



Combined Project Information Documents / Integrated Safeguards Datasheet (PID/ISDS)

Appraisal Stage | Date Prepared/Updated: 20-Nov-2017 | Report No: PIDISDSA22966



BASIC INFORMATION

A. Basic Project Data

Country Bangladesh	Project ID P159974	Project Name Enhancement and Strengthening of Power Transmission Network in Eastern Region	Parent Project ID (if any)
Region SOUTH ASIA	Estimated Appraisal Date 25-Oct-2017	Estimated Board Date 24-Jan-2018	Practice Area (Lead) Energy & Extractives
Financing Instrument Investment Project Financing	Borrower(s) People's Republic of Bangladesh	Implementing Agency Power Grid Corporation of Bangladesh (PGCB)	

Proposed Development Objective(s)

The proposed project aims to increase transmission capacity and reliability of the grid network in the eastern region and strengthen institutional capacity of the transmission company.

Components

Enhancement and Strengthening of Power Network
Institutional Development and Implementation Support

Financing (in USD Million)

Financing Source	Amount
Borrower	318.00
International Development Association (IDA)	508.00
Total Project Cost	826.00

Environmental Assessment Category

B - Partial Assessment

Decision



B. Introduction and Context

Country Context

1. Bangladesh's economy has performed well over the past decade. The country's Gross Domestic Product (GDP) has grown at an average of 6 percent per annum since 2010. In Fiscal Year 2014 (FY 14), the country moved up to a lower-middle income country (LMIC) status as per capita Gross National Income (GNI) of US\$1,080 crossed the LMIC threshold of US\$1,046. The country's per capita income rose further to US\$1,602 at the end of FY 17. This sustained growth was achieved despite the adverse impacts of the global recession, oil price increases, unrest in the Middle East and local natural disasters, and has largely been dependent on a reliable and affordable supply of electricity.
2. The Government of Bangladesh has targeted GDP growth of 7.4% per annum between 2016 and 2020 in its 7th Five Year Plan. Solid performance by the power sector is considered necessary to achieve this target. The current Power System Master Plan notes that if Bangladesh were to follow Thailand's growth trajectory (as desired by the Government) it would have to sustain a per-capita GDP growth rate of 5.2% per annum between 2016 and 2041. This would require the development of new export oriented industries and a significant increase in power generation capacity, along with a quadrupling of the total energy used.¹ The Government has also set itself the goal of ensuring universal access to electricity by 2021, when Bangladesh completes fifty years of independence.
3. The availability and reliability of power is a key constraint to job creation and poverty reduction, hampering the competitiveness of Bangladesh's economy². The supply of power in Bangladesh has not been able to keep pace with the rapid growth in demand and consumers experience frequent power outages. In addition to shortfalls in power generation, Bangladesh's aging and inadequate transmission and distribution systems impose severe constraints on power delivery to consumers. Due to lack of investment and inadequate maintenance, the reliability of the system has deteriorated substantially, resulting in several instances of major system collapse. As in other countries of South Asia, a majority of manufacturing and service firms in Bangladesh identify a shortage of reliable electricity as the most important constraint they face to smooth operations and expansion. Outages result in about 2-3 percent loss of GDP per annum, with significant sums spent on diesel generators for back-up.
4. Bangladesh is one of the world's most vulnerable countries to climate change. Two-thirds of the country is located at less than five meters above sea level and more than 700 rivers run through its borders. Consequently, infrastructure investments in Bangladesh are highly exposed to various climate risks, including extreme precipitation and flooding, sea level rise, storm surge, strong winds and landslide. The need to address climate risks in infrastructure projects is becoming increasingly urgent to ensure the sustainable economic development of the country.

Sectoral and Institutional Context

5. The power sector in Bangladesh has grown rapidly over the last decade – maximum generation

¹ The Power System Master Plan 2015. JICA/TEPCO. "PSMP2015 High-Level Discussion SUMMARY PART" April, 2016.

² Bangladesh is ranked 107th out of 140 countries on Global Competitiveness (GC) Index and 120th on quality of electricity supply. The GC Survey identified inadequate supply of infrastructure as the most problematic factor for doing business along with corruption.



increased from a little over 3,000 MW in 2009 to more than 9,000 MW in 2016 (not taking into account significant suppressed demand). Current installed generation capacity in Bangladesh is 15,000 mega-Watt (MW), but available capacity is only 9,000 MW. The highest demand served in the country until November 2016 was 9,036 MW. During the last eight years, the 81 power plants with generation capacity of 10,353 MW were installed, while the Government's electrification efforts brought electricity access to 78 percent of the population. However, the per capita consumption of electricity in Bangladesh is only 407 kilo-Watt hour (kWh)/year, which is one of the lowest in the world and lower than other large South Asian countries (1,010 kWh for India, 2,600 kWh for China, and 13,246 kWh for the United States). Nevertheless, with about 13 percent of transmission and distribution losses, and accounts receivable of 2 months of sales equivalent, the operational and financial performance of Bangladesh's power sector compares favorably with that of its larger South Asian neighbors.

