Project Administration Manual

Project Number: 51137-001
Loan and Grant Number(s): [ ]
July 2018

People's Republic of Bangladesh: Southwest Transmission Grid Expansion Project

ABBREVIATIONS

ADB	–	Asian Development Bank
EAKPF	–	Republic of Korea e-Asia and Knowledge Partnership Fund
EMP	–	environmental management plans
EPC	–	engineering, procurement, and construction
FMA	–	financial management assessment
IEE	–	initial environmental examination
JFJCM	–	Japan Fund for the Joint Crediting Mechanism
kV	–	kilovolt
LILO	–	line-in line-out
PMU	–	project management unit
MVA	–	megavolt-ampere
MW	–	megawatt
MWh	–	megawatt-hour
NCB	–	national competitive bidding
PAM	–	project administration manual
PGCB	–	Power Grid Company of Bangladesh Limited
SOE	–	statement of expenditure

CONTENTS

Project Administration Manual Purpose and Process

The project administration manual (PAM) describes the essential administrative and management requirements to implement the project on time, within budget, and in accordance with the policies and procedures of the government and Asian Development Bank (ADB). The PAM should include references to all available templates and instructions either through linkages to relevant URLs or directly incorporated in the PAM.

The Power Grid Company of Bangladesh Limited (PGCB) is wholly responsible for the implementation of ADB-financed projects, as agreed jointly between the borrower and ADB, and in accordance with the policies and procedures of the government and ADB. ADB staff is responsible for supporting implementation including compliance by PGCB of their obligations and responsibilities for project implementation in accordance with ADB's policies and procedures.

At loan negotiations, the borrower and ADB shall agree to the PAM and ensure consistency with the loan and grant agreements. Such agreements shall be reflected in the minutes of the loan negotiations. In the event of any discrepancy or contradiction between the PAM and loan and grant agreements, the provisions of the loan and grant agreements shall prevail.

After ADB Board approval of the project's report and recommendations of the President (RRP), changes in implementation arrangements are subject to agreement and approval pursuant to relevant government and ADB administrative procedures (including the Project Administration Instructions) and upon such approval, they will be subsequently incorporated in the PAM.

I. PROJECT DESCRIPTION

1. Bangladesh has sustained an average annual economic growth rate of 6.5% since 2007, despite the 2008–2009 global financial crisis.[1] Bangladesh is now evolving into a middle-income country[2] since its gross domestic product per capita has risen steadily from $1,110 in 2014 to $1,544 in 2017. The structure of the Bangladesh economy is gradually shifting from agriculture to manufacturing and services. Poverty has been halved since 2000, and many of the Millennium Development Goal targets have been met. Building on these achievements, the government has set new priority targets to (i) accelerate the annual economic growth to 7.5% to move to middle-income status by 2021; (ii) create jobs and support rural development to engender inclusive growth and poverty reduction; (iii) reduce poverty from 24.8% in 2015 to 18.6% in 2020, and extreme poverty from 12.9% in 2015 to about 8.9% in 2020; and (iv) reduce environmental degradation and climate change vulnerabilities.[3]

2. Despite its economic success, the country faces major challenges in its effort to maintain the growth trend and move closer to upper middle-income status because of infrastructure deficiencies. Addressing infrastructure deficiencies is therefore a top priority of the government. A major challenge is to provide modern and affordable energy services to those who lack access. Inadequate energy could result in loss of productivity and competitiveness and become a constraint to faster growth and greater investment in the short to medium term. To mitigate this constraint and sustain the country's economic momentum, the government has prepared the Power System Master Plan[4] to increase power generation capacity, as well as improve and extend the power transmission and distribution network, with the aim of achieving universal access to electricity by 2021.

3. The power sector in Bangladesh is characterized by recurring shortages of electricity-generating capacity in the face of ever-rising demand in a growing economy. In fiscal year (FY) 2015, per capita electricity consumption was 310 kilowatt-hours. This figure was lower than most other countries in South Asia, indicating that power sector infrastructure facilities require significant capacity additions. In FY2017, peak demand was estimated at 10,400 megawatts (MW) while available generation capacity was 9,479 MW. A significant amount of demand was met by supply from captive generation and load shedding.[5] Existing generation capacity gradually retires and needs to be replaced, while net peak demand has continued to increase; it is forecasted to exceed 13,300 MW by 2020 and 19,900 MW by 2025. Further, the national electricity access in FY2017 masks a stark urban–rural disparity, with access to electricity at over 90% in urban areas and only 40% in rural areas. Also, despite substantial improvement in operational and financial performance, weak financial management capacities of the sector entities and below cost-recovery power tariffs continue to impair the financial health of the sector entities.

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[1] Bangladesh Bureau of Statistics. http://www.bbs.gov.bd/ (accessed 1 March 2018).

[2] ADBI. 2017. *Working Paper Series: Middle-Class Composition and Growth in Middle-Income Countries*. Tokyo. https://www.adb.org/sites/default/files/publication/325056/adbi-wp753.pdf. A country is classified as lower middle-income if its gross domestic product per capita is between $2,250 and $7,500, as upper middle-income if it is between $7,500 and $14,500.

[3] Government of Bangladesh, Planning Commission. 2015. *Seventh Five Year Plan FY2016–FY2020: Accelerating Growth, Empowering Citizens.* Dhaka.

[4] Government of Bangladesh; Ministry of Power, Energy and Mineral Resources. 2016. *Power System Master Plan 2016*. Dhaka.

[5] BPDB. 2018. *Annual Report 2016–2017*. Dhaka. Bangladesh Power Development Board estimates that load shedding at peak times in FY2017 was about 250 MW.

4. Bangladesh's power generation expansion plan intends to provide the required generation capacity to meet the increasing demand and the government's electrification goals, including delivering services to those not connected to grid electricity (footnote 4). Further, Bangladesh's Seventh Five Year Plan (footnote 3) envisages an integrated development strategy for the southwest region encompassing Dhaka, Khulna, and Barisal. The power sector will play a critical role in realizing the government's vision for promoting economic and industrial growth in the southwest region.

5. The past sector progress comprises (i) creating an enabling business environment for the private sector, (ii) implementing power transmission interconnection with India, (iii) increasing clean energy investment in wind and solar, and (iv) strengthening the transmission network to accommodate expected additional power generation capacity. The sector reform actions so far have contributed to considerable achievements, including the following: (i) the establishment in 2004 of Bangladesh Energy Regulatory Commission (BERC), and (ii) the approval in 2016 of an electricity transmission tariff fixation methodology. There are still areas for further improvement and capacity building, such as financial management and corporate governance in power utilities.

6. Despite improved efficiency from power sector reforms, transmission challenges remain. Investments in network strengthening and measures to reduce nontechnical losses have resulted in a significant decline of overall system losses from over 30% of generation in the 1990s to 13%–15% of generation at present. The number of interruptions because of transmission system issues, however, increased from two incidents in FY2016 to 15 incidents in FY2017, with the cumulative duration of outages more than doubling from almost 17 hours to 39 hours. Investments in the transmission network are needed to reduce the number of interruptions and further reduction of system losses. Therefore, addressing deficiencies in the transmission network remains a top priority of the government. Investments in transmission infrastructure will also be essential to help Bangladesh (i) achieve its goal of achieving energy security (in line with Sustainable Development Goal 7),[6] (ii) accelerate its economic growth, (iii) improve living standards of its population, (iv) create meaningful jobs, and (v) attain upper middle-income status. A highly skilled workforce is required to modernize power infrastructure with advanced technologies. Utilities have not been successful in enhancing the capacity of current employees or acquiring new employees with the needed skills to operate the power system effectively and efficiently.

7. To address the issues in para. 3, the government has formulated a strategy and set targets for the power sector, as stipulated in Vision 2021[7] and the Seventh Five Year Plan (footnote 3). These include, among others, (i) increasing generation capacity by 23,000 MW, (ii) reducing combined transmission and distribution losses from 13% to 9% of generation, and (iii) providing uninterrupted power supply to industries, all by 2020. The project is also aligned with the Energy Policy[8] of the Asian Development Bank (ADB) and the priorities of ADB's country partnership strategy for Bangladesh, 2016–2020.[9]

8. Inadequate transmission lines and substation transformer capacities in southern and western regions are the main contributors to transmission bottlenecks. In tandem with increased power generation capacity, investments in the transmission network are required to address transmission bottlenecks for the evacuation of bulk power from power stations to major load

[6] Sustainable Development Goal 7 is to ensure access to affordable, reliable, sustainable, and modern energy for all.
[7] Government of Bangladesh, Ministry of Planning, Planning Commission. 2012. *Perspective Plan of Bangladesh, 2010–2021: Making Vision 2021 a Reality.* Dhaka.
[8] ADB. 2009. *Energy Policy.* Manila.
[9] ADB. 2016. *Country Partnership Strategy: Bangladesh, 2016–2020*. Manila.

centers such as Greater Dhaka, Chittagong, and the southwest economic corridor. At the same time, construction of new transmission lines has become more challenging because of the high population density and limited rights-of-way (ROWs).

9. **Value added by ADB assistance.** The proposed Southwest Transmission Grid Expansion Project builds upon ADB's strong and sustained work in the power sector of Bangladesh and embraces ADB's sector knowledge and synergistic approach in developing all energy subsectors. Complementing the investment in the Rupsha 800-Megawatt Combined Cycle Power Plant in the southwest region,[10] the proposed project will focus on addressing continuing deficiencies in the transmission system and will enhance power transfer capacity to the load centers of the southern and western zones. The project will use advanced efficient conductor technology as a cost-effective solution to allow more power transfer at lower energy loss in the new transmission lines. The project will minimize the ROW requirements and mitigate potential safeguard issues.[11] Further, the project will initiate a capacity development program focusing on new technologies and trends in power systems, with an emphasis on gender and social inclusion, which will help the long-term sustainability of the Bangladeshi power sector. The project will also support further sector reforms by strengthening financial management capacity and governance structure of the power utilities while accelerating transmission tariff approvals by BERC.

10. The project is aligned with the following impacts: (i) national target of electricity for all achieved by 2021 (footnote 7), and (ii) combined transmission and distribution losses reduced from 13% to 9% of generation, and uninterrupted power supply provided to industries by 2020 (footnote 4). The project will have the following outcome: capacity of electricity supply in Bangladesh increased.[12]

11. **Output 1: New substation at Gopalganj installed.** The project will construct and commission the Gopalganj (North) 400/132 kV substation comprising three 325 megavolt-ampere (MVA) transformers.

12. **Output 2: Transmission network in southern Bangladesh expanded.** The project will expand the network by (i) constructing and commissioning a 126-kilometer (km) Barisal (North)–Gopalganj (North)–Faridpur 230 kV double-circuit line,[13] (ii) constructing and commissioning two 230 kV bay extensions at the existing Barisal (North) substation and augmenting the existing Faridpur 132/33 kV substation with four 132 kV bays; five 230 kV bays; and 230/132 kV, 2x250 MVA transformers; and (iii) augmenting the Gopalganj (North) substation with 400/230 kV, 2x750 MVA transformers .

13. **Output 3**: **Transmission network in western Bangladesh expanded.** The project will expand the network by constructing and commissioning (i) a new 104 km Bogra (West)–Rohanpur

[10] Some recent investments include the following: ADB. Bangladesh: Sustainable Power Sector Development Program; ADB. Bangladesh: Bangladesh–India Electrical Grid Interconnection Project; ADB. Bangladesh: Natural Gas Infrastructure and Efficiency Improvement Project; ADB. Bangladesh: Bangladesh Power System Enhancement and Efficiency Improvement Project; and ADB. Bangladesh: Rupsha 800-Megawatt Combined Cycle Power Plant Project

[11] Compared to aluminum conductor steel-reinforced conductor, transmission capacity of the proposed advanced efficient conductor is increased by two times and line losses are typically 25% less. These advantages can reduce ROW requirements by limiting blowout clearance for new transmission corridors.

[12] The design and monitoring framework is in Appendix 1.

[13] The project will utilize aluminum conductor composite core cable (a type of high-temperature, low-sag conductor) in the transmission lines under outputs 2 and 3. Such energy-efficient cables have less resistance and higher capacity, reducing transmission losses and carbon dioxide emissions compared with conventional cables that are currently used in Bangladesh.

400 kV double-circuit line; (ii) a new 400/230 kV, 2x750 MVA Bogra (West) substation; (iii) a new 400/132 kV, 2x325 MVA Rohanpur substation; (iv) a new 26 km Chapainawabganj–Rohanpur 132 kV double-circuit transmission line; (v) two 132 kV bay extensions at the existing Chapainawabganj substation; and (vi) an 11 km line-in, line-out connection from the Barapukuria-Bogra (South) 230 kV transmission line to the Bogra (West) substation, and a 1 km line-in, line-out connection from the Chowdala–Niamatpur 132 kV transmission line to the Rohanpur substation.

14. **Output 4**: **Socially inclusive capacity in the electric utility industry enhanced.** The project will enhance capacity, particularly emphasizing inclusive development and gender equality, through a university program relevant to the energy sector, supporting (i) 50 university students, of which at least 40% are women; and (ii) 30 staff from Power Grid Company of Bangladesh Limited (PGCB), of which at least 30% are women .

II. IMPLEMENTATION PLANS

A. Project Readiness Activities

15. The loan implementation will be completed by 30 June 2023 with the loan and grants closing date being 31 December 2023. Implementation arrangements are given in Table 1 and the project readiness is shown in Table 2.

Table 1: Implementation Arrangements

Aspects	**Arrangements**		
Implementation period	July 2018–June 2023		
Estimated completion date	30 June 2023		
Estimated loan and grants closing date	31 December 2023		
Management			
(i) Oversight body	Power Division of the Ministry of Power, Energy and Mineral Resources (chair) PGCB board (member)		
(ii) Executing agency	PGCB		
(iii) Implementation unit	Project management unit in PGCB		
Procurement	International competitive bidding	5 contracts	$320.00 million
Consulting services	Quality- and cost-based selection	78 person-months	$1.25 million
	Individual consultants selection	16 person-months	$0.05 million
Retroactive financing and/or advance contracting	Eligible contract packages and eligible expenditures agreed between ADB and the borrower may be considered for advance contracting and retroactive financing.		
Disbursement	The loan and grant proceeds will be disbursed following ADB's *Loan Disbursement Handbook* (2017, as amended from time to time) and detailed arrangements agreed between the government and ADB.		

