Achievement of these targets contributed directly to achieving the target outcome for reduction of system losses. Compared to the baseline of 13 percent and target of 10.5 percent, actual achievement was significantly higher with losses reduced to 10.2 percent in 2019 and 8.9 percent in 2021. For comparison, the system loss for the entire BREB served area was 9.7 percent in June 2021. The loss reduction targets were exceeded even though there was a significant expansion of the low voltage network with more than 11 million new connections added in the project area during the project period. (ICR para. 30). In regard to attribution, in addition to the RTDP, there were other investments made by BREB and the PBSs in network upgrading, low voltage system expansion, and increasing consumer connections, but given their relatively smaller share (35 percent) in total investments, as compared to the RTDP (65 percent), the achievement of reduction of losses in the Project area can be substantially attributed to the interventions under the Project. (ICR para. 36).

Based on the above, the efficacy with which Objective 1 was achieved is rated High.

Rating
High

OBJECTIVE 2
Objective
To enhance capacity in the rural distribution network of primarily the Eastern part of Bangladesh.

Rationale

Theory of Change: The Project's overall Theory of Change (TOC) and results chain, relevant for both Objective 1 as well as Objective 2, were presented earlier under Objective 1 above.

Outputs and Intermediate Results Indicators: (as reported in the ICR Annex 1 - Results Framework and ICR para. 31).

The Project overachieved or achieved its targeted output and IRIs as follows:

- Distribution lines constructed or rehabilitated under the Project: (baseline 0 km; target 6,249 km; actual 7,891 km; target overachieved).
- Number of distribution systems constructed or rehabilitated under the Project: (baseline 0; target 110; actual 117; target overachieved).
- Transmission lines constructed or rehabilitated under the Project: (baseline 0 km; target 389 km; actual 388 km; target almost fully achieved).
- Number of grid substations constructed under the Project: (baseline 0; target 6; actual 6; target achieved).
- Optical ground wire (OPGW) stringing for the 132 kV line: (baseline 0 km; no target; actual 101.7 km).

Outcomes: (as reported in the ICR Annex 1 - Results Framework and ICR para. 31).

Targets for four related intermediate results indicators (IRIs) were overachieved or achieved as indicated above (the fifth IRI did not have a specific target). Achievement of these results contributed directly to achievement of the PDO for enhancement of capacity in the rural distribution network primarily in the eastern part of Bangladesh. While the PDO focused on enhancing the electricity system capacity at the distribution level, capacity enhancement at the transmission level and renovation of transmission lines were essential to transmit the increased power to the augmented rural distribution capacity. The single PDO indicator was "MVA capacity addition in the the 33 kV network of the Project supported PBSs". Against the baseline of zero and target of 1,800 MVA, the actual achievement was 2,370 MVA, 30 percent higher than the target. The outcome target was overachieved.

Based on the above, the efficacy with which Objective 2 was achieved is rated High.

Rating

High

OVERALL EFFICACY

Rationale

As discussed earlier in Section 4, the Project overachieved or fully achieved its targeted two objectives in regard to (i) reduction of system losses and (ii) enhanced capacity in the rural distribution networks in primarily the eastern part of Bangladesh. System losses were reduced below the targeted levels well before project closing. The capacity in the rural distribution network was enhanced and complemented with

additional capacity at the transmission level. These achievements can be substantially attributed to the interventions under the Project. The Project also fully met the core PDO target of the number of direct beneficiaries (both total and female). The Project benefited about 5 million new households (with an average of 5.3 persons per household). The target was 25 million beneficiaries (of which 56 percent female); the estimated actual achievement was 25.12 million beneficiaries (of which 56 percent female). Project interventions to strengthen the transmission and distribution networks enabled additional flow of electricity through the system - the electricity sales of the Project-supported PBSs increased from 10,350 GWh at appraisal to 25,000 GWh at project completion. (ICR para. 35).

Institutional Strengthening: In addition to the defined PDOs, the Project supported institutional capacity building in BREB, the PBSs, and PGCB which was a significant factor in the achievement of the PDOs as well as for future sustainability of the Project's outcomes. This is discussed below in Section 10 under 'Other Impacts' - Institutional Strengthening.