6. Fifty five percent of the installed capacity is generated by public sector plants run by BPDB and by its subsidiary corporatized generation companies, and the rest by independent power producers (IPPs) and rental units (smaller in scale and with different contractual structures than IPPs, many running on liquid fuel although some use gas) owned by the private sector. While urban areas have close to complete electricity coverage, only 42 percent of rural households have access to electricity. Thus, electricity demand is projected to grow by more than 10 percent per annum over the medium term. To address the growing demand, the Government plans to double the existing installed capacity by 2021 and reach 50 GW by 2041 using private and public funding. The Government is also working on improving the energy mix (including imports from India, Bhutan and Nepal) considering the depleting indigenous natural gas reserves.

7. Considerable challenges, however, remain to ensure that people connected to the grid get reliable and quality electricity supply. A major challenge is the shortage of domestic natural gas and the limited success in recent years in bringing new base-load generation capacity online quickly. Bangladesh's reserves of natural gas, which accounts for about 67% of power generation, are estimated to diminish substantially from 2020, if no new gas reserves are discovered, or if technology does not allow a higher rate of extraction from existing gas fields. Declining indigenous resources and growing electricity demand have resulted in an increasing reliance on imported fuel oil for power generation. From 2009 to 2017, the share of oil-fired electricity increased from 5 to 27 percent. This increase in oil-fired electricity contributed to the fuel cost per kWh generated rising from BDT1.1/kWh to BDT3.42/kWh (US\$0.014/kWh to US\$0.04/kWh) over the same period. This leaves Bangladesh's energy sector vulnerable to external shocks in energy supply.

8. Bangladesh's transmission system mainly consists of 230 kilo-Volt (kV) and 132kV system, while one 400kV High Voltage Direct Current (HVDC) system has recently been implemented. The country has about 10,623 circuit km of transmission lines and about 46,413 million kWh wheeled through the transmission network during the FY 2015-16. Transmission losses have come down to 2.38 percent in 2015-16 from 4.24 percent in 2000-01. The country is vertically divided by the rivers Jamuna and Padma and the western and eastern part of Bangladesh's transmission network is interconnected by two 230kV Direct Current (DC) lines. A summary of the country's transmission system is presented below:



Table 1: Transmission Lines and Substations by Voltage, Length/Quantity, MVA (as of August 2017)

Transmission Lines		Substations	
Voltage level	Circuit Km	Voltage Level	No of S/S
400kV	560	400kV HVDC	1 (500MW)
230kV	3,325	400/230kV	3 (2,210 MVA)
132kV	6,738	230/132kV	24 (11,485 MVA)
		132/33kV	117 (17,603 MVA)
Total	10,623		31,298 MVA

9. Power Grid Company of Bangladesh (PGCB) is the sole authority responsible for the transmission network in the country. The network is currently under pressure due to the rapid growth of demand for electricity. A considerable numbers of grid substations and transmission lines are overloaded contributing to the unreliable electricity supply in major load centers. The system also faces growing physical constraints to expand due to lack of Right of Way (ROW) for the lines and land for substations in densely populated areas. Bangladesh’s growing power system will require wheeling of 50GW capacity through the transmission network by 2041. Therefore, PGCB not only needs to expand its transmission system but also significantly improve its operation and maintenance practices to ensure reliability and quality of supply. It has already undertaken several development projects to improve the network and plans to add 3,098 km new transmission lines and 106 new substations by 2020 and additional 3,005km and 90 substations by 2025.

10. Most of the planned lines will be of multiple circuits due to land constraints mentioned above, leading to additional constraints in terms of reliability. The current O&M practices in PGCB are mainly based on time-based and breakdown maintenance, which affect the system availability and the cost of service. If PGCB continues these practices, doubling the size of the infrastructure in less than 10 years implies major challenges to ensure the sustainability of transmission assets, which is key to the reliability of the grid.

11. More than 2,000 staff are involved in O&M (including 1,141 engineers and 709 technical staff). The total expenditure³ for maintenance almost doubled between FY 2011/12 and 2015/16 from BDT 4.2 billion to BDT 7.2 billion (i.e. USD54 million to USD90.3 million). This does not include losses due to unserved energy related to planned outages for maintenance, which may increase exponentially due to the increased use of multiple circuits lines (lack of ROW) and absence of live line maintenance capacity. Handling the expanded system with current maintenance practices and tools will lead to low level of reliability and unmanageable level of staffing.