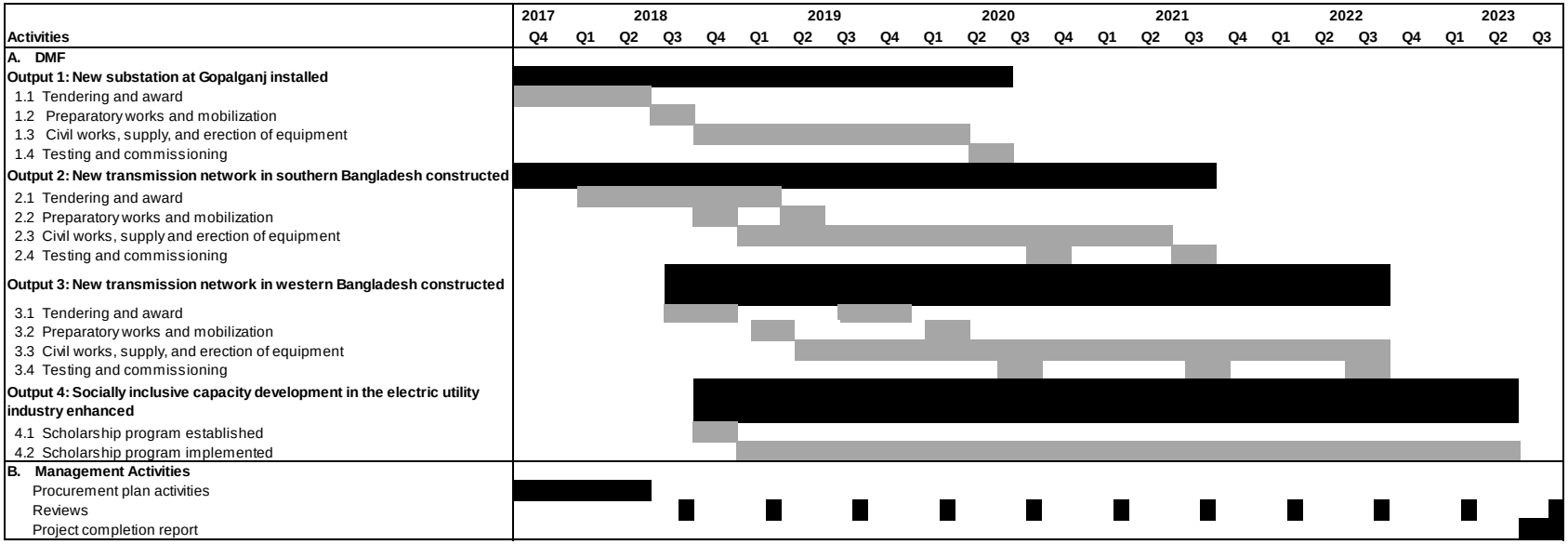
ADB = Asian Development Bank, PGCB = Power Grid Company of Bangladesh Limited.
Source: ADB estimates.

Table 2: Project Readiness Activities

Indicative Activities	2017 Oct	Nov	Dec	2018 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Responsible Individual/Unit/ Agency/ Government
Advance contracting actions													
Submission of bidding documents for Gopalganj 400/132 kV AIS Substation	X												PGCB
Submission of bidding documents for Barisal-Gopalganj-Faridpur 230 kV transmission Line				X									PGCB
Submission of bidding documents for 230/132 kV Indoor GIS Substation at Faridpur and 230 kV Bay Extension at Barisal Substation						X							PGCB
Retroactive financing actions													
Tendering for Gopalganj 400/132 kV AIS Substation							X						PGCB
Establish project implementation arrangements					X								PGCB
ADB Board approval										X			ADB
Loan and grant signing											X		GOB, PGCB, ADB
Government legal opinion provided											X		GOB
Government budget inclusion							X						GOB
Loan and grant effectiveness												X	ADB

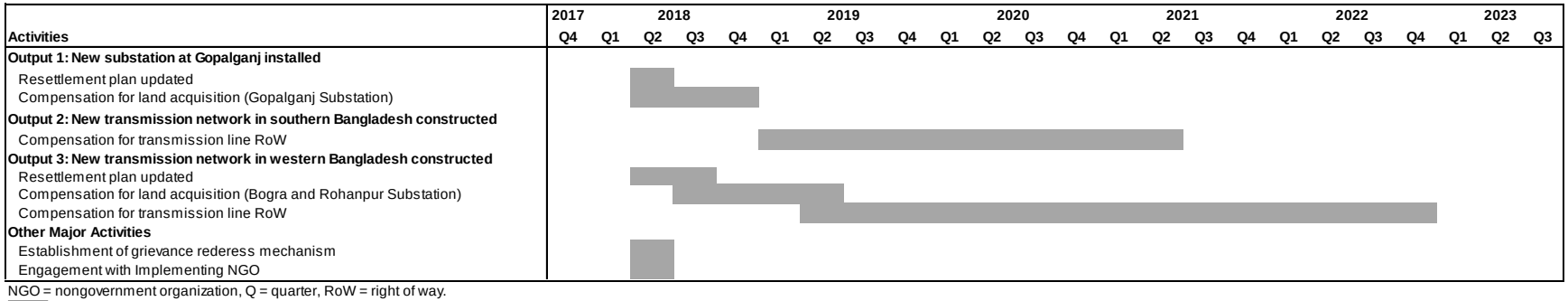
ADB = Asian Development Bank, AIS = air-insulated switchgear, Apr = April, Aug = August, Dec = December, Feb = February, GIS = gas insulated switchgear, Government of Bangladesh, Jan = January, June = June, Jul = July, kV = kilovolt, Mar = March, Nov = November, Oct = October, PGCB = Power grid Company of Bangladesh Limited, Sep = September.
Source: Asian Development Bank and PGCB estimate.

B. Overall Project Implementation Plan



Q = quarter.
Effective duration for the entire component
Effective duration for the specific activity
Source: Asian Development Bank estimates.

C. Overall Project Land Acquisition Schedule



NGO = nongovernment organization, Q = quarter, RoW = right of way.
Effective duration for the specific activity
Source: Resettlement Plan.

III. PROJECT MANAGEMENT ARRANGEMENTS

A. Project Implementation Organizations: Roles and Responsibilities

Table 3: Management Roles and Responsibilities

Project Implementation Organizations	Management Roles and Responsibilities
Executing agency (PGCB)	➢ Responsible for overall execution, supervision, and monitoring the tendering, award, and implementation of respective project components ➢ Complying with agreed covenants
Project management unit	➢ PMU headed by a project director[14] will implement the project including working with consultants for design, procurement, and implementation and be responsible for preparation and submission of withdrawal applications and meeting reporting requirements including audit reports and financial statements. ➢ The PMU will be responsible for finalizing surveys and detailed designs, update of safeguard documents, preparation of semi-annual safeguard monitoring reports, and timely submission to ADB. ➢ Responsible for setting up grievance redress mechanisms and addressing grievances raised by affected persons in a timely manner. ➢ Disclosure of relevant information to affected people and undertaking consultations. ➢ Updating the environment and resettlement documents in case of unanticipated impacts, preparing corrective action plans, and documents update.
Ministry of Finance, Economic Relations Division	➢ Will enter into the loan and grant agreement with ADB
Ministry of Power, Energy and Mineral Resources	➢ Will provide policy direction to PGCB
Contractors	➢ Will undertake implementation of the contracts
ADB	➢ Will undertake regular project reviews and facilitate in implementation of the project including compliance by the executing agency of obligations and responsibilities for project implementation

ADB = Asian Development Bank, PGCB = Power Grid Company of Bangladesh Limited, PMU = project management unit.
Source: Asian Development Bank estimates.

B. Key Persons Involved in Implementation

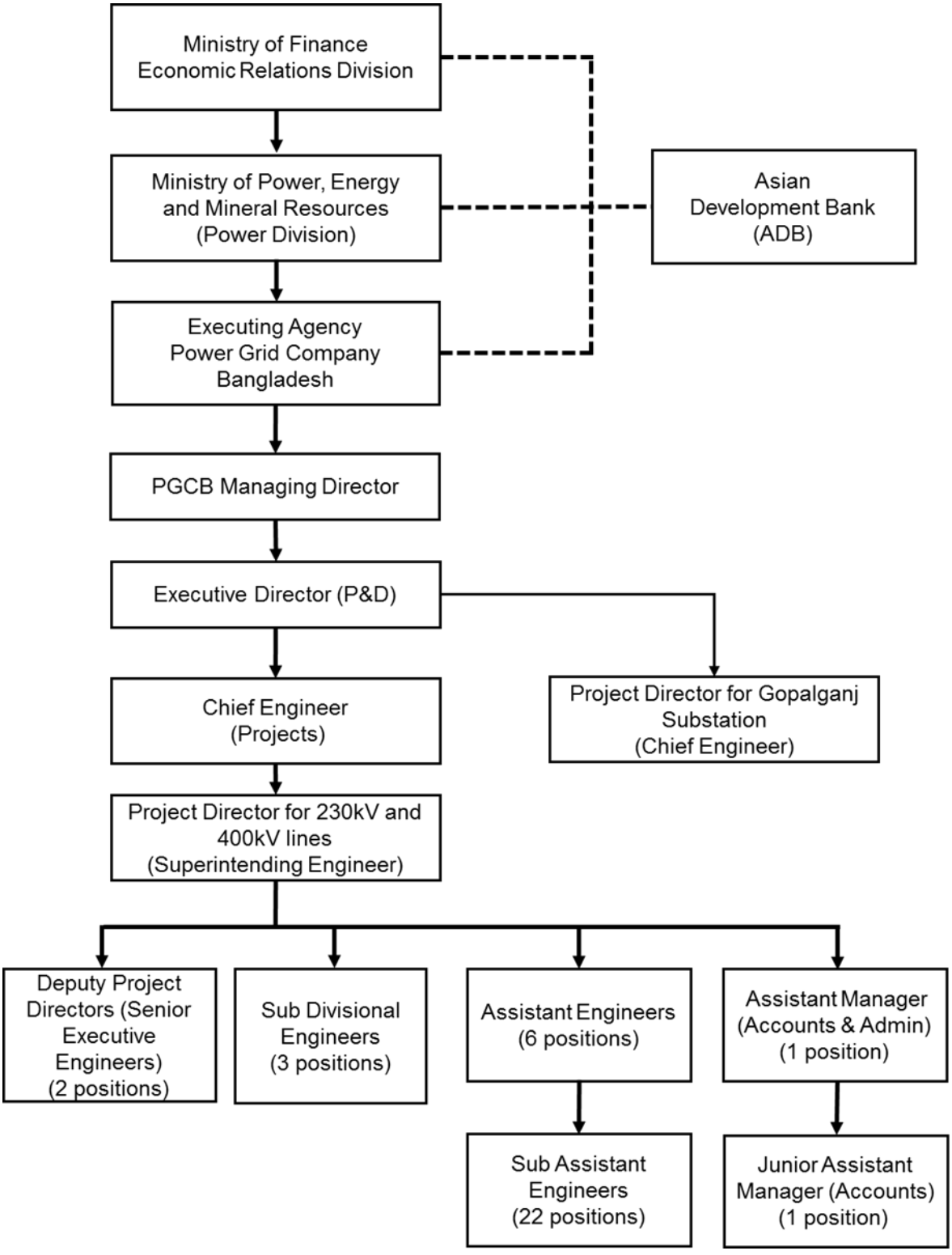
Executing Agency

Power Grid Company of Bangladesh Limited	Masum-Al-Beruni Managing Director Telephone No.: +880-2-9560883 Fax No.: +880-2-9582382 Email address: md@pgcb.org.bd IEB Bhaban, 4th Floor

[14] An additional project director (chief engineer) has been appointed by PGCB under Component 1, which was under a development project proposal (DPP) approved in 2017.

	8/A Ramna, Dhaka - 1000
Asian Development Bank	
Energy Division	Priyantha Wijayatunga Director Telephone No.: (632) 632 6131 Email address: pwijayatunga@adb.org
Mission Leader	Aiming Zhou Senior Energy Specialist Telephone No. (632) 632 5602 Email address: azhou@adb.org

C. Project Organization Structure



ADB = Asian Development Bank, kV = kilovolt, PGCB = Power Grid Company of Bangladesh Limited, P&D = planning and design.
Source: PGCB.

IV. COSTS AND FINANCING

16. The project is estimated to cost $532.0 million. The investment plan is summarized in the Table 4 below.

Table 4: Project Investment Plan
($ million)

Item			Amount[a]
A.	**Base Cost**[b]		
	1.	New substation at Gopalganj installed	75.9
	2.	Transmission network in southern Bangladesh expanded	140.0
	3.	Transmission network in western Bangladesh expanded	218.9
	4.	Socially inclusive capacity in the electric utility industry enhanced	0.5
	Subtotal (A)		**435.2**
B.	**Contingencies**[c]		**50.1**
C.	**Financial Charges During Implementation**[d]		**46.7**
	Total (A+B+C)		**532.0**

Note: Numbers may not sum precisely because of rounding.
[a] Includes taxes and duties of $89.3 million to be financed by the government by cash contribution. In addition, minor taxes on consulting services and capacity development financed under the Republic of Korea e-Asia and Knowledge Partnership Fund will also be charged to the fund.
[b] In end-2017 prices as of February 2018.
[c] Physical contingencies computed at 5% of base costs. Price contingencies computed at an average of 1.5% for foreign exchange costs and 6.0% for local currency costs; includes provision for potential exchange rate fluctuation under the assumption of a purchasing power parity exchange rate.
[d] Includes interest and commitment charge. Interest during construction has been computed at the government's onlending rate. Commitment charges for the ordinary capital resources loan are 0.15% per year to be charged on the undisbursed loan amount.
Source: Asian Development Bank estimates.

17. The government has requested a regular loan of $350 million from ADB's ordinary capital resources (OCR) to help finance the project. The loan will have a 25–year term, including a grace period of 5 years, an annual interest rate determined in accordance with ADB's London interbank offered rate (LIBOR)–based lending facility,[15] a commitment charge of 0.15% per year and such other terms and conditions set forth in the draft loan agreement. and the maturity premium payable to ADB is 0.10%. Based on straight-line repayment method, the average loan maturity is 15.25 years, and the maturity premium payable to ADB is 0.10% per year.

18. The government has also requested: (i) a grant not exceeding $7.0 million from the JFJCM, and (ii) a grant not exceeding $0.5 million from the EAKPF to help finance the project. Both grants will be administered by ADB. The JFJCM will help meet the incremental cost for adopting energy efficient conductors under output 2. The grant from the JFJCM will be front-loaded to finance the equipment. The grant from the EAKPF will finance output 4 for capacity development and related consulting services.

19. The summary financing plan is in Table 5. ADB will finance the expenditures in relation to civil works, material and equipment, goods and installation, and consulting services for project management, physical implementation, and contingencies. Counterpart funding will be provided by the government to finance taxes and duties and other in-kind contributions.

[15] The interest includes a maturity premium of 10 basis points. This is based on the loan terms in para. 18 and the government's choice of repayment option and dates.