Based on the above, the efficacy with which the Project achieved its objectives is rated High.

Overall Efficacy Rating

High

5. Efficiency

Economic Efficiency

At appraisal: The economic efficiency of the Project was assessed using a cost-benefit methodology based on an incremental net benefits approach i.e. incremental costs and benefits attributable to the Project derived from a comparison of the 'with-project' and 'without-project' scenarios. Economic costs included capital investment costs and estimated operations and maintenance expenses. Economic benefits included the additional energy delivered to the consumers in the Project area. Regarding economic benefits, the baseline situation was that very little additional power could be delivered to the consumers because of constraints in the transmission and distribution network. Therefore, any increase in power supplied was attributable to the interventions to be carried out under the Project including reduction in technical losses and enhancing capacity of the transmission and distribution system. All costs and benefits were estimated net of taxes and duties. The incremental electricity supplied was valued based on the estimated consumers' willingness to pay. The indicators of economic viability adopted were the Economic Internal Rate of Return (EIRR) and Economic Net Present Value (ENPV) at a discount rate of 10 percent estimated over a period of 20 years. On this basis, the EIRR was estimated at 71 percent and the ENPV at BDT127,408 million (equivalent to about US$1,633 million).

Post-Completion: The completion analysis was carried out using the same methodology as at appraisal but updated for actual results and values observed during implementation. On this basis, the post-completion estimates are: EIRR of 43 percent and ENPV of BDT161,330 million (US$1,861 million equivalent). (ICR Annex 4). Factors contributing to the lower EIRR as compared to appraisal were (i) a delay of about two years in start of operations of the Project financed interventions and (ii) lower electricity distribution tariffs than projected at appraisal.(ICR Annex 4).

Rating: Despite being significantly lower than the estimates at appraisal, the post-completion EIRR is substantially higher than the discount rate of 6 percent to 8 percent prescribed under the World Bank guidelines for economic assessment of investment projects. The estimated post-completion ENPV is higher than the estimate at appraisal. Based thereon, the Project's economic efficiency is rated Substantial.

Implementation Efficiency

Project Cost: The Project was carried out within the cost estimated at appraisal. At completion, the project cost was US$641.57 million, lower by about US$195.5 million than the appraisal estimate of US$837 million. All the planned interventions under the Project were carried out. In addition, cost savings were realized which were utilized by BREB to carry out additional investments to further strengthen the transmission and distribution networks.

Project Duration: The implementation period estimated at appraisal was 78 months (6.5 years). The actual implementation period was 90 months (7.5 years). While all the investments planned at appraisal were completed by the original closing date (June 30, 2020), the closing date was extended by 12 months (to June 30, 2021) to allow for completion of additional investments being carried out by BREB utilizing cost savings realized under the Project.

Rating: Based on the above, the Project's implementation efficiency is rated Substantial.

Efficiency Rating

Substantial

a. If available, enter the Economic Rate of Return (ERR) and/or Financial Rate of Return (FRR) at appraisal and the re-estimated value at evaluation:

	Rate Available?	Point value (%)	*Coverage/Scope (%)
Appraisal	✓	71.00	0 ☐ Not Applicable
ICR Estimate	✓	43.00	0 ☐ Not Applicable

* Refers to percent of total project cost for which ERR/FRR was calculated.

6. Outcome

The Project's outcome is rated on the basis of (i) Relevance of Objectives, (ii) Efficacy, and (iii) Efficiency.

As discussed in Section 3, the Relevance of Objectives is rated High.

As discussed in Section 4, the Project's Efficacy is rated High.

As discussed in Section 5, the Project's Efficiency is rated Substantial.

Based on the above, there were no shortcomings in the Project's relevance and achievements and only minor shortcomings in the Project's efficiency. The Project's outcome is therefore rated Highly Satisfactory.

a. Outcome Rating
Highly Satisfactory

7. Risk to Development Outcome

Technical risks: These are rated Moderate. While BREB and PGCB have the institutional capacity and experience to operate and maintain the physical infrastructure and facilities, at the rural power distribution level, the PBSs will continue to be responsible for operating and maintaining the infrastructure and facilities. In addition to availability of technical assistance and support as needed, timely and sufficient availability of funds will be important for them to carry out their responsibilities. This will depend upon the GoB's willingness and ability to continue with its policies of allowing adequate cost recovery through tariffs.