12. The proposed project will expand the network in the eastern region of the country, which is an important economic and industrial hub. The region covers the Greater Comilla, Noakhali and partly the Greater Chittagong area. Aged and low capacity grid network in this region is one of the major problems PGCB is facing. The Greater Comilla region that has more than 1000 people per square km and Noakhali areas together are the second largest load centers of Bangladesh after the capital city of Dhaka. The Greater Chittagong area is a major commercial and industrial hub with the Government taking initiatives to set up multiple economic zones, upgrade port facility and transportation network. Due to lack of electricity supply capacity, economic growth of this area is stagnant. Operational bottlenecks of the region were identified during the network analysis performed by PGCB and the feasibility study carried out by a consulting firm⁴.

³ including Repair & Maintenance, Salaries & Benefits of O&M Staff, Depreciation etc.

⁴ PGCIL of India carried out the feasibility study of the project



The project will also assist PGCB to introduce reactive, predictive and pro-active approaches.

13. Institutionally, the Ministry of Power, Energy and Mineral Resource (MPEMR) in Bangladesh has the responsibility for the power sector. The structure of the sector has evolved from a single vertically integrated utility to a partially unbundled sector with private entry and competition in generation and to a lesser extent in distribution. Until 1996, when the Power Grid Company of Bangladesh (PGCB) and Dhaka Electric Supply Company (DESCO) were carved out of it, BPDB was the single vertically integrated utility. Over the years, it has been unbundled both horizontally and vertically and now the sector comprises BPDB plus several generation companies, one transmission company, and several distribution companies (all of the latter are corporate entities under the 1994 Companies Act), and a regulatory body (Bangladesh Energy Regulatory Commission- BERC) were formed. However, BPDB retained a large portion of public generation and a part of distribution, and has been acting as a single buyer.

14. There have recently been some developments on the potential for private sector participation (PSP) in the transmission network. A government committee evaluated the technical, financial and security aspects of PSP in the transmission sector but has not identified any particular investments that may be undertaken in the medium term. Given the level of the private sector participation in generation, potential for PSP in transmission network could highlight underlying systemic challenges that need to be addressed.

C. Proposed Development Objective(s)

Development Objective(s) (From PAD)

15. The proposed project aims to increase transmission capacity and reliability of the grid network in the eastern region and strengthen institutional capacity of the transmission company.

Key Results

16. Key expected results from the project are: (i) increase in transformation capacity (MVA) in the project area; (ii) reduction in number of electricity outages; (iii) number of people provided with new or improved electricity; (iv) improvements in maintenance and financial management practices.

D. Project Description

A. Project Components

17. The proposed project will have two components with the following estimated cost: 1) Enhancement and strengthening of power network (US\$793 million); and 2) Institutional development and implementation support (US\$33 million). Component 2 includes US\$8 million as Technical Assistance (TA).

Component 1: Enhancement and Strengthening of Power Network (US\$793 million, IDA US\$480 million):

18. This component will cover the following activities:

- a) thirteen (13) new GIS substations (one upgradation to 400/230/132kV substations, one 400/230kV substations, two 230/132kV substations and nine 132/33kV substations);



- b) one 230kV high capacity four circuit backbone transmission line (with twin Finch conductor per phase) through greater Comilla region and four short distance 132kV double circuit lines to connect the new 132/33kV substations to the existing ones in Comilla and Noakhali area.
- c) the project also includes replacement of the Haliashahar 132/33kV air insulated substation (AIS) by an advanced GIS and reconductoring of existing Sikalbaha-Cox's Bazar 132kV line and Korerhat-Feni 132 kV line with higher capacity conductor.

19. A new 400/230kV substation will be installed at Korerhat and one 230/33kV substation will be upgraded to 400/230/33kV substations at Mirsharai. Substations of 230/132kV are planned for Chowmuhoni and Kachua, while 132/33 kV substations are to be installed in Kosba, Muradnagar, Chandina, Laksham, Laxmipur, Bashurhat, Maijdee, Patiya and New Mooring. Because of the scarcity of land in the project areas (due to high population density), all these substations are planned with GIS configuration. The 132/33kV New Mooring substation to be built on the western side of Chittagong City will become a 400/230/132/33kV power hub in future. The 132/33kV part will be built by this project but the land acquisition and layout planning will incorporate the future 400/230/132kV design. Some other 132/33kV substations will also be designed keeping provisions for future upgrades to 230kV in.