20. Climate mitigation is estimated to cost $93 million. ADB will finance 92.4% ($86 million) while JFJCM grant will finance the rest. The application of efficient conductors under the project will contribute to climate mitigation.

Table 5: Summary Financing Plan

Source	Amount ($ million)	Share of Total (%)
Asian Development Bank		
Ordinary capital resources (regular loan)	350.0	65.8
Japan Fund for the Joint Crediting Mechanism (grant)[a]	7.0	1.3
Republic of Korea e-Asia and Knowledge Partnership Fund (grant)[a]	0.5	0.1
Government	174.5	32.8
Total	**532.0**	**100.0**

[a] Administered by the Asian Development Bank.
Source: Asian Development Bank estimates.

A. Cost Estimates Preparation and Revisions

21. Detailed cost estimates were obtained from the development project proposals (DPPs), the document prepared for approval of the project by the Government of Bangladesh.

B. Key Assumptions

22. The following key assumptions underpin the cost estimates and financing plan:

(i) Exchange rate: Tk82.40 = $1.00 (as of 5 December 2017).
(ii) Price contingencies based on expected cumulative inflation over the implementation period are as follows:

Table 6: Escalation Rates for Price Contingency Calculation

Item	2018	2019	2020	2021	2022	Annual Average
Foreign rate of price inflation	1.5%	3.0%	4.6%	6.1%	7.7%	3.0%
Domestic rate of price inflation	6.0%	12.4%	19.1%	26.2%	33.8%	6.0%

Source: ADB estimates.

(iii) In-kind contributions were calculated based on the requirements and details as outlined in the draft of development project proposals.

A. Detailed Cost Estimates by Expenditure Category

Table 7: Detailed Cost Estimates by Expenditure Category

Item		Tk million Foreign Exchange	Tk million Local Currency	Tk million Total Cost	$ million Foreign Exchange	$ million Local Currency	$ million Total Cost	% of Total Base Cost
A.	**Investment Costs**[a]							
	1. Civil works and installation	411	5,251	5,663	4.99	63.73	68.72	15.8%
	2. Mechanical and equipment	21,070	7,017	28,087	255.71	85.15	340.86	78.3%
	3. Consulting services	77	47	123	0.93	0.56	1.50	0.3%
	4. Capacity development	19	19	37	0.23	0.23	0.45	0.1%
	5. Environment and social mitigation cost	-	21	21	0.00	0.26	0.26	0.1%
	6. Land acquisition and resettlement cost	-	1,594	1,594	0.00	19.35	19.35	4.4%
	Subtotal (A)	**21,577**	**13,948**	**35,526**	**261.86**	**169.28**	**431.14**	**99.1%**
B.	**Recurrent Costs**[a]							
	Incremental administration cost	-	335	335	0.00	4.06	4.06	0.9%
	Subtotal (B)	-	**335**	**335**	**0.00**	**4.06**	**4.06**	0.9%
	Total Base Cost	**21,577**	**14,283**	**35,860**	**261.86**	**173.34**	**435.20**	**100.0%**
C.	**Contingencies**[b]							
	1. Physical	1088	617	1704	13.20	7.49	20.68	4.8%
	2 Price	958	1468	2427	11.63	17.82	29.45	6.8%
	Subtotal (C)	**2,046**	**2,085**	**4,131**	**24.83**	**25.31**	**50.13**	**11.5%**
D.	**Financing Charges During Implementation**[c]							
	1. Interest during construction	3,409	344	3,752	41.37	4.17	45.54	10.5%
	2. Commitment charges	93	-	93	1.13	-	1.13	0.3%
	Subtotal (D)	**3,502**	**344**	**3,845**	**42.50**	**4.17**	**46.67**	10.7%
	Total Project Cost (A+B+C+D)	**27,125**	**16,712**	**43,837**	**329.18**	**202.82**	**532.00**	**122.2%**

Tk = Bangladesh taka

Notes: Numbers may not sum precisely because of rounding

[a] In end-2017 prices as of February 2018. Includes taxes and duties of $89.3 million to be financed by the government by cash contribution. In addition, taxes on consulting service and capacity development financed under the Republic of Korea e-Asia and Knowledge Partnership Fund (EAKPF) will also be charged to the EAKPF.

[b] Physical contingencies computed at 5% of base costs. Price contingencies computed at average of 1.5% for foreign exchange costs and 6.0% on local currency costs; includes provision for potential exchange rate fluctuation under the assumption of a purchasing power parity exchange rate.

[c] Includes interest and commitment charge. Interest during construction has been computed at government's on-lending rate. Commitment charges for the OCR loan is 0.15% per year to be charged on the undisbursed loan amount.

Sources: Development project proposal and Asian Development Bank estimates.

D. Allocation and Withdrawal of Loan/Grant Proceeds

Table 8: Allocation and Withdrawal of Loan Proceeds

CATEGORY		ADB FINANCING BASIS	
Number	**Item**	**Amount Allocated for ADB Financing ($ million)**	**Percentage and Basis for Withdrawal from the Loan Account**
1	Civil works and installation	52.41	100% of total expenditure claimed[a]
2	Mechanical equipment	248.71	100% of total expenditure claimed[a]
3	Consulting services	1.25	100% of total expenditure claimed[a]
4	Unallocated	47.63	100% of total expenditure claimed[a]
	Total	350.00	

ADB = Asian Development Bank
[a] Exclusive of all duties and taxes imposed within the territory of the Borrower.
Source: Asian Development Bank estimates.

Table 9: Allocation and Withdrawal of Grant (JFJCM) Proceeds

CATEGORY		ADB FINANCING BASIS	
Number	**Item**	**Amount Allocated for ADB Financing ($ million)**	**Percentage and Basis for Withdrawal from the Loan Account**
1	Mechanical equipment	7.00	Frontloading 230kV Barisal-Faridpur Package[a]
	Total	7.00	

[a] Exclusive of all duties and taxes imposed within the territory of the Borrower.
JFJCM = Japan Fund for the Joint Crediting Mechanism
Source: Asian Development Bank estimates.

Table 10: Allocation and Withdrawal of Grant (EAKPF) Proceeds

CATEGORY		ADB FINANCING BASIS	
Number	**Item**	**Amount Allocated for ADB Financing ($ million)**	**Percentage and Basis for Withdrawal from the Loan Account**
1	Capacity development	0.45	100% of total expenditure claimed
2	Consulting services	0.05	100% of total expenditure claimed
	Total	0.50	

EAKPF = Republic of Korea e-Asia and Knowledge Partnership Fund.
Source: Asian Development Bank estimates.

E. Detailed Cost Estimates by Financier

Table 11: Detailed Cost Estimates by Financier
($ million)

Item		ADB OCR (regular loan)		JFJCM		EAKPF[a]		Government/PGCB[b]		Total Cost	
		Amount	% of Cost Category	Amount	% of Cost Category	Amount	% of Cost Category	Amount	Cost Category	Amount	Taxes and duties
A.	**Investment Costs[a]**										
	1. Civil works and installation	52.41	76.3%	-	0.0%	-	0.0%	16.31	23.7%	68.72	3.89
	2. Mechanical and equipment	248.71	73.0%	7.00	2.1%	-	0.0%	85.15	25.0%	340.86	85.15
	3. Consulting services										
	a. Project management and supervision	1.25	87.0%	-	0.0%	-	0.0%	0.19	13.0%	1.44	0.19
	b. e-Asia fund implementation	-	0.0%	-	0.0%	0.05	87.0%	0.01	13.0%	0.06	0.01
	4. Capacity Development	-	0.0%	-	0.0%	0.45	100.0%	-	0.0%	0.45	-
	5. Environment and social mitigation cost	-	0.0%	-	0.0%	-	0.0%	0.26	100.0%	0.26	-
	6. Land acquisition and resettlement cost	-	0.0%	-	0.0%	-	0.0%	19.35	100.0%	19.35	-
	Subtotal (A)	**302.37**	**70.1%**	**7.00**	**1.6%**	**0.50**	**0.1%**	**121.27**	**28.1%**	**431.14**	**89.24**
B.	**Recurrent Costs[a]**										
	Incremental administration cost	-	0.0%	-	0.0%	-	0.0%	4.06	100.0%	4.06	-
	Subtotal (B)	-	**0.0%**	-	**0.0%**	-	**0.0%**	**4.06**	100.0%	**4.06**	-
	Total Base Cost	**302.37**	**69.5%**	**7.00**	**1.6%**	**0.50**	**0.1%**	**125.33**	**28.8%**	**435.20**	**89.24**
C.	**Contingencies[b]**										
	1. Physical	19.43	93.9%	-	0.0%	-	0.0%	1.25	6.1%	20.68	-
	2. Price	28.20	95.7%	-	0.0%	-	0.0%	1.25	4.3%	29.45	-
	Subtotal (C)	**47.63**	**95.0%**	**-**	**0.0%**	**-**	**0.0%**	**2.51**	**5.0%**	**50.13**	**-**
D.	**Financing Charges During Implementation**										
	1. Interest during construction	-	0.0%	-	0.0%	-	0.0%	45.54	100.0%	45.54	-
	2. Commitment charges	-	0.0%	-	0.0%	-	0.0%	1.13	100.0%	1.13	-
	Subtotal (D)	**-**	**0.0%**	**-**	**0.0%**	**-**	**0.0%**	**46.67**	**100.0%**	**46.67**	**-**
	Total Project Cost (A+B+C+D)	**350.00**	**65.8%**	**7.00**	**1.3%**	**0.50**	**0.1%**	**174.50**	**32.8%**	**532.00**	**89.24**

ADB = Asian Development Bank, EAKPF = Republic of Korea e-Asia and Knowledge Partnership Fund, JFJCM = Japan Fund for the Joint Crediting Mechanism, OCR = ordinary capital resources, PGCB = Power Grid Company of Bangladesh Limited.

[a] Taxes on consulting service and capacity development financed under the Republic of Korea e-Asia and Knowledge Partnership Fund (EAKPF) will also be charged to the EAKPF.

[b] Government of Bangladesh cash contribution will include debt (40%) and equity (60%) according to the Ministry of Finance lending terms for local currency loans. PGCB will finance interest during construction and incremental administration cost from its own resource.

F. Detailed Cost Estimates by Components

Table 12: Detailed Cost Estimates by Components
($ million)

Item		Total Cost	Component 1 Amount	Component 1 % of Cost Category	Component 2 Amount	Component 2 % of Cost Category	Component 3 Amount	Component 3 % of Cost Category	Component 4 Amount	Component 4 % of Cost Category
A.	**Investment Costs**									
	1. Civil works and installation	68.72	15.68	22.8%	18.57	27.0%	34.47	50.2%	0.00	0.0%
	2. Mechanical and equipment	340.86	43.73	12.8%	119.28	35.0%	177.86	52.2%	0.00	0.0%
	3. Consulting services	1.50	0.00	0.0%	0.00	0.0%	1.44	96.2%	0.06	3.8%
	4. Capacity development	0.45	0.00	0.0%	0.00	0.0%	0.00	0.0%	0.45	100.0%
	5. Environment and social mitigation cost	0.26	0.03	10.0%	0.10	40.0%	0.13	50.0%	0.00	0.0%
	6. Land acquisition and resettlement cost	19.35	15.71	81.2%	0.73	3.8%	2.91	15.0%	0.00	0.0%
	Subtotal (A)	**431.14**	**75.14**	**17.4%**	**138.68**	**32.2%**	**216.80**	**50.3%**	**0.51**	**0.1%**
B.	**Recurrent Costs**									
	Incremental administration cost	4.06	0.75	18.3%	1.27	31.2%	2.05	50.5%	0.00	0.0%
	Subtotal (B)	**4.06**	**0.75**	**18.3%**	**1.27**	**31.2%**	**2.05**	**50.5%**	**0.00**	**0.0%**
	Total Base Cost	**435.20**	**75.89**	**17.4%**	**139.95**	**32.2%**	**218.85**	**50.3%**	**0.51**	**0.1%**
C.	**Contingencies**									
	1. Physical	20.68	3.61	17.5%	6.66	32.2%	10.41	50.3%	0.00	0.0%
	2. Price	29.45	5.14	17.5%	9.48	32.2%	14.83	50.3%	0.00	0.0%
	Subtotal (C)	**50.13**	**8.75**	**17.5%**	**16.14**	**32.2%**	**25.24**	**50.3%**	**0.00**	**0.0%**
D.	**Financing Charges During Implementation**									
	1. Interest during construction	45.54	7.95	17.5%	14.66	32.2%	22.93	50.3%	0.00	0.0%
	2. Commitment charges	1.13	0.20	17.5%	0.36	32.2%	0.57	50.3%	0.00	0.0%
	Subtotal (D)	**46.67**	**8.15**	**17.5%**	**15.02**	**32.2%**	**23.49**	**50.3%**	**0.00**	**0.0%**
	Total Project Cost (A+B+C+D)	**532.00**	**92.79**	**17.4%**	**171.12**	**32.2%**	**267.59**	**50.3%**	**0.51**	**0.1%**

Notes: Numbers may not sum precisely because of rounding.
Source: Asian Development Bank estimates.