Financial risks: These are rated Moderate. The PBSs will require timely and adequate availability of funds to efficiently carry out their operations and maintenance activities. The GoB has been following a policy of progressively increasing tariffs to full cost recovery levels, but during the implementation period, the tariff levels did not fully cover the amount of taxes payable by the PBSs. This resulted in varying degrees of financial deficits for the PBSs. The Project provided for technical assistance to BERC to improve the tariff methodology towards ensuring full cost recovery. Prior to the closing of the Project, a tariff application that fully covered relevant costs was submitted based on the revised methodology supported by the Project. The policy of ensuring adequacy of tariffs will need to be continued in future. Changing economic and social environments, and the ensuing social impacts, could influence the GoB's policies in regard to tariff setting in future.

Institutional capacity risks: These are rated Moderate. The institutional capacity of BREB, PGCB and BERC have been strengthened under the Project, but sustainability of these gains will require continued commitment from their respective managements along with strong support from the government. Lacking these, the gains could be progressively eroded.

8. Assessment of Bank Performance

a. Quality-at-Entry
(Reference ICR paras. 59 to 61 and 85).

The strategic relevance and the PDOs were well aligned, and continued to be well aligned, with the priorities in the national programs and in the WBG Country Assistance Strategy/Country Partnership Framework. The project design was built on a generally sound theory of change and the Results Framework was adequate for the purposes of monitoring and evaluating implementation progress. The

Project benefited, to some extent, from the earlier Rural Electrification and Renewable Energy Development (RERED) Project Phase I, and the then ongoing RERED Project Phase 2. This enabled a relatively quick preparation of the Project in a period of about eight months from Project Concept to Board Approval. Technical, financial and economic aspects were generally well covered. Since the GoB was already supporting expansion of low-voltage networks and connections, the Project design focused on improving the efficiency of the network to facilitate more electricity being supplied from the existing power generation capacity while also strengthening the medium voltage distribution system to enable delivery of additional electricity as new generation capacity came online. Environmental and social aspects were adequately covered through preparation of the relevant Environmental and Social Management Framework (ESMF) and site-specific Environmental and Social Impact Assessments (ESIAs). Attention to policy and institutional aspects included the preparation by the GoB of a Governance and Accountability Action Plan (GAAP) and technical assistance to BERC for improving tariff-setting methodology. Regarding procurement, drawing on experience from earlier projects, including RERED, particular attention was given to setting up the procurement processes, including bid evaluation and award. Implementation arrangements were generally well covered with appropriately staffed Project Management Units (PMUs) being set up in BREB and PGCB and relevant technical assistance being provided to them. The risk assessments and mitigation measures proposed were generally adequate.

Quality-at-Entry Rating

Satisfactory

b. Quality of supervision

During project implementation, the Bank supervision team remained focused on development, and was generally proactive in identifying emerging or anticipated issues and seeking solutions with the counterparts. The Project was relatively procurement-intensive, involving large-value supply and installation contracts, goods contracts, and several small-value goods and service contracts. This required intensive effort on the part of the team to engage with the clients to understand emerging procurement-related issues and seek adjustments while ensuring that the procurement processes remained consistent with the Bank guidelines. Safeguards and fiduciary compliance issues were well monitored throughout implementation.

During the implementation period of 7.5 years, the Bank supervision team carried out a total of 15 supervision missions. The missions were adequately supported by specialists as required, including safeguards and fiduciary specialists who generally remained with the Project through the implementation period. Special attention was given to procurement aspects given the large assortment of large-value and small-value procurement packages. Technical specialists and consultants provided assistance and support to the PMUs as needed. Implementation progress, issues, guidance, and detailed action plans agreed with the counterparts were recorded in Aide-Memoires and Implementation Status Reports (ISRs) which were regularly filed in a timely manner. The Back-to-Office reporting was generally candid and highlighted issues for the information of the management e.g. the PDO and IP (Implementation Progress) ratings were kept at 'Moderately Satisfactory' from time to time to reflect delays in procurement and disbursement when they occurred.