20. To strengthen the Dhaka-Chittagong transmission backbone system, one 400/230kV and one 400/132kV substations at Korerhat will be established through the Modunaghat – Meghnaghat 400kV DC line. This will improve system stability and reduce losses. In the Chittagong region, the Government has planned to build Mirsharai area as the largest Economic Zone of Bangladesh. Development of this economic zone is expected to result in high electricity demand. This proposed project will help upgrade the Mirsharai 230kV substation to higher capacity at the 400kV level and will be directly connected to Korerhat substation (through extension of Mirsharai – BSRM 400kV line up to Korerhat substation) to enhance the power supply capability of the Mirsharai Economic Zone. A few additional 230kV substations within and around this economic zone are also expected to be fed directly from the 230kV bus of Mirsharai 400/230kV substation. To meet the growing demand in the Chittagong area, 132/33kV substations at New Mooring/Anand Bazaar and Patiya will be established along with the re-conductoring of the Sikalbaha – Patiya – Dohazari – Cox's Bazaar 132kV DC line with high capacity conductor.

21. To strengthen the transmission system in Noakhali and Comilla area, the Korerhat– Chowmuhoni – Kachua – Gazaria 230kV High Capacity corridor will be built, along with 230/132kV substations at Chowmuhoni and Kachua. Establishment of 132/33kV substations have been planned at Basurhat, Maijdee and Laxmipur for transfer of reliable power from Chowmuhoni 230kV substation to these areas. Another 132/33kV substation at Laksham has been planned to supply power in this area. For dispersal of power from existing Comilla (N) 230/132kV substation, 132/33kV substations have been planned at Chandina, Muradnagar and Kosba, which would also facilitate supply of reliable power to these area.

22. The proposed project will also replace the existing 132/33kV Haliashahar substation in Chittagong area. This aged substation supplies power to several important establishments like Chittagong Sea Port, Chittagong Airport and Chittagong Eastern Refinery & Chittagong EPZ. Thus, renovation of the Haliashahar substation along with augmentation of transformation capacity and upgrading from AIS to GIS substation has been planned to improve the reliability of power supply near Haliashahar. This will require modification and extension of local 33kV and 11 kV network so that load at Haliashahar can be fed from the New Mooring substation during replacement works at Haliashahar. A summary of the proposed



scope of works under this project is given below:

Table 2: Summary of Proposed Scope of Works⁵

Transmission Lines		Substations	
Voltage level	Circuit Km	Voltage Level	No of S/S(MVA)
		400/230/33kV	1(2650MVA)
400kV	26.8	400/230kV	1(2000MVA)
230kV	662.9	230/132kV	2(1750MVA)
132kV	376.4 ⁶	132/33kV	10 ⁷ (2640MVA)

23. According to the Multilateral Development Bank (MDB) methodology for climate change co-benefits, project activities under this component will generate climate change mitigation co-benefits. The reconductoring of existing Sikalbaha-Cox's Bazar line and Korerhat-Feni line (total length 157 km and the investment amount is US\$15.45 million) with higher capacity conductor will result in a reduction in technical losses, estimated at 1.6MW power savings annually. In addition, new substations at Lakhshmipur, Choumuhani and Majdee are expected to facilitate the integration of renewable energy grid of significant capacities (about 550 MW of proposed solar PV projects). The total cost of these three substations is about US\$42.66 million. The 300MW solar PV project at Feni (expected to be financed through IDA support) will benefit from the upgrading of the Mirsharai substation to 400kV (at a cost of US\$25.5 million). Interconnecting transmission lines will also be built under this project to allow two (Lakhshmipur and Majdee) of these three substations to be connected to the grid substation at a cost of US\$14.66 million. The project will also generate adaptation benefits.

Component 2: Institutional Development and Implementation Support (IDA US\$28 million out of which Technical Assistance support is US\$8 million):

24. The World Bank Group plans to maintain a long-term engagement with PGCB aiming to support the strengthening of its institutional capacities so that it can become a modern transmission company. There are already institutional development activities through on-going Bank engagements and other development partners to assist PGCB. Support to PGCB includes activities on investment planning, preparation of its business plan, improvement of operational and financial management practices and technical capacity building.

25. The power system needs to double by 2024, requiring significant sources of financing for investment and sustainable operations. The Government has recently appointed a Strategic Financial Consultant to review sector investment needs, identify financial and management strengths and weaknesses of power sector entities (including PGCB) and recommend actions to enable the raising of required funds to deliver future development plans and obligations, while keeping the sector financially viable. The Government has also engaged another consulting firm to assess the human resources requirement of each entity and

⁵From the final Feasibility study

⁶Includes reconductoring of 157km

⁷Includes one rehabilitation



propose an optimized organigram based on international practices. Implementation of an Enterprise Resource Planning (ERP) system across the sector will enable companies to have greater control, insights and visibility into their operations allow them to make improved critical business decisions. Finally, a full-fledged capacity building program under an Asian Development Bank funded technical assistance program will help the regulation of the sector (tariff methodology, tariff filing format and frequency, process of tariff determination, a database and a data submission procedure) and its effective implementation.