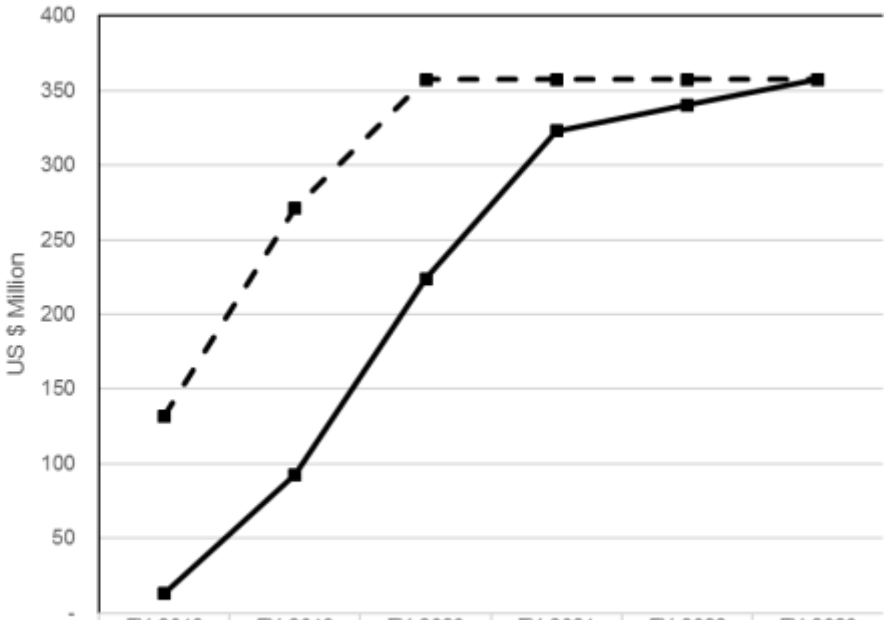
G. Detailed Cost Estimates by Year

Table 13: Detailed Cost Estimates by Year
($ million)

	Item	Total Cost	Year 1	Year 2	Year 3	Year 4	Year 5
A.	**Investment Costs**						
	1. Civil works and installation	68.72	14.18	16.16	30.64	5.73	2.01
	2. Mechanical and equipment	340.86	48.00	69.11	136.63	60.46	26.66
	3. Consulting services	1.50	-	0.15	0.45	0.60	0.30
	4. Capacity development	0.45	0.09	0.09	0.09	0.09	0.09
	5. Environment and social mitigation cost	0.26	0.07	0.05	0.12	0.01	0.00
	6. Land acquisition and resettlement cost	19.35	5.12	3.88	9.25	0.76	0.34
	Subtotal (A)	**431.14**	**67.46**	**89.44**	**177.19**	**67.65**	**29.41**
B.	**Recurrent Costs**						
	Incremental administration cost	4.06	0.66	0.86	1.69	0.60	0.26
	Subtotal (B)	4.06	**0.66**	**0.86**	**1.69**	**0.60**	**0.26**
	Total Base Cost	**435.20**	**68.12**	**90.29**	**178.87**	**68.25**	**29.66**
C.	**Contingencies**						
	1. Physical	20.68	3.24	4.29	8.50	3.24	1.41
	2. Price	29.45	4.61	6.11	12.10	4.62	2.01
	Subtotal (C)	**50.13**	**7.85**	**10.40**	**20.61**	**7.86**	**3.42**
D.	**Financing Charges During Implementation**						
	1. Interest during construction	45.54	1.18	4.35	9.59	14.26	16.16
	2. Commitment charges	1.13	0.49	0.38	0.20	0.05	0.01
	Subtotal (D)	**46.67**	**1.67**	**4.73**	**9.79**	**14.32**	**16.16**
	Total Project Cost (A+B+C+D)	**532.00**	**77.63**	**105.42**	**209.27**	**90.43**	**49.24**
	% Total Project Cost	**100.0%**	**14.6%**	**19.8%**	**39.3%**	**17.0%**	**9.3%**

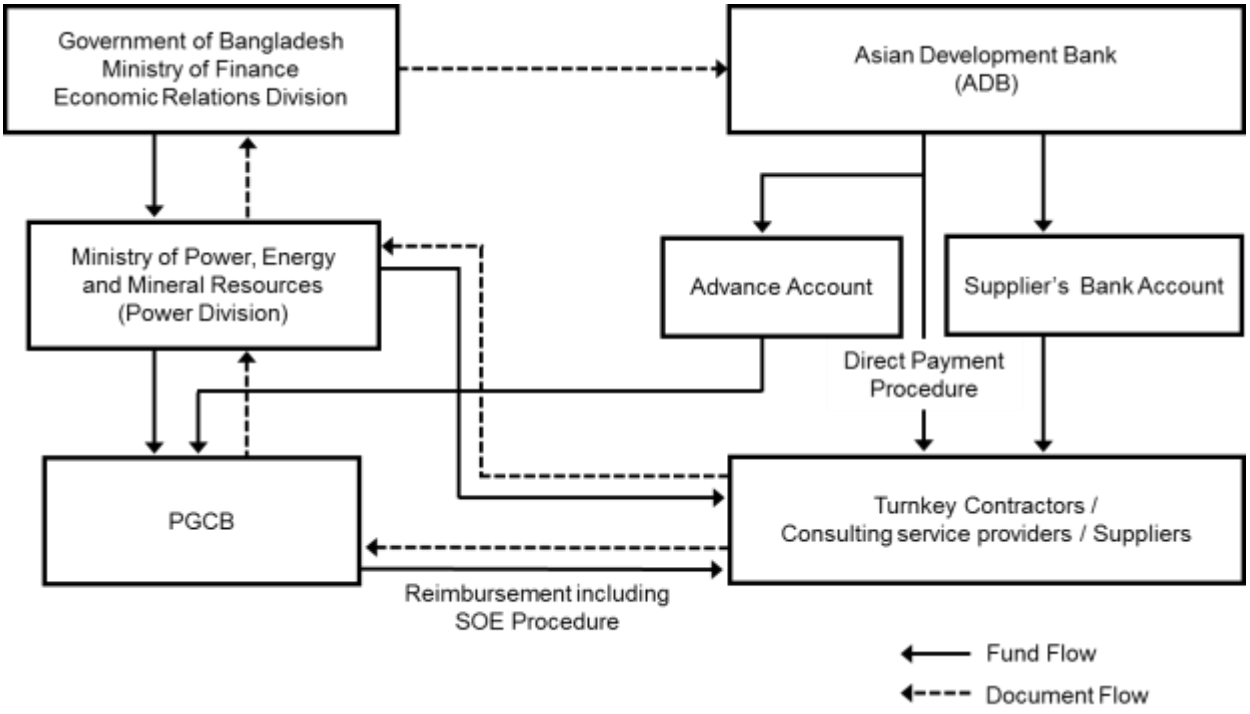
Note: Numbers may not sum precisely because of rounding.
Source: Asian Development Bank estimates.

H. Contract and Disbursement S-Curve



	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Contract Awards	131.50	271.50	357.50	357.50	357.50	357.50
Disbursement	13.11	92.71	223.81	322.90	340.20	357.50

I. Fund Flow Diagram



V. FINANCIAL MANAGEMENT

A. Financial Management Assessment

23. The financial management assessment (FMA) was conducted in January 2018 following ADB's Guidelines for the Financial Management and Analysis of Projects (2005), Financial Due Diligence Methodology Note (2009), and Financial Management Technical Guidance Note (2015).[16] The FMA considered the capacity of PGCB including funds flow arrangements, staffing, accounting and financial reporting systems, financial information systems, and internal and external auditing arrangements.

24. PGCB is a public limited company incorporated in 1996 under the Companies Act, 1994. Bangladesh Power Development Board, a wholly government-owned entity, owns 76.25% of the share capital of PGCB, with the balance held by various institutions and individual shareholders. PGCB is listed in the Dhaka Stock Exchange and Chittagong Stock Exchange.

25. PGCB was entrusted with the responsibility to own, operate and expand the national power grid. PGCB completed the takeover of transmission assets of Bangladesh Power Development Board and Dhaka Electric Supply Authority by December 2002. As of December 2017, PGCB operates 10,537.3 circuit km and 114 substations.[17] PGCB had an employee strength of 2,413 as of June 30, 2017. PGCB's customers are (i) Bangladesh Power Development Board, (ii) Dhaka Power Distribution Company Limited, (iii) Dhaka Electric Supply Company Limited, (iv) West Zone Power Distribution Company Limited, and (v) *palli bidyut samitis* of Bangladesh Rural Electrification Board.

26. Based on the assessment, PGCB's financial management has the following certain strengths:

(i) Has vast experience in managing externally financed projects including ADB-funded projects, and has qualified personnel who are familiar with the requirements for reporting, financial management and disbursement of ADB loans;
(ii) A detailed budget preparation exercise and its review are carried out periodically and budget variations go through a precise review system for approval;
(iii) Strong capacity in planning and budgeting and well-structured organization; and
(iv) Timely submission of audited project financial statement and audited entity financial statement.

27. However, the following key financial management weaknesses have been identified as well:

(i) Urgent need to strengthen the finance function; the main positions of finance, executive director finance, general manager finance and deputy general manager project finance are still vacant, and the level of staffing in finance department is not adequate to meet its current operation;
(ii) Incomplete and non-integrated manual information reporting system is being used; financial reports are generated manually with excel spread sheet;

[16] ADB. 2005. *Financial Management and Analysis of Projects*. Manila; ADB. 2009. *Financial Due Diligence: A Methodology Note*. Manila; ADB. 2015. *Financial Management Technical Guidance Note*. Manila.

[17] Transmission lines: 559.76 circuit km (400 kV), 3,324.99 circuit km (230 kV), 6,652.63 circuit km (132 kV), substations: HVDV (one station), 400/230 kV (two stations), 400/132 kV (one station), 230/132 kV (19 stations), 132/33 kV (91 stations).

(iii) Mainly exposed to foreign exchange risk and the effects of changes in foreign exchange rates have not been recognized as a loss in the statement of profit or loss and other comprehensive income;[18]

(iv) Strengthening the internal audit function is required; the level of staffs in audit department is not adequate and audit finding is not directly reported to the Audit Committee or the chairman in a regular basis;

(v) Incomplete fixed asset management; the fixed asset register of PGCB is incomplete and managed manually. In addition, it does not include a complete list of fixed assets; and

(vi) Over the last few years, the external auditors gave a qualified opinion based on their observations that:

a. Proper register for fixed assets and inventories not maintained by PGCB;
b. Exchange rate fluctuations has not recognized in the income statement;[19]
c. Certain disputed amounts shown as account receivable are unlikely to be received; and
d. Actuarial valuation should be performed for provision of gratuity.

28. The FMA reviewed two types of risks: (i) inherent risks (risks outside the direct control of the PGCB financial management), and (ii) control risks (risk concerning the internal functioning and control of the PGCB's finance and accounting section. The FMA identified the following key risks and its mitigation measures as provided in Table 14. Based on the assessment, it is concluded that the overall premitigation financial management risk of PGCB is substantial.

Table 14. Risk Management Assessment

Risk Type	Risk Rating	Risk Description	Mitigation Measures
A. Inherent Risks			
1. Country specific risks	Substantial	Overall public financial management risk: aggregate budget credibility deteriorated, and external scrutiny and audit still remain in the weak area in the PFM.	Dialogue needed between ADB, Government of Bangladesh and ICAB aimed at (i) capacity building of CAG auditors, (ii) strengthening of statutory/regulatory requirements to ensure that audits look beyond transactions and focus on the systems of the audited entities.

[18] PGCB has a qualified opinion on provisions of foreign exchange income or loss for fiscal year (FY)2016–2017. As per para. 28 of Bangladesh Accounting Standard, the foreign exchange loss, which amounts to Tk739 million, should be recognized as a loss in the income statement. However, this exchange loss is capitalized with the relevant assets in line with Companies Act 1994.

[19] PGCB has experienced a foreign exchange loss of Tk1.1 billion and Tk0.7 billion in FY 2015–2016 and FY2017–2018, respectively.

Risk Type	Risk Rating	Risk Description	Mitigation Measures
	Moderate	Financing risk: delays in releasing counterpart funds for the project	The disbursements of counterpart fund are subject to approval of DPP. The DPP is reviewed and cleared by the Ministry of Power, Energy and Mineral Resources and Planning Commission, respectively with an ability to provide counterpart funds. Since the project addresses the key need for providing reliable power supply in Bangladesh, the government is expected to make adequate provision for counterpart funds in its budget.
2. Entity specific risks	Substantial	Financial risk: The current wheeling charge is insufficient to recover costs undermining financial sustainability of PGCB.	Regular periodic tariff filing by PGCB to ensure tariffs cover costs based on the BERC's regulation, which is effective from June 2016.
	Substantial	Foreign exchange risk: PGCB will expose to foreign exchange risk. Currently, US dollars continue to appreciate against Bangladesh currency, Taka.	Foreign exchange variation should be recovered through adjustment of wheeling charge based on the current BERC's regulation. Regular periodic tariff filing by PGCB to ensure tariffs cover costs including foreign exchange loss with the support from consultants under the loan Bangladesh Power System Enhancement and Efficiency Improvement Project[a]
Overall Inherent Risk	**Substantial**		
B. Control Risk			
1. Executing agency	Low	Compliance risk: PGCB follows structured planning and technical assessment processes. It also has significant experience in implementing externally assisted projects and is familiar with ADB's financial management and disbursement requirements	Not required.
2. Funds flow	Low	Financing risk: the disbursements of counterpart fund are subject to approval of DPP. Access to funds from government follow specified procedures, and requires prior approvals, which creates delays.	PGCB assured that the DPP will be reviewed and cleared before loan negotiation from the Ministries of Power, Energy and Mineral Resources and the Planning Commission, respectively.
3. Staffing	High	Urgent need to strengthen the finance function; the main top	PGCB has prepared a recruitment plan in finance department based on

Risk Type	Risk Rating	Risk Description	Mitigation Measures
		positions of finance, executive director finance, general manager finance and deputy general manager project finance are still vacant and the level of staffing in finance department is not adequate to meet its current operation. Considering the future growing development projects, it is urgently needed to improve the finance. The vacancies of top positions of finance may lead to lack of guidance and weak controls on financial transactions.	the new approved structure for the next 10 years; PGCB finance department currently has 29 professional staffs and will have an additional 34 professional staffs. (total staff number 63). The executive director finance, general manager finance and deputy general manager project finance positions should be filled by qualified chartered accountant or cost and management accountant with proper accounting/finance background such as chartered accountant or cost and management accountant (ICMAB and/or ICAB) The project management manpower should include at least one manager accounts (senior level of accounts) for efficient financial management in project level.
4. Accounting Policies and Procedures	Substantial	PGCB has defined accounting policies and procedures in place which are in line with international accounting standards. However, over the last years, the external auditors issued a qualified opinion and highlighted persisting issues with regards to fixed asset management, foreign exchange gain/loss recognition and account receivables.	PGCB should resolve audit issues within a certain time frame. A detailed time bound action plan to be developed to address the major audit observations and assign the work to the departments concerned.
5. Information System	Substantial	Incomplete information reporting systems: Currently, accounting, financing and fixed asset recording are done manually using Microsoft Excel spreadsheets.	PGCB will consider developing an ERP implementation plan based on current practice in Bangladesh.
6. Internal Audit	Substantial	Improving the internal audit function for transparent financial management. Due to insufficient staffs in the audit department, it is unable to conduct internal audit of all the ongoing projects every year. The Internal Audit Division comprises of only 10 internal	Support to develop internal audit capacity in PGCB with the support from consultants under the loan Bangladesh Power System Enhancement and Efficiency Improvement Project[a] PGCB has prepared a recruitment plan in internal audit department based on the new approved structure for the next 10 years; PGCB's audit department currently has 10 professional staffs and will

Risk Type	Risk Rating	Risk Description	Mitigation Measures
		auditors and are responsible for audit of 78 offices of PGCB. The deputy general manager (audit), the head of the IA department does not directly report to the chairman nor audit committee and report to the managing director, which can cause interest of conflicts.	have an additional 26 professional staffs. (total staff number 36). The internal audit findings report to the chairman or audit committee in regular basis through managing director.
7. External Audit	Low	PGCB has appointed local chartered accountancy firm for audit. Annual reports are normally issued regularly within timelines.	Not required.
8. Reporting and Monitoring	Low	Comprehensive monthly and quarterly financial management reporting systems are in place with detailed guidelines issued by the finance department of PGCB	Not required.
9. Land acquisition and relocation.	High	Resettlement plan needs to be updated before contract award of each substation including a detailed measurement survey result, and compensation should be given to the affected people before staring of civil work.	As the project is resettlement category A, PGCB will engage an implementing NGO and an external monitor. The implementing NGO will provide support to PMU and undertake capacity building activities deemed necessary. The implementation of the resettlement plan will be monitored by PGCB and supervised by the external monitoring expert.
Overall Control Risk	**Substantial**		
Overall Combined Risk	**Substantial**		

ADB = Asian Development Bank, BERC = Bangladesh Energy Regulatory Commission, CAG = comptroller auditor general, DPP = development project proposal, ERP= enterprise resource planning, IA = internal audit, ICAB = Institute of Chartered Accountants Bangladesh, ICMAB= Institute of Cost and Management Accountant of Bangladesh, NGO = nongovernment organization, PFM = public financial management, PGCB= Power Grid Company of Bangladesh Limited.