Overall, the Bank's supervision performance contributed significantly to the Project's implementation efficiency which is rated Substantial (in Section 5 above).

Quality of Supervision Rating

Satisfactory

Overall Bank Performance Rating

Satisfactory

9. M&E Design, Implementation, & Utilization

a. M&E Design

The M&E design was based on a generally sound theory of change. The Results Framework was adequately designed with PDOs well aligned with national and WBG CAS/CPF priorities. The PDO indicators and Intermediate Results Indicators (IRIs) were relevant, measurable, and generally adequate for attribution of results to the Project's interventions. Baselines and targets were well specified. The data collection and processing arrangements were adequate with the main responsibility assigned to BREB and PGCB and their PMUs. Recognizing the importance of governance and accountability aspects in the Project context, the design provided for preparation of a Governance and Accountability Action Plan (GAAP) that was agreed with the GoB. Two areas where PDOs could have been considered were (i) enhancement of transmission capacity and (ii)institutional strengthening of BREB and PGCB. (ICR para. 67). However, these were covered through relevant IRIs and the information was adequate to assess the outcomes. The ICR reports (para. 68) that design and monitoring of the PDO indicator on beneficiaries could have been improved. The design of this indicator was based on one-time estimates and may have understated the number of beneficiaries (ICR para. 68).

b. M&E Implementation

The PMUs in BREB and PGCB were responsible for collecting and processing relevant data, including from the Project-supported PBSs. Data collection, monitoring and evaluation were reported to have been generally regular. The quality and timeliness of required M&E reporting was satisfactory (ICR para. 70). The status in regard to implementation of the GAAP was regularly followed up. The ICR does not report any significant issues with the M&E system during implementation. In addition to the regular M&E reports, an Impact Evaluation Study was carried out in 2021 based on feedback from Project beneficiaries (ICR paras. 55 and 56). (Further details in Section 10). The shortcoming in regard to the PDO indicator related to the number of beneficiaries (mentioned above) was not addressed during implementation.

c. M&E Utilization

The M&E system was used to report on project progress, including both positive as well as negative aspects. The system helped identify emerging issues in regard to procurement activities which enabled timely remedial actions to be taken. Results were communicated to the GoB and Project agencies

involved and used for periodic reporting of the Project's progress in the Implementation Status Reports (ISRs).

M&E Quality Rating

Substantial

10. Other Issues

a. Safeguards

Environmental and Social Safeguards

(Reference ICR paras. 74 to 79).

At appraisal, the Project was designated a Category B project. The Project triggered the following safeguards: Environmental Assessment (EA) - OP 4.01); Involuntary Resettlement (IR) OP 4.12; and Indigenous Peoples (IP) OP 4.10.

Environmental: To mitigate potential environmental impacts, the Project developed the following instruments: (i) Environmental and Social Management Framework (ESMF) jointly prepared by BREB and PGCB; (ii) site-specific Environmental and Social Impact Assessments (ESIAs); and (iii) Environmental and Social Management Plan (ESMP). The ESIAs were prepared and updated in a timely manner by the concerned entities during implementation. The ICR reports (para. 75) that most of the adverse impacts were limited to the local environment and issues were addressed through the implementation of the ESMP. The overall compliance status of the ESMP at various subproject sites under BREB and PGCB was satisfactory throughout the implementation period. Both BREB and PGCB obtained the required certificates of environmental clearance from the Department of Environment and shared it with the Bank. (ICR para. 75).

Social: Based on screening outcomes and census surveys, BREB and PGCB prepared Resettlement Action Plans (RAPs); BREB prepared one RAP and PGCB five RAPs. These were cleared by the Bank and disclosed to relevant stakeholders. The ICR reports (para. 76) that implementation of the BREB RAP was satisfactory with 348 entitled persons (EPs) (out of a total of 349) being fully compensated; the remaining EP was partially compensated with full compensation expected after submission of required documents. Under the PGCB RAPs, 167 landowners (out of a total of 192) were fully compensated. Compensation for the remaining 25 landowners was delayed due to legal disputes and identification issues. The funds involved have been kept in an escrow account. (ICR para. 77). A segment of a 1.5 km 132 kV transmission line remained incomplete at project closing due to disputes regarding siting of the towers. PGCB has agreed to build the towers with its own funds after the disputes are resolved. (ICR para. 77).