26. This component will support complementary TA activities to further help PGCB, already registered at the capital market, to clearly identify its assets and use them overtime to access securitized financing and ensure well-justified tariff applications as well as use up to standard accounting & reporting system. This component would also cover project supervision. The following sub-components have been agreed:

27. Sub-component 2.1: Definition and implementation of a new corporate maintenance strategy (\$21.5 million including \$1.5 million TA): The TA activity will allow PGCB to define a new corporate maintenance strategy to address issues raised under para 11. As soon as the new strategy and roadmap for implementation is adopted, PGCB will procure the main equipment, software and training under this project to cope with the growing asset base and help feeding the new strategy process with key data. The TA activity and priority investments identified are described below:

- a) Formulation of a roadmap for corporate maintenance strategy (\$1.5 million): A consultancy firm will be hired to review current policy and procedures, assess organization of the maintenance departments, establish baseline for cost and performance. It will then propose a new strategy based on an inclusive process involving all relevant department of PGCB and combining reactive, predictive and pro-active approaches. This will include (i) the introduction of Reliability-Centered-Maintenance (RCM) analysis, (ii) the definition of a new policy framework, (iii) institutional re-organization of the maintenance, and (iv) standard guidelines and procedure during all the equipment/systems lifetime that would include recommending climate resilient equipment specifications.
- b) Computerized maintenance management system (\$16 million): it will include an online equipment data base, continuous on-line monitoring of high value assets and laser technology for health assessment of aged grid lines.
- c) Live-line maintenance (\$4 million): This practice will allow to perform major maintenance without disconnecting assets/systems from the power grid. The project will cover the tools and personal protection equipment needed as well as consultancy to establish the required procedures and train selected staff for an initial number of crews.

28. Sub-component 2.2: TA for PGCB Institutional Development and Project Supervision (\$6.5 million): This sub-component will help PGCB to undertake urgent activities hampering its capacity to obtain required tariff from the regulator and access to financial market. It will also support the project supervision activities. Activities are detailed below:

- a) Assist PGCB in compiling a complete fixed asset register (\$1.0 million): PGCB has been receiving qualified audit opinion for incomplete fixed asset register. It was noted that the carrying amount of property, plant and equipment (PPE) reported in the financial statement of 2016 could not be verified as the PPE register is not maintained with relevant information like, original cost,



accumulated depreciation, rate of depreciation, year of acquisition, identification number, etc. Valuation and physical verification of plant and machinery transferred from BPDB and DPDC was not conducted. A firm will be hired to undertake physical verification, valuation, and tagging of fixed assets located dispersedly across the country as per international accounting standards.

- b) Computerized Financial Management System (\$1.0 million): A consulting firm will be hired to assess the current financial reporting system, availability of hardware and software that are being used for the reporting system. Based on the assessment, the consultant will develop the technical specifications and bidding documents for the supply, installation, customisation and configuration of software and system (Including necessary hardware & accessories) for the automation of the financial management systems covering recording, materials management, payroll, fixed assets and project accounting modules. The configuration will be kept opened to interface with the planned sector ERP.
- c) Support for project supervision (\$4.5 million): Despite good implementation record with other IDA financed projects, PGCB's staff are overwhelmed by the increasing number of projects from different financing partners. To ensure adequate supervision and timely implementation of the activities under the proposed project, additional supervision resources will be funded. A consulting firm will be hired to support the Project Management Unit (PMU) for the review of design, procurement, contract management, and field supervision of different contractors and reporting.

E. Implementation

- 29. PGCB will be the implementing agency of the project. It will set up a dedicated Project Management Unit (PMU) to implement the project, which will work closely with the corporate units at PGCB. In particular, all procurement will be carried out by a newly formed 'contract' unit under its Planning & Design (P&D) department. Financial management activities will also be led by corporate finance team. Although the TA activities will be managed by the relevant internal departments, the initiation of the consultants' hiring and coordination among the internal stakeholders (including the central management) will be carried out by the PMU. PGCB has demonstrated good implementation performance in procurement, safeguards and construction management with two earlier World Bank-funded projects: the power evacuation component under the Siddhirganj Power Project and the Rural Electricity Transmission and Distribution Project. Despite its good performance, PGCB is now under stress with the increasing number of projects supported by different financing partners. To cope with the increasing load and to enable PGCB to adequately manage development projects, PGCB is ensuring that a single Project Director (PD) would not manage more than one project.
- 30. The PMU staffing will include:
 - a) A full-time Project Director (PD).
 - b) Dedicated Design & Supervision Engineers-PGCB will depute Senior Design and Planning Engineers from its corporate units for both substations and transmission lines. They will be supported by qualified, junior design and planning engineers in the PMU.
 - c) The PMU should be supported by adequate number of Engineers during Supervision.
 - d) Procurement Experts- PGCB will strengthen the Corporate Procurement Team with engineers having knowledge/experience in public procurement and implementation of infrastructure projects.
 - e) Additional Support in project implementation: A firm to act as Owner's Engineer will be hired to