[a] ADB. 2017. Report and Recommendation of the President to the Board of Directors: *Proposed Loans and Administration of Grant to the People's Republic of Bangladesh for the Bangladesh Power System Enhancement and Efficiency Improvement Project.* Manila.

Source: ADB.

29. PGCB and ADB have agreed an action plan to address the following issues that the FMA identified. The financial management action plan is provided in Table 15.

Table 15: Risks and Mitigation Plan

Risk Description	Mitigation Actions	Responsibility	Timeframe
Urgent need to strengthen the finance function; the main top positions of finance, executive director finance, general manager finance, and deputy general manager project finance are still vacant and the level of staffing in finance department is not adequate to meet its current operation. Considering the future growing development projects, it is urgently needed to improve the finance. The vacancies of top positions of finance may lead to lack of guidance and weaken controls on financial transactions.	PGCB has prepared a recruitment plan in finance department based on the new approved structure for the next 10 years; PGCB finance department currently has 29 professional staffs and will have an additional 34 professional staffs. (total staff number 63).	PGCB	Considering the future growing development projects, the proposed additional staffs of 34 should be recruited by 2023.
	The executive director finance, general manager finance and deputy general manager project finance positions should be filled by qualified chartered accountant or cost and management accountant with proper accounting/finance background such as chartered accountant or cost and management accountant (ICMAB and/or ICAB)	PGCB	The recruitment of qualified executive director of finance, general manager of finance and deputy general manager of project finance shall have been advertised and the submission of applications shall have been closed by June 2019
	The project management manpower should include at least one Manager accounts (senior level of accounts) for efficient financial management in project level.	PGCB	PGCB should include at least one manager accounts for ADB funded projects before final approval of development project proposal.
Incomplete information reporting systems: currently, accounting, financing and fixed asset recording are done manually using excel spreadsheets.	PGCB will consider developing an ERP implementation plan based on current practice in Bangladesh.	PGCB	Submission of detailed action plan of the deployment of ERP system including timeline and its work scope (financing, accounting, inventory, procurement, and human resource) by December 2019.
Foreign exchange risk; Government of Bangladesh relends the foreign loan for the development projects to PGCB in foreign loan.	PGCB can recover foreign exchange loss occurring to the foreign loan according to the transmission tariff regulation, which is effective from June 2016.	PGCB	Regular periodic tariff filing by PGCB to ensure tariffs cover costs including foreign exchange loss with the support from consultants under the loan

Risk Description	Mitigation Actions	Responsibility	Timeframe
PGCB is exposed to foreign exchange risk. Considering the current depreciation of Bangladesh currency and future expected growing external borrowing, PGCB should prepare financial mechanism to reduce the risk.			Bangladesh Power System Enhancement and Efficiency Improvement Project.[a]
Improving the internal audit function for transparent financial management.	Support to develop internal audit capacity in PGCB with the support from consultants under the loan Bangladesh Power System Enhancement and Efficiency Improvement Project.[a]	PGCB	To be completed by end 2018.
Due to insufficient staffs in the audit department, it is unable to conduct internal audit of all the ongoing projects every year. The Internal Audit Division comprises of only 10 Internal Auditors and are responsible for audit of 78 offices of PGCB.	PGCB has prepared a recruitment plan in internal audit department based on the new approved structure for the next 10 years; PGCB's audit department currently has 10 professional staffs and will have an additional 26 professional staffs. (total staff number 36).	PGCB	Considering the future growing development projects, the proposed additional staffs of 26 should be recruited by 2023.
The deputy general manager (audit), the head of the IA department does not directly report to the chairman nor audit committee and report to the managing director, which can cause interest of conflicts.	The internal audit findings report to the chairman or audit committee in regular basis through managing director	PGCB	Work to start in June 2018
Incomplete fixed asset management; and proper register for fixed assets and inventories not maintained	Proper fixed asset management system should be considered under the ERP implementation plan	PGCB	Submission of detailed action plan of the deployment of ERP system including timeline and its work scope (financing, accounting, inventory, procurement and human resource) by December 2019.
Unresolved external audit observations	A plan to be developed to address the major audit observations and assign the	PGCB	Develop a detailed time bound action plan to address all materials external audit

Risk Description	Mitigation Actions	Responsibility	Timeframe
	work to the departments concerned.		qualifications raised in the 2016-2017 audited financial statement reports by December 2019.

ADB = Asian Development Bank, ERP = enterprise resource planning, IA = internal audit, ICAB = Institute of Chartered Accountants of Bangladesh, ICMAB = Institute of Cost and Management Accountant of Bangladesh, PGCB = Power Grid Company of Bangladesh Limited.

[a] ADB. 2017. Report and Recommendation of the President to the Board of Directors: *Proposed Loans and Administration of Grant to the People's Republic of Bangladesh for the Bangladesh Power System Enhancement and Efficiency Improvement Project.* Manila.

Source: Power Grid Company of Bangladesh.

B. Disbursement

1. Disbursement Arrangements for ADB and ADB-administered cofinancier Funds

30. The loan and grant proceeds including ADB-administered cofinancier funds will be disbursed in accordance with ADB's *Loan Disbursement Handbook* (2017, as amended from time to time),[20] and detailed arrangements agreed upon between the government and ADB. Online training for project staff on disbursement policies and procedures is available.[21] Project staff are encouraged to avail of this training to help ensure efficient disbursement and fiduciary control.

31. ADB's reimbursement, direct payment, and commitment disbursement procedure will be used. PGCB will prepare and send withdrawal applications to ADB.

32. Before the submission of the first withdrawal application, the borrower should submit to ADB sufficient evidence of the authority of the person(s) who will sign the withdrawal applications on behalf of the government, together with the authenticated specimen signatures of each authorized person. The minimum value per withdrawal application is stipulated in the *Loan Disbursement Handbook* (2017, as amended from time to time). Individual payments below such amount should be paid by the PGCB and subsequently claimed to ADB through reimbursement. Use of ADB's Client Portal for Disbursements[22] system is encouraged for submission of withdrawal applications to ADB.

2. Disbursement Arrangements for Counterpart Fund

33. Government counterpart funds will be used to finance civil works, installations, and the remaining miscellaneous works and services. PGCB will follow relevant disbursement and liquidation procedures for government funds. Local taxes and duties under the project (except minor taxes on consulting services and capacity development to be financed by the EAKPF Grant) will be financed by the government through cash contribution. The project director under PGCB will be responsible for: (i) preparing disbursement projections, (ii) requesting budgetary allocations

[20] The handbook is available electronically from the ADB website (http://www.adb.org/documents/ loan-disbursement-handbook.

[21] Disbursement eLearning. http://wpqr4.adb.org/disbursement_elearning.

[22] The Client Portal for Disbursements facilitates online submission of withdrawal application to ADB, resulting in faster disbursement. The forms to be completed by the Borrower are available online at https://www.adb.org/documents/client-portal-disbursements-guide.

for counterpart funds, (iii) collecting supporting documents, and (iv) preparing withdrawal applications.

C. Accounting

34. The PGCB will maintain, or cause to be maintained, separate books and records by funding source for all expenditures incurred on the project following International Financial Reporting Standards (accrual-based accounting following the equivalent national accounting standards). The executing agency will prepare project financial statements in accordance with the government's accounting laws and regulations which are consistent with international accounting principles and practices.

D. Auditing and Public Disclosure

35. The PGCB will cause the detailed project financial statements to be audited in accordance with International Standards on Auditing as adopted by the Institute of Chartered Accountants of Bangladesh, by an independent auditor acceptable to ADB. The audited project financial statements together with the auditor's opinion will be presented in the English language to ADB within 6 months from the end of the fiscal year by the PGCB.

36. The audited entity financial statements, together with the auditor's report and management letter, will be submitted in the English language to ADB within 1 month after their approval by the relevant authority.

37. The audit report for the project financial statements will include a management letter and auditor's opinions, which cover (i) whether the project financial statements present an accurate and fair view or are presented fairly, in all material respects, in accordance with the applicable financial reporting standards; (ii) whether the proceeds of the loan and grant were used only for the purpose(s) of the project; and (iii) whether the borrower or executing agency was in compliance with the financial covenants contained in the legal agreements (where applicable).

38. Compliance with financial reporting and auditing requirements will be monitored by review missions and during normal program supervision, and followed up regularly with all concerned, including the external auditor.

39. The government and PGCB have been made aware of ADB's approach to delayed submission, and the requirements for satisfactory and acceptable quality of the audited project financial statements.[23] ADB reserves the right to require a change in the auditor (in a manner consistent with the constitution of the borrower), or for additional support to be provided to the auditor, if the audits required are not conducted in a manner satisfactory to ADB, or if the audits

[23] ADB's approach and procedures regarding delayed submission of audited project financial statements:

(i) When audited project financial statements are not received by the due date, ADB will write to the executing agency advising that (a) the audit documents are overdue; and (b) if they are not received within the next 6 months, requests for new contract awards and disbursement such as new replenishment of advance accounts, processing of new reimbursement, and issuance of new commitment letters will not be processed.

(ii) When audited project financial statements are not received within 6 months after the due date, ADB will withhold processing of requests for new contract awards and disbursement such as new replenishment of advance accounts, processing of new reimbursement, and issuance of new commitment letters. ADB will (a) inform the executing agency of ADB's actions; and (b) advise that the loan may be suspended if the audit documents are not received within the next 6 months.

(iii) When audited project financial statements are not received within 12 months after the due date, ADB may suspend the loan.

are substantially delayed. ADB reserves the right to verify the project's financial accounts to confirm that the share of ADB's financing is used in accordance with ADB's policies and procedures.

40. Public disclosure of the audited project financial statements, including the auditor's opinion on the project financial statements, will be guided by ADB's Public Communications Policy 2011.[24] After the review, ADB will disclose the audited project financial statements and the opinion of the auditors on the project financial statements no later than 14 days of ADB's confirmation of their acceptability by posting them on ADB's website. The management letter, additional auditor's opinions, and audited entity financial statements will not be disclosed.[25]

VI. PROCUREMENT AND CONSULTING SERVICES

41. This section reflects the project's specific procurement and consulting services arrangements.

A. Advance Contracting and Retroactive Financing

42. All advance contracting and retroactive financing will be undertaken in conformity with *ADB Procurement Policy*[26] (2017, as amended from time to time) and *Procurement Regulations for ADB Borrowers* (2017, as amended from time to time).[27] The issuance of invitations to bid under advance contracting and retroactive financing will be subject to ADB approval. The government and PGCB have been advised that approval of advance contracting and retroactive financing does not commit ADB to finance the project.

43. **Advance contracting.** Advance contracts can be entered into for goods, works and consulting services through (i) tendering, and bid evaluation for civil works packages; (ii) preparation of tender documents to procure materials and equipment; (iii) evaluation of bids; and (iv) recruitment of consultants.

44. **Retroactive financing.** Retroactive financing is requested and will not exceed 20% of the loan amount, incurred before loan effectiveness, but not earlier than 12 months before the signing of the loan agreement.

B. Procurement of Goods, Works, and Consulting Services

45. All procurement of goods, works, nonconsulting and consulting services will be undertaken in accordance with *ADB Procurement Policy* (2017, as amended from time to time) and *Procurement Regulations for ADB Borrowers* (2017, as amended from time to time). ADB will allow advance contracting.

46. Open competitive bidding procedures will be used for all design supply, installation, testing of commissioning of substation and transmission lines.

47. Before the start of any procurement, ADB and the government will review the Public Procurement Rules, 2008 (as updated) pursuant to the Public Procurement Act, 2006.

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[24] Public Communications Policy: http://www.adb.org/documents/pcp-2011?ref=site/disclosure/publications.
[25] This type of information would generally fall under public communications policy exceptions to disclosure. ADB. 2011. *Public Communications Policy*. Paragraph 97(iv) and/or 97(v).
[26] Available at https://www.adb.org/documents/adb-procurement-policy.
[27] Available at https://www.adb.org/documents/procurement-regulations-adb-borrowers.

48. A procurement plan covering the entire project duration and review procedures is appended as Section C.

49. Contracts for consulting support to PGCB are planned under the project requiring an estimated 78 person-months input of project implementation and supervisory service. One individual consultant with an estimated 16-person month will be engaged to develop and manage the PGCB scholarship program. Consulting firms will be engaged using the quality- and cost-based selection (QCBS) method with a standard quality–cost ratio of 90:10. For the PGCB scholarship program under the grant administered by ADB, government's arrangement will be followed.

C. Procurement Plan

PROCUREMENT PLAN
Basic Data

Project Name: Bangladesh Southwest Transmission Grid Expansion Project	
Project Number: 51137-001	**Approval Number**: TBD
Country: People's Republic of Bangladesh	**Executing Agency**: Power Grid Company of Bangladesh Limited (PGCB)
Project Procurement Classification: B	**Executing Agency:** PGCB
Procurement Risk: Moderate	
Project Financing Amount: $532.0 million ADB Financing: $350.0 million (OCR) Cofinancing ADB Administered: $7.0 million (JFJCM) $0.5 million (EAKPF) GOB Financing: $174.5 million	**Project Closing Date:** 31 December 2023
Date of First Procurement Plan: 11 February 2018	**Date of this Procurement Plan**: 14 May 2018

A. Methods, Thresholds, Review and 18-Month Procurement Plan

1. Procurement and Consulting Methods and Thresholds

50. Except as ADB may otherwise agree, the following process thresholds shall apply to procurement of goods and works.

Procurement of Goods and Works		
Method	**Threshold**	**Comments**
International Competitive Bidding (ICB) for Works	$15,000,000	
International Competitive Bidding for Goods	$2,000,000	
National Competitive Bidding (NCB) for Works	Beneath that stated for ICB, Works	
National Competitive Bidding for Goods	Beneath that stated for ICB, Goods	
Shopping for Works	Below $100,000	
Shopping for Goods	Below $100,000	

Consulting Services	
Method	Comments
Quality and Cost Based Selection (QCBS)	QCBS will be used for consulting service from firms (90:10)
Individual Consultants Selection	Biodata

2. Goods and Works Contracts Estimated to Cost $1 Million or More

51. The following table lists goods and works contracts for which the procurement activity is either ongoing or expected to commence within the next 18 months.