Grievance Redressal Mechanism (GRM): The ICR reports (para. 78) that community consultations and GRM procedures were put in place with BREB and PGCB and were functioning. During implementation, PGCB received seven grievances, all related to tower location. Five were resolved. The remaining two, raised by the Bangladesh Inland Water Authority (BIWA), are being addressed through consultations between PGCB and BIWA. (ICR para. 79).

b. Fiduciary Compliance

(Reference ICR paras. 80 to 84).

Procurement: The Project was procurement-intensive with more than 90 percent of the project cost resulting from procurement contracts. All major procurement activities were completed without any major issues. Substantial cost savings were realized which can, at least partly, be attributed to efficient procurement activities and project implementation. (ICR para. 80). The ICR does not report any case of mis-procurement or other non-compliance in regard to procurement guidelines. The rating for Procurement in the last ISR filed prior to project closing was Moderately Satisfactory.

Financial Management: At appraisal, the financial management risk was rated substantial based on assessment of the financial management capacity in BREB and PGCB. To address this, technical assistance was provided under the Project to both agencies. With regard to BREB, the ICR reports (para. 82) that BREB submitted the required FM reports (unaudited or audited) generally in at timely manner. BREB also completed a strategy for implementing an Integrated Financial Management Information System (IFMIS) including BREB and the PBSs. (ICR para. 82). The ICR does not report any instance of non-eligible expenditures in the case of BREB. Regarding PGCB, the ICR does not provide information concerning PGCB's compliance with agreed FM requirements. The rating for Financial Management in the last ISR filed prior to project closing was Moderately Satisfactory.

c. Unintended impacts (Positive or Negative)

Fire Incident at the Keraniganj 230/132/33 kV GIS Substation: A fire broke out at the nearly completed substation in February 2019. St the time, the substation was not commercially energized and had not been handed over by the contractor to PGCB. No injuries to personnel were reported. However, the incident caused delay in the completion of the Project which was exacerbated by the impacts of the COVID pandemic. The reconstruction of the substation was carried out by the contractor at its own cost and insurance coverage. The substation has been put into operation. (ICR para. 65).

d. Other

(Reference ICR paras. 48 to 56).

Gender: The Project was not gender-tagged. However, during project preparation and implementation, beneficiary consultations carried out by BREB and PGCB included both male and female beneficiaries. At appraisal, a Gender Responsive Social assessment Study was carried out to assess the impact of the Project on women, both as customers as well as employees of BREB and PGCB). This resulted in several recommendations made to improve the participation of women in the work forces at BREB and PGCB. The number of women employees in BREB and Project PBSs increased from 1,814 in 2013 to 3,390 in 2021 due to several initiatives taken to attract female participation in the work force. Building on the Bank's

engagement in 2020, BREB also became a partner to the WePOWER initiative which is a voluntary women's professional network in the Energy and Power Sector in South Asia. BREB is implementing some gender activities related to this initiative. (ICR para. 49).

Institutional Strengthening: Although not defined as a specific project development objective, institutional strengthening in BREB, PGCB and the PBSs was a significant component under the Project.

BREB: Fourteen activities were commissioned out of which eleven were completed and the remaining three almost completed (BREB will complete these using its own funds). (ICR paras. 32, 50 and 51).

- Development of a Master Plan for the rural electrification program.
- Development of a Geographic Information System (GIS) framework for use in BREB and the PBSs.
- Environmental and Social Management support and training.
- Support for implementation of an Integrated Financial Management Information System (IFMIS) for BREB and the PBSs.
- Improvement of system reliability and performance through enhanced data acquisition, improved control schemes, and protection of distribution networks.
- Establishment of specifications for materials, equipment, construction standards, and planning criteria for BREB's power system development program.
- Support for development of a tariff calculation methodology and model for BREB and PBSs.
- Training and capacity building for more than 200 BREB/PBS staff.
- Review of course curricula and preparation of training manuals.
- Support for review and update of BREB and PBS Policy Instruction manuals.
- Forensic audit of selected contracts.
- Translation into English of BREB 2013 Act and Rules.
- Evaluation of the Socio-Economic Impact of the Project.
- Supporting the PMU with a Financial Management Specialist.