ensure adequate supervision and timely implementation of the project.

- f) Financial Management (FM) Experts: PGCB should depute at least two FM experts, not below the rank of a Manager, to handle all FM matters of the project.
- g) Safeguard Experts: A dedicated Environment and Social Unit (ESU) is already established and two permanent positions approved. These two posts will be filled in no later than January 2018.

31. Given the large volume of activities in the project and that again are concentrated in and around Comilla, Noakhali and Chittagong, the complexity of the project will require a close and robust supervision plan. It is imperative that full-time field presence of PGCB is required for timely and quality implementation. It is suggested that a post of Deputy Project Director is created who should be resident in one of the areas to supervise the whole works and give day-to-day decisions to the various contracts, with support of the dedicated supervision team and the Owner's Engineer.

F. Project location and Salient physical characteristics relevant to the safeguard analysis (if known)

The proposed project is expected to finance the augmentation and rehabilitation of transmission network and substations of the Power Grid Company of Bangladesh (PGCB) in the commercially important eastern region of the country. The project area comprises the Greater Comilla, Noakhali and Chittagong areas. The rationale behind the project is to expand the 230kV transmission system and to strengthen the 132kV transmission systems in the project area. It is assumed that the Project activities are not expected to cause any long term or irreversible environmental impact. The project is classified as a Category B project and the Environment Assessment (OP/BP 4.01) safeguard policy has been triggered to ensure that the project investment is environmentally sound, sustainable and thus help to improve decision making. Since the line routes, locations of substation, size and extent of the sub-projects are known in the project appraisal stage, sub-project specific environment assessment are required for the Project. The Environmental Assessment (EA) meets the requirements of Environment Conservation Rules 1997 of Bangladesh, the Safeguard Policies of the World Bank and the Environmental, Health and Safety Guidelines of the World Bank Group/International Finance Corporation (IFC).

G. Environmental and Social Safeguards Specialists on the Team

Sabah Moyeen, Social Safeguards Specialist

Iqbal Ahmed, Environmental Safeguards Specialist



SAFEGUARD POLICIES THAT MIGHT APPLY

Safeguard Policies	Triggered?	Explanation (Optional)
Environmental Assessment OP/BP 4.01	Yes	<p>The proposed project aims to enhance and strengthen the grid network in the eastern region. The Project is classified as Environmental Category B in accordance with OP 4.01 due to the nature and scale of the planned civil works and assessed impacts. The expected environmental and social impacts can be mitigated through implementation of appropriate environmental code of practice and environmental management plan, social management plans. The environmental screening/assessment with environmental management plan (EMP) for each sub-project (based on exact routes and locations of the transmission/distribution lines and substations) are be carried out. The general Environmental, Health, and Safety (EHS) Guidelines of the World Bank Group along with the industry sector EHS for Electric Power Transmission are applicable. Also, necessary mitigation measures for overhead transmission lines against accidental fall from elevated height during work (e.g. using body harness, waist belts, secured climbing devices, etc.) shall be addressed. Only the local labor will be involved in the construction work. However, the potential risks and impacts from project induced labor influx will be addressed.</p> <p>Rationale for EA Category</p> <p>Key environmental issue would be the health and safety during the line installation. The impacts on environment are normally restricted to rights of way (ROW). The effect of the construction of transmission line is temporary and limited during construction. The preliminary survey along the proposed transmission line routes revealed that some tall-growing trees will be cut in the entire right-of-way (ROW) width. Also, due to movement of heavy construction vehicles, the agricultural areas within the ROW will be temporarily suspended to use the land for crop production. Even the project will involve land acquisition and resettlement</p>