Package Number[5]	**General Description**	**Estimated Value**	**Procurement Method**	**Review** [Prior / Post/Post (Sampling)]	**Bidding Procedure**[6]	**Advertisement Date** (quarter/year)	**Comments**[7]
Package 1	Installation of Gopalganj (North) 400/132 kV AIS substation on Turnkey Basis	45.00	ICB*	Prior	1S2E	Q4/2017	ADB's SBD for plant, estimated value excludes taxes and duties
Package 2	Construction of Barisal (North)-Gopalganj (North)-Faridpur 230 kV Transmission Line on Turnkey Basis	70.00	ICB	Prior	1S2E	Q2/2018	ADB's SBD for plants estimated value excludes taxes and duties
Package 3	Installation of 230/132 kV Indoor GIS Substation at Faridpur and 230 kV Bay Extension at Barisal (North) Substation	15.00	ICB	Prior	1S2E	Q4/2018	ADB's SBD for plants, estimated value excludes taxes and duties
Package 4	Construction of Bogra (West)-Rohanpur 400kV, LILO of Bogra (South)-Barapukuria 230kV, Chapainawabganj-Rohanpur 132kV and LILO of Niamatpur-Rohanpur 132 kV line on Turnkey Basis	72.00	ICB	Prior	1S2E	Q4/2018	ADB's SBD for plants. Estimated value excludes taxes and duties
Package 5	Augmentation of Gopalganj (North) 400/230 kV AIS SS, Bogra (West) 400/230kV outdoor GIS SS, Rohanpur 400/132 kV	118.00	ICB	Prior	1S2E	Q3/2019	ADB's SBD for plants. Estimated value excludes taxes and duties

Package Number[5]	General Description	Estimated Value	Procurement Method	Review [Prior / Post/Post (Sampling)]	Bidding Procedure[6]	Advertisement Date (quarter/year)	Comments[7]
	outdoor GIS SS, and Chapainawabganj 132 kV GIS Bay extension on Turnkey Basis						

*: The procedure of international competitive bidding (ICB) now is described as open competitive bidding (OCB).

3. Consulting Services Contracts Estimated to Cost $100,000 or More

52. The following table lists consulting services contracts for which the recruitment activity is either ongoing or expected to commence within the next 18 months.

Package Number	General Description	Estimated Value	Recruitment Method	Review (Prior / Post)	Advertisement Date (quarter/year)	Type of Proposal	Comments
Package 1	Project implementation consultants	1.25	QCBS	Prior	Q3/2018	FTP	Assignment: International, Quality-Cost Ratio: 90:10 Comments: Estimated value excludes taxes and duties

4. Goods and Works Contracts Estimated to Cost Less than $1 Million and Consulting Services Contracts Less than $100,000 (Smaller Value Contracts)

53. The following table groups smaller-value goods, works and consulting services contracts for which the activity is either ongoing or expected to commence within the next 18 months.

Goods and Works								
Package Number	**General Description**	**Estimated Value**	**Number of Contracts**	**Procurement Method**	**Review** [Prior / Post]	**Bidding Procedure**	**Advertisement Date** (quarter/ year)	**Comments**
Package 1	Social Development and Gender Specialist	0.05	1	ICS	Prior	Biodata	Q3/2018	Funded by EAKPF Grant (Education) (International)

B. Indicative List of Packages Required Under the Project

54. The following table provides an indicative list of goods, works and consulting services contracts over the life of the project, other than those mentioned in previous sections (i.e., those expected beyond the current period).

Goods and Works							
Package Number	**General Description**	**Estimated Value (cumulative)**	**Estimated Number of Contracts**	**Procurement Method**	**Review** [Prior / Post/Post (Sampling)]	**Bidding Procedure**	**Comments**
None							

Consulting Services							
Package Number	**General Description**	**Estimated Value (cumulative)**	**Estimated Number of Contracts**	**Recruitment Method**	**Review** (Prior / Post)	**Type of Proposal**	**Comments**
None							

C. List of Awarded and On-going, and Completed Contracts

55. The following tables list the awarded and on-going contracts and completed contracts.

(i) Awarded and On-going Contracts

Goods and Works							
Package Number	**General Description**	**Estimated Value**	**Awarded Contract Value**	**Procurement Method**	**Advertisement Date** (quarter/ year)	**Date of ADB Approval of Contract Award**	**Comments**
None							

Consulting Services							
Package Number	**General Description**	**Estimated Value**	**Awarded Contract Value**	**Recruitment Method**	**Advertisement Date** (quarter/year)	**Date of ADB Approval of Contract Award**	**Comments**
None							

(ii) Completed Contracts

Goods and Works								
Package Number	**General Description**	**Estimated Value**	**Contract Value**	**Procurement Method**	**Advertisement Date** (quarter/ year)	**Date of ADB Approval of Contract Award**	**Date of Completion**	**Comments**
None								
Consulting Services								
Package Number	**General Description**	**Estimated Value**	**Contract Value**	**Recruitment Method**	**Advertisement Date** (quarter/ year)	**Date of ADB Approval of**	**Date of Completion**	**Comments**

						Contract Award		
None								

D. Non-ADB Financing

56. The following table lists goods, works and consulting services contracts over the life of the project, financed by Non-ADB sources.

Goods and Works				
General Description	**Estimated Value (cumulative)**	**Estimated Number of Contracts**	**Procurement Method**	**Comments**
None				

Consulting Services				
General Description	**Estimated Value (cumulative)**	**Estimated Number of Contracts**	**Recruitment Method**	**Comments**
None				

E. Consultant's Terms of Reference

57. Terms of reference for consultants are attached in Annex.

VII. SAFEGUARDS

58. This project is located in mostly agricultural area. No wildlife sanctuaries, national parks, ecologically sensitive areas or national protected areas are marked in the project area. None of the project components will have significant adverse environmental impacts. There are three substations which require acquisition of approximately 40 hectares of land, and it was identified 138 households with 552 persons are expected to be significantly affected. The project is categorized as B for environment, A for involuntary resettlement, and C for indigenous peoples.[28] Following ADB's Safeguard Policy Statement (2009) and government laws, PGCB has prepared an initial environmental examination (IEE) including environmental management plans (EMPs) and also a resettlement plan. The draft IEE and resettlement plan were disclosed in ADB's website on 16 April 2018. PGCB will adhere to the IEE and resettlement plan. In the event of any unanticipated environmental impacts during project implementation, PGCB will take corrective actions, and update the IEE and EMPs and revise the resettlement plan, which will be disclosed on the ADB website. Environmental impacts have been assessed and mitigation measures proposed in the IEE and EMPs to minimize impacts on health and safety as a result of project construction and operation.

59. According to the survey, 266 households with 1,183 persons can be affected by the land acquisition for three substations. It was identified 138 households with 552 persons are expected to be significantly affected losing more than 10% of their productive land. The land acquisition is scheduled for Gopalgaj is from March 2018 to December 2018, and for Bogra and Rohanpur from July 2018 to June 2019. The land acquisition schedule is synchronized with the project implementation schedule. The resettlement plan will be updated based on the project final design

[28] tribes, minor races, ethnic sects, and communities peoples.

including a result of detailed measurement survey consisting of census survey of the affected persons and inventory of losses. During a meeting with the district commissioner office for the Gopalgaj substation site, the district revenue officer confirmed, the team finished measurement survey, and conducted site visits. The record would be shared with ADB consultants after verification by the team. In addition, it was informed that compensation for landowners who have not appeared will be deposited in the Public Account by DC and will remain until such time the landowners claim their entitlements. The 268 km of transmission lines have mostly temporary impacts but also permanent impacts on the land along the right of way (RoW). Based on the preliminary design, approximately 919 households with 3,676 persons can be affected by the RoW, and among them 77 households with 308 persons who own 89 structures may need relocation. It is estimated that footings of 277 angle and 414 suspension towers are to occupy about 0.223 ha of land in total. Compensation will be provided in accordance with the entitlement matrix in the resettlement plan. There will not be any impacts on tribes, minor races, ethnic sects and communities peoples. PGCB will ensure compliance to the applicable national and state laws and regulations and ADB's *Safeguard Policy Statement* (2009).

60. The project management unit (PMU) of PGCB with two PDs will be responsible for supervising, monitoring, auditing, and reporting to ADB on the implementation of the EMPs on a semi-annual basis during construction and an annual basis during operation. The EMPs have been prepared to describe the anticipated impacts, monitoring requirements, and mitigation measures during the whole project. The EMPs and relevant mitigation measures will be incorporated in contract documents for the engineering, procurement, and construction (EPC) contractor(s). EPC contractor(s) are required to comply with the EMPs during pre-construction and construction stage. As the project is resettlement category A, PGCB will engage an implementing NGO for implementation of the RP and an external monitor. The implementing NGO will provide support to PMU and undertake capacity building activities deemed necessary. The implementation of the resettlement plan will be monitored by PGCB and supervised by the external monitoring expert. The monitoring reports will be submitted to ADB semi-annually and disclosed in ADB website.

61. PMU will also be responsible for overall project planning and implementation, including procurement, accounting, quality assurance, social and environmental issues and coordination with concerned agencies. PGCB has an environmental and social unit composed with two engineers in headquarters, and they will be involved in the project implementation. In addition, a staff member at PMU level will be assigned for IEE and resettlement plan implementation. PGCB will also engage qualified and experienced external expert(s)[29] for resettlement as it is resettlement category A, who will support implementation and supervision of the project. The duties of PMU at field level include:

(i) Conduct overall coordination, preparation, planning, and implementation of all field level activities;
(ii) Implement EMPs and the environment and social policy guidelines and environmental and social good practices at the project site;
(iii) Undertake and supervise compensation to the affected persons based on the entitlement matrix in the resettlement plan;
(iv) Oversight PMU and construction contractor(s) on monitoring and implementing mitigation measures during design, construction and operation phases of the project;

[29] An external monitoring expert will be engaged under ADB. Bangladesh: Bangladesh Power System Enhancement and Efficiency Improvement Project.

(v) Advise and coordinate with PMU to finalize survey and detailed design and update that safeguard documents following detailed design;
(vi) Engage in grievance redress and ensure the prompt resolution of complaints;
(vii) Set up appropriate record keeping system;
(viii) Disclose relevant information to the affected people and continue consultations;
(ix) Provide training and awareness on environmental and social issues to the project staff and EPC contractor(s); and
(x) Preparation of environmental monitoring reports on a regular basis and semi-annual social monitoring reports.

62. JFJCM Requirement: PGCB shall have the following responsibility as following; (i) Developing the Gopalganj (North) – Barisal (North) transmission line project as a joint crediting mechanism (JCM) project, and for fulfilling requirements as the project participant of the JCM project; (ii) Developing the JCM methodology and submitting it to the JCM Joint Committee (JC) for approval. In case the methodology is not approved, PGCB will revise the methodology and make best efforts to have it approved by the JC. Methodology approval is to be achieved before project registration; (iii) Upon methodology approval, PGCB will prepare a project design document (PDD), hire an accredited third-party entity (TPE) to validate the project, and submit the project for registration to the JC. In case the project is not registered, PGCB will make necessary revisions to the PDD considering comments received and make best efforts to have the project registered. Project registration is to be achieved before commissioning of the subproject supported under the JFJCM; (iv) PGCB will monitor the project in line with the PDD and prepare a monitoring report at least once a year, based on the recorded monitoring data. The monitoring report will be reported to ADB. PGCB will monitor the JCM project from commissioning until the end of the project operation or the expiry of the JCM bilateral document between Bangladesh and Japan, whichever is earlier;(v) PGCB will ensure monitoring reports and emission reductions verified by a TPE. Verifications are to be conducted at least twice: (a) after one year of operation, and (b) after December 2030. Verifications are to be completed within 9 months of the end of each monitoring period; (vi) Upon successful verification, PGCB will request the issuance of JCM credits to the JC. Issuance requests are to be made at least twice: (a) after one year of operation, and (b) after December 2030; (vii) In meeting the JCM requirements, PGCB, during the implementation period, hire consultants for methodology development, PDD preparation, validation support, monitoring report preparation, verification support, issuance support, training, and other JCM related activities. The JFJCM secretariat may also provide necessary support; (viii) The Gopalganj (North) – Barisal (North) transmission line project supported under the JFJCM cannot apply for any other international carbon market mechanisms.

63. PGCB will establish a grievance redress mechanism to address complaints that may be raised during project implementation. The field officers will response and resolve minor grievances, and local grievance committee chaired will take it over if solution is not provided. For complaints not resolved by the local level, it will be filed to higher grievance redress committee to resolve. Corrective actions will be taken for any unanticipated impacts. All complaint-related documentation such as minutes of the meetings and decisions will be summarized and become part of the environmental and social monitoring reports submitted to ADB. If the problem is not solved, the complainant can seek legal redress of the grievance in the appropriate courts. ADB's accountability mechanism will also be informed to the affected people by PGCB.

64. **Climate change impact.** The project has low climate change risk. Climate mitigation is estimated to cost $93 million. ADB and ADB-administered JFJCM fund will finance 100% of mitigation costs, of which, 92.4% is from ADB OCR loan. Application of efficient conductors under outputs 1–3 leads to climate mitigation.

65. **Prohibited investment activities.** Pursuant to ADB's *Safeguard Policy Statement* (2009), ADB funds may not be applied to the activities described on the ADB Prohibited Investment Activities List set forth at Appendix 5 of the Safeguard Policy Statement.

VIII. GENDER AND SOCIAL DIMENSIONS

66. **Gender.** The project is categorized as some gender elements. Under the proposed EAKPF grant, the project will support 50 students in universities and 30 engineers in PGCB for them to continue education. Among the beneficiaries, 40% of the students and 30% of engineers should be women. This will directly support women's access to higher education opportunities. A consultant will be recruited for implementation of the proposed grant and detail implementation arrangement is described in the terms of reference in the Annex. Through the scholarship program, human resources development in the energy sector will be improved. Further, this program will increase women participation in the energy sector, and encourage socially inclusive capacity in the electric utility industry.