PGCB:

- Training programs to strengthen capacity for project/contract management; procurement management; financial management; and grid modernization and maintenance.
- More than 600 PGCB staff trained on various aspects through local and international trainers.
- Study tours on selected aspects.

Mobilizing Private Sector Financing: The Project was carried out by the state-owned BREB and PGCB and did not involve private sector financing. The ICR reports (para. 53) that the GoB has indicated an intention to build a part of the transmission network with private investment and has identified several grid lines for implementation on a Public-Private Partnership (PPP) basis. A Draft Private Sector Transmission Policy has been prepared but has not yet been approved. (ICR para. 52).

Poverty Reduction and Prosperity Sharing: The Project made more electricity available to the Project-supported PBSs and their customers which include also the more vulnerable and lower-income groups. An Impact Evaluation Study carried out under the Project confirmed that the beneficiaries in the targeted

Project-supported rural areas reported a range of positive outcomes from the improved electricity services enabled by the Project. (ICR para. 54).

11. Ratings

Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Highly Satisfactory	Highly Satisfactory	
Bank Performance	Satisfactory	Satisfactory	
Quality of M&E	Substantial	Substantial	
Quality of ICR	---	Substantial	

12. Lessons

(Reference ICR paras. 89 to 94).

The ICR lists a number of lessons drawn from the Project experience which have relevance for similar projects carried out in comparable environments. From these, IEG derives the following lessons:

Investment in infrastructure coupled with policy and regulatory reforms can allow efficient utilization of assets and sustainability of project outcomes: Under the GoB's objectives at the time, expansion of power generation and low-voltage networks were to be addressed through other investments that would complement the IDA-financed RTDP. The Project's design therefore focused on addressing weaknesses in the medium-voltage and transmission networks that were constraining additional supply of electricity to the distribution network in the Project-supported rural areas. While the planned investments were successfully carried out, sustainability of the gains require that appropriate operations are carried out to address issues such as inefficient dispatch and lack of wholesale markets that constrain the efficiency of the overall system. Optimization of dispatch operation is being addressed under the successor World Bank financed Power System Reliability and Efficiency Improvement Project (P159807) approved in 2017.

To ensure accurate measurement of the Project outcomes and benefits, it is important to design a comprehensive and quantifiable Results Framework that is adaptable to changing conditions: In the case of the Project, the effects of complementary expansions in power generation and improving electricity grid coverage were not adequately captured in the Results Framework. This resulted in an understatement of the benefits realized under the Project.

Early possession of land is critical for projects focusing on infrastructure creation: Land acquisition processes can be cumbersome and protracted. Learning from experience under earlier projects, to expedite acquisition of land, BREB decided very early in the Project to purchase land on a willing buyer - willing seller basis rather than follow the cumbersome processes of land acquisition. BREB was successful in this and the early handover of land to the contractors was an important

factor in timely completion of infrastructure facilities, particularly the transmission grid enhancements for which changes to route alignment are more difficult to make than for expansion of electricity distribution systems.

Institutionalizing of the environment and social safeguards management in project implementing agencies helps in adequate and timely resolution of safeguard challenges during project implementation: The Project design supported establishment and capacity building of Environmental and Social Units in BREB and PGCB to mainstream environmental and social considerations in all BREB and PGCB operations. This contributed to the proactiveness of the implementing agencies and the Bank task team in timely monitoring of environmental and social issues, their mitigation, and achievement of overall compliance with environment and social issues.

13. Assessment Recommended?

No

14. Comments on Quality of ICR

The ICR is well-written, candid, and generally follows the OPCS's ICR Guidelines (except in regard to length - 24 pages compared to the recommended 15 pages or less). It provides an adequate theory of change in regard to the causal links and full results chain, and the reporting is outcome focused. The analysis is generally evidence based but constrained to some extent by some relatively minor weaknesses in the Project's M&E system. The ICR provides lessons learned from the Project's experience that have broader relevance for similar projects executed in comparable environments. Given the nature of the project interventions, which included significant investments in medium- and high- voltage transmission lines, further elaboration regarding the safeguards issues encountered, and their resolution, would have been useful.

a. Quality of ICR Rating

Substantial