		activities associated with the sub-stations and TLs, RAPs are prepared to mitigate for all impacts identified through the SIA. Displacement of people and interventions in densely populated areas will be minimized. None of the impacts are expected to be irreversible in nature, and are expected to be mitigable via appropriate assessments and safeguards plans.
Natural Habitats OP/BP 4.04	Yes	As a precautionary approach, it is triggered though it is highly unlikely that any natural habitat formed largely by native plant and animal species will be affected or modified due to the Project activities.
Forests OP/BP 4.36	Yes	The impact assessment revealed that a small segment of transmission line will cross forest area in Chittagong area. However, it is anticipated that expect that there would not be any impact on the management, protection, or utilization of natural forests or plantations.
Pest Management OP 4.09	No	The Project is not expected to finance any synthetic chemical pesticides activities and the policy has not been triggered.
Physical Cultural Resources OP/BP 4.11	Yes	Physical Cultural Resources is triggered although it is very unlikely that the transmission lines or substations may locate through areas with physical cultural resources. Chance finds is encountered in the EMP and special precautions will need to be taken to avoid damaging cultural heritage sites and property.
Indigenous Peoples OP/BP 4.10	No	The project areas are pre-identified; No IP policy is triggered according to the preliminary screening.
Involuntary Resettlement OP/BP 4.12	Yes	The routes are pre-identified. The substations under the project will require land acquisition. The RoW for transmission lines will not require land acquisition. However, temporary losses caused by the transmission line construction will need to be addressed under the social safeguard policy OP 4.12. An Environment and Social Impact Assessment (ESIA) has been conducted that describes potential social impacts of the project. Thirteen site-specific Resettlement Action Plans (RAPs) for sub-stations have been prepared, approved and disclosed in the PGCB websites and the Bank's operational portal. Hard copies of the documents have also been made available in all field offices related to the project's implementation. The RAPs provide the sub-station -



specific (i) social screening; (ii) baseline information on social impacts; (iii) analysis of alternatives; (iv) public consultations; (v) specific mitigation measures detailed in entitlement matrix; (vi) specific assistance to be provided to vulnerable groups including female headed households; and (viii) institutional arrangement for implementation of RAPs along with grievance redress mechanisms.

Safety of Dams OP/BP 4.37	No	The Project will not finance any dams, nor do project activities depend on any existing dams.
Projects on International Waterways OP/BP 7.50	No	The Project activities will not take place along international waterways which are shared with Riparian countries.
Projects in Disputed Areas OP/BP 7.60	No	There are no disputed areas in the Project area of influence.

KEY SAFEGUARD POLICY ISSUES AND THEIR MANAGEMENT

A. Summary of Key Safeguard Issues

1. Describe any safeguard issues and impacts associated with the proposed project. Identify and describe any potential large scale, significant and/or irreversible impacts:

The project is classified as a Category B project and no large-scale infrastructure investment or major expansion will be implemented under the proposed project. The environmental impacts of the project are expected to be mostly construction related and limited within the project boundaries. These impacts can be mitigated through implementation of appropriate environmental code of practice and environmental management plan.

Since the line routes, exact locations of SVCs, size and extent of the sub-projects are known at the project appraisal stage, in addition to Environmental and Social Impact Assessment (ESIA), 13 site specific RAPs have been prepared based on preliminary studies of possible locations of proposed substations and surveys of proposed routes of new /rehabilitation of transmission lines.

2. Describe any potential indirect and/or long term impacts due to anticipated future activities in the project area:

The impacts are site-specific and It is expected that the Project activities are not expected to cause any long term or irreversible environmental impact. The impacts are normally restricted to rights of way (ROW). The effect of the construction of transmission line is temporary and limited during construction. Appropriate measures are suggested to prevent, minimize, mitigate, or compensate However, the project requires careful health and safety measures during implementation and operation phases as the activities involve transmission of electricity. The long-term indirect benefit is the development of rural areas with better electricity connection. To mitigate social impacts, RAPs have included detailed entitlement matrix for compensating all kinds of tangible losses (land, housing, business, trees, crops, livelihoods) to project affected people. The positive social impacts of the project will benefit most people living in the area by providing uninterrupted electricity supply.



3. Describe any project alternatives (if relevant) considered to help avoid or minimize adverse impacts.

Activities like construction of transmission line and its subsequent operation and maintenance are non-polluting in nature and its environmental impact are also negligible and are restricted to Right of way only. Three different alternatives alignments were studied for each sub-project with the help of published data/google maps and walkover survey to arrive at most optimum route for avoiding environmentally sensitive areas. For selection of optimum route, the following points are taken into consideration:

- (i) The route of the proposed transmission lines does not involve any human rehabilitation.
- (ii) Any monument of cultural or historical importance is not affected by the route of the transmission line.
- (iii) The proposed route of transmission line does not create any threat to the survival of any community with special reference to Tribal Community.
- (iv) The proposed route of transmission line does not affect any public utility services like playgrounds, schools, other establishments etc.
- (v) The line route does not pass through any sanctuaries, National Park, Forest etc.
- (vi) The line route does not infringe with area of natural habitat.