67. **Social.** The country faces shortage of electricity and poor quality of electricity supply from the aged and low capacity grid network. The overall objective of the project is to strengthen power transmission system in Bangladesh and enhance its reliability and efficiency. The major benefit of the project is enhanced energy security and additional electricity supply that will promote business expansion and create employment opportunities to the local communities, including poor and socially disadvantaged people, during the implementation phase. The project can contribute to poverty reduction by bringing economic activities and livelihoods opportunities around the project site. In addition, under the proposed EAKPF grant, the project will also encourage poverty reduction and gender equity by providing scholarship with a focus on women and vulnerable people. Through the scholarship program, human resources development in the energy sector will be improved.

68. **HIV/AIDS.** Based on the poverty and social assessment, the risk that the project will increase HIV/AIDS incidence is not high. However, contractors will carry out HIV/AIDS awareness activities for their laborers at work sites, which will be monitored by the construction supervision consultants.

69. **Health.** PGCB will ensure that contractors adequately provide health and safety measures for the construction workers and further ensure that bidding documents include clauses on how contractors will address this, including an information and awareness raising campaign for construction workers on sexually transmitted diseases, including HIV/AIDS and human trafficking.

70. **Labor.** PGCB will ensure that civil works contractors comply with all applicable labor laws and regulations including (i) not to employ child labor for construction and maintenance activities, (ii) provision of appropriate facilities for women and children in construction campsites; and (iii) do not differentiate wages between men and women for work of equal value. PGCB will ensure that specific clauses ensuring these will be included in bidding documents.

IX. PERFORMANCE MONITORING, EVALUATION, REPORTING, AND COMMUNICATION

71. Overall monitoring of the project in terms of progress will be undertaken by the government, which will review quarterly progress reports submitted by PGCB.

A. Project Design and Monitoring Framework

DESIGN AND MONITORING FRAMEWORK

Impacts the Project is Aligned with

National target of electricity for all achieved by 2021 (Perspective Plan of Bangladesh, 2010–2021: Making Vision 2021 a Reality)[a]

Combined transmission and distribution losses reduced from 13% to 9% of generation, and uninterrupted power supply provided to industries by 2020 (Power System Master Plan 2016)[b]

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting	Risks
Outcome	**By 2024:**		
Capacity of electricity supply in Bangladesh increased	a. Power delivery capacity of southern and western grid increased to 14,135 MVA (2017 baseline: 9,000 MVA) b. Transmission loss reduced to 2.5% (2017 baseline: 2.7%) c. Carbon dioxide emissions reduced by 174,595 tons per year from transmission loss reduction (2017 baseline: 0)	a–c. Annual reports of PGCB	Delay in government approval of power generation investments could limit the utilization of the transmission network.
Outputs			
1. New substation at Gopalganj installed	**By 2020:** 1. Gopalganj (North) 400/132 kV substation with capacity of 3x325 MVA constructed and commissioned (2017 baseline: 0)	1–4. Annual reports of PGCB	Price increases of goods and services beyond contingency could cause delays and budget overruns.
2. Transmission network in southern Bangladesh expanded	**By 2023:** 2a. 126 km Barisal (North)–Gopalganj (North)–Faridpur 230 kV double-circuit line constructed and commissioned (2017 baseline: 0) 2b. Two 230 kV bay extensions at existing Barisal (North) substation constructed and commissioned, and the existing Faridpur 132/33 kV substation augmented with four 132 kV bays; five 230 kV bays; and 230/132 kV, 2x250 MVA transformers (2017 baseline: 0) 2c. Gopalganj (North) substation augmented with 400/230 kV, 2x750 MVA transformers (2017 baseline: 0)		
3. Transmission network in western	**By 2023:** 3a. New 104 km Bogra (West)–Rohanpur 400 kV double-circuit line		

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting	Risks
Bangladesh expanded	constructed and commissioned (2017 baseline: 0)		
	3b. New Bogra (West) substation constructed and commissioned with 400/230 kV, 2x750 MVA transformers, nine 400 kV bays, and eleven 230 kV bays (2017 baseline: 0) 3c. New Rohanpur substation constructed and commissioned with 400/132 kV, 2x325 MVA transformers; five 400 kV bays; and nine 132 kV bays (2017 baseline: 0) 3d. New 26 km Chapainawabganj–Rohanpur 132 kV double-circuit transmission line constructed and commissioned (2017 baseline: 0) 3e. Two 132 kV bay extensions at existing Chapainawabganj substation constructed and commissioned (2017 baseline: 0) 3f. 11 km line-in, line-out connection from Barapukuria–Bogra (South) 230 kV transmission line to Bogra (West) substation, and 1 km line-in, line-out connection from Chowdala–Niamatpur 132 kV transmission line to Rohanpur substation constructed and commissioned (2017 baseline: 0)		
4. Socially inclusive capacity in the electric utility industry enhanced	**By 2023:** 4a. 50 university students (of which at least 40% are women) completed a university program relevant to energy sector (2017 baseline: 0) 4b. 30 PGCB staff (of which at least 30% are women) completed a university program relevant to energy sector (2017 baseline: 0)		

Key Activities with Milestones
1. New substation at Gopalganj installed 1.1 Tender published by October 2017 1.2 Contract awarded by 30 August 2018 1.3 Construction started by October 2018 1.4 Construction completed by 31 July 2020 **2. Transmission network in southern Bangladesh expanded** 2.1 First set of tenders published by May 2018 2.2 Second set of tenders published by October 2018 2.3 Contract award of first set of tenders by November 2018 2.4 Contract award of second set of tenders by March 2019 2.5 Construction of first set of tenders started by January 2019 2.6 Construction of second set of tenders started by May 2019 2.7 Construction of first set of tenders completed by December 2020 2.8 Construction of second set of tenders completed by September 2021 **3. Transmission network in western Bangladesh expanded** 3.1 First set of tenders published by August 2018 3.2 Second set of tenders published by August 2019 3.3 Contract award of first set of tenders by December 2018 3.4 Contract award of second set of tenders by December 2019 3.5 Construction for first set of tenders started by March 2019 3.6 Construction for second set of tenders started by March 2020 3.7 Construction for first set of tenders completed by February 2022 3.8 Construction for second set of tenders completed by February 2023 **4. Socially inclusive capacity in the electric utility industry enhanced** 4.1 Partnership agreement initiated by September 2018 4.2 Scholarships established in selected universities by December 2018 4.3 First scholarships awarded by June 2019 4.4 Program completed by 30 June 2023
Inputs ADB: $350.0 million (regular OCR loan) Japan Fund for the Joint Crediting Mechanism: $7.0 million (grant) Republic of Korea e-Asia and Knowledge Partnership Fund: $0.5 million (grant) Government: $174.5 million
Assumptions for Partner Financing Not Applicable

ADB = Asian Development Bank, km = kilometer, kV = kilovolt, MVA = megavolt-ampere, OCR = ordinary capital resources, PGCB = Power Grid Company of Bangladesh Limited.

[a] Government of Bangladesh, Ministry of Planning, Planning Commission. 2012. *Perspective Plan of Bangladesh, 2010–2021: Making Vision 2021 a Reality.* Dhaka.

[b] Government of Bangladesh; Ministry of Power, Energy and Mineral Resources. 2016*. Power System Master Plan 2016*. Dhaka.

Source: ADB.

B. Monitoring

72. **Project performance monitoring.** Overall monitoring of the project in terms of progress will be undertaken by the government, which will review monthly progress reports submitted by PGCB. The projects department of PGCB will monitor progress, procurement, quality, contract management, and fiduciary management. In addition, the projects department will undertake regular field visits and provide guidance to the project director and the project consultants.

73. **Compliance monitoring.** Loan covenants—policy, legal, financial, economic, environmental, and others—will be monitored through the quarterly progress reports and review missions.

74. **Safeguards monitoring.** PGCB must adhere to the EMPs and resettlement plan during contract implementation as prepared in accordance with ADB's *Safeguard Policy Statement* (2009) and as agreed and/or endorsed by the government. PGCB will provide environmental monitoring reports to ADB on a regular basis during construction and operation phases and submit separate social monitoring reports to ADB a semiannual basis. The environmental and social monitoring reports will describe implementation progress of environment and resettlement activities and compliance issues and include quantitative monitoring data in accordance with the IEE/EMPs, environmental monitoring plans and resettlement plan, respectively. The environmental and social monitoring reports and the relevant safeguard reports will be posted to ADB website as required by *Safeguard Policy Statement* and ADB's *Public Communications Policy* 2011 and disclosed locally by PGCB. In the event of any unanticipated environmental or resettlement impacts during implementation, or if monitoring identifies a breach of performance standards that should be complied with by PGCB and/or their contractors, PGCB will submit to ADB a time-bound corrective action plan or updated the IEE/resettlement plan.

75. **Gender and social dimensions monitoring.** Gender and social data will be monitored, collated and analyzed to provide an indication of change in the life of beneficiaries, which in turn will be important for recording the outputs and performance of the project. A social development and gender specialist (education) will be recruited for implementation and monitoring of the proposed grant as per the terms of reference in the Annex. In addition, the inclusion and compliance with labor standards, health, and gender aspects will be monitored through review of bidding documents, contract awards, and progress reports.

C. Evaluation

76. ADB will field regular review missions every six months at the minimum to review status of contract awards, disbursements, physical progress, and implementation of the environmental management plan and resettlement plan. As necessary, special loan administration mission and midterm review mission will be fielded, under which any changes in scope or implementation arrangements may be required to ensure achievement of project objectives. Within 6 months of physical completion of the project, PGCB will submit a project completion report to ADB.[30] Subsequently, ADB will field a mission to finalize the project completion report. Table 16 provides the evaluation methodology for the project.

Table 16: Evaluation Methodology

Evaluation Activity	Purpose	Methodology	Responsibility
Review Mission	Review the progress of the project and provide guidance to facilitate implementation	Site visits and meetings with PGCB officials, contractors, consultants at least twice a year	ADB and PGCB
Midterm Review	Comprehensive review of the project	With Government of Bangladesh and PGCB after 2 years of effectiveness	ADB and PGCB

[30] Project completion report format is available at: http://www.adb.org/Consulting/consultants-toolkits/PCR-Public-Sector-Landscape.rar.

Project completion report	Evaluate the overall output of the project and its relevance and suitability	Site visit and meetings with PGCB officials, contractors, consultants	ADB and PGCB

ADB = Asian Development Bank, PGCB = Power Grid Company of Bangladesh Limited.
Source: ADB and PGCB.

D. Reporting

77. PGCB will provide ADB with (i) quarterly progress reports in a format consistent with ADB's project performance reporting system; (ii) consolidated annual reports including (a) progress achieved by output as measured through the indicator's performance targets, (b) key implementation issues and solutions, (c) updated procurement plan, and (d) updated implementation plan for the next 12 months; and (iii) a project completion report within 6 months of physical completion of the project. To ensure that projects will continue to be both viable and sustainable, project accounts and the executing agency audited financial statement together with the associated auditor's report, should be adequately reviewed.

E. Stakeholder Communication Strategy

78. The stakeholder communications strategy is described in Table 17. PGCB will post relevant information on their website that will include at minimum information regarding the bidding process, bidders, contract awards, use of funds disbursed under the project and physical progress.

Table 17: Stakeholder Communication Strategy

Project Information to be Communicated	Means of Communication	Responsibility	Audience	Frequency
Report and recommendation of the President with linked documents	ADB website	ADB	ADB, Government of Bangladesh, development partners, civil society, and individuals	Once
Project information while planning/ designing	Discussions and stakeholder consultations	PGCB, Power Division of MPEMR	Project beneficiaries	Regular intervals during planning and design
Status of implementation during construction	Boards at site	PGCB / contractors	Project beneficiaries	All the time at construction sites
Project performance reports and project information documents	ADB website	ADB	ADB, Government of Bangladesh, development partners, civil society, and individuals	Every quarter

Project Information to be Communicated	Means of Communication	Responsibility	Audience	Frequency
Periodic progress reports	Website of PGCB	PGCB, Power Division of MPEMR	ADB, Government of Bangladesh, development partners, civil society, individuals	Quarterly
Project completion report	ADB website	ADB	ADB, Government of Bangladesh, development partners, civil society, and individuals	Once

ADB = Asian Development Bank, MPEMR = Ministry of Power, Energy and Mineral Resources, PGCB = Power Grid Company of Bangladesh Limited.
Source: ADB; MPMER; and PGCB.

X. ANTICORRUPTION POLICY

79. ADB reserves the right to investigate, directly or through its agents, any violations of the Anticorruption Policy relating to the project.[31] All contracts financed by ADB shall include provisions specifying the right of ADB to audit and examine the records and accounts of the executing agency and all project contractors, suppliers, consultants, and other service providers. Individuals and/or entities on ADB's anticorruption debarment list are ineligible to participate in ADB-financed activity and may not be awarded any contracts under the project.[32]

80. To support these efforts, relevant provisions are included in the loan agreement/regulations and grant agreement/regulations and the bidding documents for the project.

XI. ACCOUNTABILITY MECHANISM

81. People who are, or may in the future be, adversely affected by the project may submit complaints to ADB's Accountability Mechanism. The Accountability Mechanism provides an independent forum and process whereby people adversely affected by ADB-assisted projects can voice, and seek a resolution of their problems, as well as report alleged violations of ADB's operational policies and procedures. Before submitting a complaint to the Accountability Mechanism, affected people should make an effort in good faith to solve their problems by working with the concerned ADB operations department. Only after doing that, and if they are still dissatisfied, should they approach the Accountability Mechanism.[33]

XII. RECORD OF CHANGES TO THE PROJECT ADMINISTRATION MANUAL

82. All revisions and/or updates during the course of implementation should be retained in this section to provide a chronological history of changes to implemented arrangements recorded in the PAM, including revision to contract awards and disbursement S-curves.

[31] Anticorruption Policy: http://www.adb.org/Documents/Policies/Anticorruption-Integrity/Policies-Strategies.pdf.
[32] ADB's Integrity Office web site: http://www.adb.org/integrity/unit.asp.
[33] Accountability Mechanism. http://www.adb.org/Accountability-Mechanism/default.asp.

OUTLINE TERMS OF REFERENCE FOR CONSULTING SERVICES

I. PROJECT IMPLEMENTATION SUPPORT FOR PGCB (FIRM) (APRIL 2019- JUNE 2023)

A. Scope of Work

1. An international consulting firm along with national experts will be employed by Power Grid Company of Bangladesh (PGCB) to supervise the implementation of the following subcomponents of the Southwest Transmission Grid Expansion Project, financed by the Asian Development Bank (ADB).

i. Construction of Bogra (West) substation with nine 400 kilovolt (kV) gas insulated switchgear (GIS) bays, two (2) 400 kV/230 kV transformers, each rated at 750 megavolt-ampere (MVA)
ii. Construction of the Rohanpur outdoor GIS with five (5) 400 kV, two (2) 400 kV/132 kV transformers, each rated at 325 MVA, and one shunt reactor rated at 125 MVAr.
iii. Augmentation of Gopalganj (North) 400/132 kV substation with two (2) 400 kV/230 kV transformers, each rated at 750 MVA.
iv. Two consultants will be engaged under this consulting service for the evaluation of the environmental benefits of the $7 million grant provided by the Japan Fund for the Joint Crediting Mechanism (JFJCM) in preference to aluminum conductor steel reinforced for the 126 kilometer (km) long Barisal (North)-Gopalganj (North)-Faridpur 230 kV double circuit transmission.

2. The consultant's scope of work shall be, but not limited to, the following:

i. Electromagnetic transients program (EMTP) study for the selection of reactors at Bogra (West), Rohanpur, Gopalganj (North) substations;
ii. Preparation of bid documents for the 400 kV substation package (Package 5) and clarification thereof;
iii. Review all technical design submissions and drawings submitted by the contractor and submit comments and recommendations to PGCB to facilitate the approval process;
iv. Supervision of all civil works in substation and switching station, erection and installation of substation equipment;
v. Review factory acceptance test procedures and formats of the equipment;
vi. Supervision of testing and commissioning of all substation equipment including control, protection, and metering;
vii. Top supervision of final testing of fiber optic multiplexer equipment;
viii. Review and certification of as-built drawings; and
ix. Review and certification of operating and maintenance manuals.
x. Prepare monthly and quarterly progress reports per JFJCM's requirement
xi. Audit the report and prepare progress reports per JFJCM's requirement.

B. Construction Supervision

3. The consultant will assist PGCB to create the interruption plan for the implementation of the project, review the approved design drawings and documents, and assist PGCB in contractual matters with contractors and suppliers. When the construction starts, the consultant will supervise the construction of project facilities to ascertain that they comply with the specifications. The

consultant will supervise the work of the contactors during the implementation stage paying due attention to safety and security issues and supervise the execution activities and sign the checklists of activities carried out in the field. The consultant will review and compile as-built drawings and review the operation and maintenance manuals prepared by the contractor for accuracy and adequacy.

C. Testing and Commissioning

4. The consultant will investigate and approve the contractor's procedure of commissioning and assist PGCB to prepare the commissioning time schedule. In coordination with PGCB engineers, the consultant will witness commissioning and assist PGCB to take over the competed facilities. The consultant will assist PGCB to review and evaluate the detailed test reports submitted to PGCB by the contractor.

D. Expertise and Person-Months

No.	International Experts	Person-Months	No.	National Experts	Person-Months
1	Team leader/project manager	10	1	Senior electrical engineer (substation)	6
1	Electrical engineer (substation)	8	1	Junior electrical engineer (substation)	6
1	Procurement specialist	2	1	Protection and control system engineer	6
1	Protection and control system engineer	4	1	Communications system engineer	4
1	Communications system engineer	2	1	Senior civil engineer (substation)	5
1	Civil engineer (substation)	5	1	Junior civil engineer (substation)	5
1	Safety expert	1	1	Environmental specialist	2
1	JCM methodology expert	6			
1	JCM auditor	6			
	Total (international)	**44**		**Total (national)**	**34**

E. Qualifications and Tasks

5. **Team leader/project manager (international, 10 person-months).** With at least bachelor's degree in electrical engineering; has minimum 15 years of work experience in substation related projects; and has work experience in bid document preparation, design, construction, and supervision for at least two 345 kV or higher GIS projects. The expert should have worked as a project manager for at least one project and shall have experience in working internationally for at least two projects. The team leader/ project manager will:

i. Coordinate with other team members to develop a detailed work plan and implementation schedule, work with the executing agency to oversee the consulting team and compile, edit, and ensure the design and quality of technical assignment and reports to be prepared under the assignment;
ii. Make necessary inputs and provide advice to the project team and to PGCB to prepare bid documents, review project designs and drawings, testing procedures, detail test reports, and the EMTP study;
iii. Participate in project technical meeting and progress meeting;
iv. Prepare the regular reports and final project report consisting of information needed for ADB; and
v. Provide technical inputs to the entire team.

6. **Electrical engineer (substation) (international, 8 person-months).** With at least bachelor's degree in electrical engineering; has minimum 10 years of work experience in

substation related projects; and has experience in design and construction supervision for at least one GIS of 345 kV or above. International experience of the expert is essential. The consultant will:

i. Oversee and lead the assignment and the consultant team, and act as the team's point of contact for substation with PGCB and ADB;
ii. Make necessary inputs and advice to the project team and to PGCB to review project designs and drawings; testing procedures; and detailed test reports;
iii. Participate in project technical meeting and progress meeting;
iv. Contribute to capacity building of PGCB counterpart staff; and
v. Perform other functions as may be assigned or delegated by the team leader from time to time during the time of assignment.

7. **Procurement specialist (international, 2 person-months).** With at least bachelor's degree in engineering or relevant field; has minimum 10 years of work experience in bid document preparation; and has international experience with power sector procurement under financing from multilateral financial institutions, preferably, in ADB-financed projects. The expert should have worked as a procurement manager for transmission substations for at least 5 years. The consultant will:

i. Assist PGCB in the preparation of tender documents of 400 kV substations; and
ii. Review the clarifications after floating the tender.

8. **Protection and control system engineer (international, 4 person-months).** With at least bachelor's degree in electrical engineering and has minimum 7 years of work experience as an electrical engineer for transmission substations. The expert should have international work experience in design and construction supervision of electrical equipment, including protection and control systems, for at least one transmission substation project. The consultant will:

i. Review the design and drawing of protection and control systems, amend and approve as required; and
ii. Supervise the works of the protection and control equipment during implementation stage.

9. **Communication system engineer (international, 2 person-months).** With at least bachelor's degree in electrical/electronic/communication engineering and has minimum 7 years of work experience as a telecommunication engineer for transmission substations. The expert should have international experience in design and construction supervision of electronic/ communication systems for at least one substation related project. The consultant will:

i. Review the design and drawing of optical fiber-based telecommunication and substation supervisory control and data acquisition system; and
ii. Supervise the works of the related equipment during implementation stage.

10. **Civil engineer (international, 5 person-months).** With at least bachelor's degree in civil engineering and has minimum 10 years of experience as a civil engineer for transmission substations, including international experience. The expert should have experience in design and construction supervision of at least one GIS project at 345 kV or higher. The consultant will:

i. Review the civil design and drawing of substations; and
ii. Supervise the civil works during implementation stage.

11. **Safety expert (international, 1 person-months).** With at least bachelor's degree in engineering or other relevant field and has minimum 7 years of work experience, including international experience, in preparation of safety procedures, their implementation and

enforcement during construction, testing and commissioning of power transmission and substation projects. The consultant will

i. Review the safety plan and procedures of the contractors and recommend improvement as required; and
ii. Supervise the work of contractors during the implementation stage paying due attention to safety and security issues.

12. **JCM methodology expert** (international, 6 person-months, intermittent). The expert should have experience in carbon offset mechanisms and knowledgeable in rules on joint crediting mechanism (JCM). He/she should have a bachelor's degree in science, environment, or engineering; with 10 years of post-qualifying experience; have worked in at least two JCM or similar activities, to develop, documents, prepare trial calculations, measurement systems, to establish the benefits accrued. The qualification shall be verified by JFJCM Secretary, if needed, consultation is preferred during EOI stage. The consultant will:

i. Draft JCM methodology for the proposed JCM project under the Southwest Transmission Grid Expansion Project, and assist the PGCB's project management unit (PMU) to have the methodology approved;
ii. Draft a project design document for the proposed JCM project, assist PMU to have the project design document validated, and have the project registered;
iii. Assist PMU to conduct monitoring and draft monitoring report, have the monitoring report verified, and request issuance of JCM credits; and
iii. Train PMU staff in carrying out the JCM monitoring, reporting and verification process.

13. The consultant shall prepare monthly and quarterly progress reports in a format and detail acceptable to PGCB and ADB. The consultant shall be responsible for preparation and submission of reports and documents that will include but not limited to the following:

i. Inception report (including schedule) within one month after contract signing;
ii. JCM methodology;
iii. Project design document; and
iv. Monitoring and reporting format.

14. **JCM auditor** (international, 6 person-months, intermittent). The auditor shall be engaged through a third-party entity accredited by the Bangladesh-Japan JCM Joint Committee, and published on their website (https://www.jcm.go.jp/bd-jp/tpes), qualified to validate proposed JCM projects and verify greenhouse gas emission reductions of JCM projects. The consultant will:

i. Conduct validation of the proposed JCM project under the Southwest Transmission Grid Expansion Project; and
ii. Conduct verification of emission reductions from the JCM project.

15. The auditor shall prepare progress reports in a format and detail acceptable to PGCB and ADB. The consultant shall be responsible for preparation and submission of reports and documents that will include but not limited to the following:

i. Inception report (including schedule) within one month after contract signing;
ii. Progress report;
iii. Validation report; and
iv. Verification report.

The consultant, upon request from PGCB, shall provide reports and documents on other items, provided that the subjects of those reports are covered by the scope of work of the consultant. All documents and reports shall be made available in electronic format to PGCB and ADB.

16. **Senior electrical engineer (substations) (national, 6 person-months).** With at least bachelor's degree in electrical engineering and has minimum 10 years of work experience in transmission substation projects and should have experience in design and construction supervision for at least one transmission substation project. The consultant will:

i. Supervise the erection and commissioning works of all the electrical items of the substation according to the approved drawing; and
ii. Prepare all types of reports.

17. **Junior electrical engineer (substation) (national, 6 person-months).** With at least bachelor's degree in electrical engineering; has minimum 7 years of experience in transmission substation related projects; and has experience in design and construction supervision for at least one transmission substation project. The consultant will:

i. Supervise the erection and commissioning works of all the electrical items of the substation according to the approved drawing; and
ii. Prepare all types of reports.

18. **Protection and control system engineer (national; 6 person-months).** With at least bachelor's degree in electrical engineering and has minimum 7 years of work experience as an electrical engineer for transmission substations and has experience in design and construction supervision of electrical equipment including protection and control system for at least one transmission substation project. The consultant will supervise all types of protection and control system engineering works according to the approved drawing.

19. **Communications system engineer (national, 4 person-months):** With at least bachelor's degree in electrical engineering; has a minimum 7 years of experience as an electrical engineer for transmission substations; and has experience in design and construction supervision of electronic and communication systems for at least one transmission substation project. The consultant will supervise all kinds of communication system engineering works according to the approved drawing.

20. **Senior civil engineer (national, 5 person-months):** With at least bachelor's degree in civil engineering; has minimum 15 years of work experience as a civil engineer for transmission substations; and has experience in design and construction supervision of at least one transmission substation project. The consultant will:

i. Supervise all the civil works according to the approved drawing; and
ii. Prepare various reports.

21. **Junior civil engineer (national, 5 person-months).** With at least bachelor's degree in civil engineering and has minimum 7 years of work experience as a civil engineer for transmission substations. The expert should have experience in design and construction supervision of at least one transmission substation project. The consultant will:

i. Supervise all the civil works according to the approved drawing; and
ii. Prepare various reports.

22. **Environmental specialist (national, 2 person-months).** With at least a master's degree in science or engineering or environmental management, has minimum 5 years of experience in environmental impact assessment, preferably in electricity supply industry projects. The consultant will:

i. Study and be familiar with the requirements of the environmental impact assessment study and approvals for the project scope, including ADB's policies and requirements;
ii. Undertake necessary consultations with the project stakeholders on relevant environmental issues and impacts;
iii. Ensure the requirements are implemented by contractors; and
iv. Assist PGCB to prepare reports on review and compliance with environmental safeguards.

F. Outputs

23. The consultant shall prepare monthly and quarterly progress reports in a format and detail acceptable to PGCB and ADB. The consultant shall be responsible for preparation and submission of reports and documents that will include but not limited to the following:

i. Inception report (including schedule) within one month after contract signing;
ii. Engineering report (including basic design report) within one week of receiving drawings and documents;
iii. Monthly progress report;
iv. Quarterly progress report; and
v. Project completion report.

24. The consultant, upon request from PGCB, shall provide reports and documents on other items, provided that the subjects of those reports are covered by the scope of work of the consultant.

25. All documents and reports shall be made available in electronic format to PGCB and ADB.

26. All reports shall be in English language.

SOCIAL DEVELOPMENT AND GENDER SPECIALIST (EDUCATION) FOR PGCB SCHOLARSHIP IMPLEMENTATION (INDIVIDUAL, INTERNATIONAL) (INTERMITTENT), OCTOBER 2018 – JUNE 2023)

A. Scope of Work

1. The specialist shall support PGCB's implementation of "PGCB Scholarship Program (tentative title)" funded by the Republic of Korea e-Asia and Knowledge Partnership Fund.

2. The specialist shall prepare selection criteria for the scholarship program, monitor selection process and provide support on implementation of the scholarship program in close coordination with PGCB and the concerned universities in Bangladesh and abroad. The specialist shall monitor the implementation of the scholarship program with focus on gender targets, and report to PGCB and ADB.

B. Expertise and Person-Months

National	Person-Months
Social development and Gender specialist (Education)	16 (Intermittent)
Total	**16 (Intermittent)**

C. Qualifications and Tasks

3. **Social development and gender specialist (education).** The specialist should have a postgraduate degree in education, business administration or related discipline, and/or have working experience in administrating education programs such as an exchange program. The specialist should be familiar with issues of "gender", "vulnerability," "accessibility," and "affordability" in the education sector, and shall have minimum 10 years general experience and minimum 5 years education and social development related experience. The consultant will:

i. Carry out surveys on gender ratio and conduct needs assessments for PGCB staff and university students with a focus on women;
ii. Search available education programs for the scholarship and coordinate with PGCB and the universities and support necessary process to initiate the scholarship program;
iii. Develop student and staff selection criteria and monitor the selection process;
iv. Provide support on implementation of the scholarship program;
v. Monitor the money flow and keep necessary records; and
vi. Provide necessary advice to PGCB.

D. Outputs

4. The specialist shall prepare reports in a format and detail acceptable to PGCB and ADB. The specialist shall be responsible for preparation and submission of reports and documents that will include but not limited to the following:

i. Inception report;
ii. Survey on gender ratio and needs assessment;

iii. Student and staff selection criteria, and the revised budget;
iv. Progress reports and reports of fund flows;
v. Mid-term evaluation report; and
vi. Final report, upon conclusion of the program.

5. The specialist, upon request from PGCB, shall provide reports and documents on other items, provided that the subjects of those reports are covered by the scope of work of the consultant.

6. All documents and reports shall be made available in electronic format to PGCB and ADB.

7. All reports shall be in English language.