4. Describe measures taken by the borrower to address safeguard policy issues. Provide an assessment of borrower capacity to plan and implement the measures described.

PGCB has prior experience in implementing the IDA funded projects and it has implemented the “Siddhirganj and Maniknagar 230kV Transmission Line Project” under IDA financed Siddhirganj Power Project. Also they are implementing the sub-projects under Rural Electricity Transmission and Distribution Project of the World Bank. PGCB created an Environment and Social Management Unit (ESMU) in their regular organogram. The PGCB have kept the provision of short and long-term training courses of their concerned officials on environmental management for the institutional capacity building. The ESIA and RAPs have elaborated the supervision and monitoring requirements of the EMP and ECoP. The quarterly progress on environmental implementation will be reported in detail along with the Project Progress Report.

5. Identify the key stakeholders and describe the mechanisms for consultation and disclosure on safeguard policies, with an emphasis on potentially affected people.

The ESIA was prepared on extensive consultation, including FGD/ informal meetings. Several field level consultations with the key stakeholders of the PGCB, field level staffs, and communities have been carried out during the preparation of the ESIA. The number of consultations, location, and type of participants are enclosed in the annex of ESIA. As a part of disclosure, summary of the ESIA report has been translated into Bangla and disseminated locally. Copies of the report (both in English and Bengali) will be sent to concerned offices of PGCB and will be made available to the public. In accordance with WB access to information policy, the ESIA report has also been uploaded in the website of PGCB and in the Bank operational portal. The draft ESIA will be presented in a national workshop in mid-January, 2018.

B. Disclosure Requirements

Environmental Assessment/Audit/Management Plan/Other

<p>Date of receipt by the Bank</p> <p>16-Oct-2017</p>	<p>Date of submission for disclosure</p> <p>20-Oct-2017</p>	<p>For category A projects, date of distributing the Executive Summary of the EA to the Executive Directors</p>
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"In country" Disclosure

Bangladesh

18-Oct-2017

Comments

Executive Summary of the EIA in Bengali language was disclosed at PGCB website on October 30, 2017.

Resettlement Action Plan/Framework/Policy Process

Date of receipt by the Bank

08-Oct-2017

Date of submission for disclosure

20-Oct-2017

"In country" Disclosure

Bangladesh

18-Oct-2017

Comments

Executive Summary of the RAP in Bengali language was disclosed at PGCB website on November 01, 2017.

C. Compliance Monitoring Indicators at the Corporate Level (to be filled in when the ISDS is finalized by the project decision meeting)

OP/BP/GP 4.01 - Environment Assessment

Does the project require a stand-alone EA (including EMP) report?

Yes

If yes, then did the Regional Environment Unit or Practice Manager (PM) review and approve the EA report?

Yes

Are the cost and the accountabilities for the EMP incorporated in the credit/loan?

Yes

OP/BP 4.04 - Natural Habitats

Would the project result in any significant conversion or degradation of critical natural habitats?

No

If the project would result in significant conversion or degradation of other (non-critical) natural habitats, does the project include mitigation measures acceptable to the Bank?

No

OP/BP 4.11 - Physical Cultural Resources

Does the EA include adequate measures related to cultural property?



Yes

Does the credit/loan incorporate mechanisms to mitigate the potential adverse impacts on cultural property?

No

OP/BP 4.12 - Involuntary Resettlement

Has a resettlement plan/abbreviated plan/policy framework/process framework (as appropriate) been prepared?

Yes

If yes, then did the Regional unit responsible for safeguards or Practice Manager review the plan?

Yes

OP/BP 4.36 - Forests

Has the sector-wide analysis of policy and institutional issues and constraints been carried out?

No

Does the project design include satisfactory measures to overcome these constraints?

No

Does the project finance commercial harvesting, and if so, does it include provisions for certification system?

No

The World Bank Policy on Disclosure of Information

Have relevant safeguard policies documents been sent to the World Bank for disclosure?

Yes

Have relevant documents been disclosed in-country in a public place in a form and language that are understandable and accessible to project-affected groups and local NGOs?

Yes



All Safeguard Policies

Have satisfactory calendar, budget and clear institutional responsibilities been prepared for the implementation of measures related to safeguard policies?

Yes

Have costs related to safeguard policy measures been included in the project cost?

Yes

Does the Monitoring and Evaluation system of the project include the monitoring of safeguard impacts and measures related to safeguard policies?

Yes

Have satisfactory implementation arrangements been agreed with the borrower and the same been adequately reflected in the project legal documents?

Yes

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APPROVAL

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Approved By

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Country Director:	Rajashree S. Paralkar	21-Nov-2017