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# Project Information Document (PID)

Appraisal Stage | Date Prepared/Updated: 06-Dec-2022 | Report No: PIDA35210

**BASIC INFORMATION****A. Basic Project Data**

Country Bangladesh	Project ID P179009	Project Name Gas Sector Efficiency Improvement and Climate Mitigation Project	Parent Project ID (if any)
Region SOUTH ASIA	Estimated Appraisal Date 27-Feb-2023	Estimated Board Date 10-Apr-2023	Practice Area (Lead) Energy & Extractives
Financing Instrument Investment Project Financing	Borrower(s) Peoples Republic of Bangladesh	Implementing Agency Bangladesh Energy Regulatory Commission (BERC), Titas Gas T&D Company Limited, Petrobangla, Pashchimanchal Gas Company Limited (PGCL)	

## Proposed Development Objective(s)

To improve efficiency of gas distribution and end-use, and support decarbonization of the gas sector

## Components

Strengthening gas sector monitoring and control capabilities downstream  
Technical assistance for decarbonization of the oil and gas value chain

**PROJECT FINANCING DATA (US\$, Millions)****SUMMARY**

<b>Total Project Cost</b>	300.00
<b>Total Financing</b>	300.00
<b>of which IBRD/IDA</b>	300.00
<b>Financing Gap</b>	0.00

**DETAILS****World Bank Group Financing**



International Development Association (IDA)	300.00
IDA Credit	300.00

Environmental and Social Risk Classification

Moderate

Decision

The review did authorize the team to appraise and negotiate

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Other Decision (as needed)

## B. Introduction and Context

### Country Context

1. **Bangladesh made rapid social and economic progress in recent decades and reached lower-middle-income status in 2015.** Annual gross domestic product (GDP) growth averaged close to 6 percent since 2000. Strong labor market gains contributed to a sharp decline in poverty, with the national poverty rate falling from 48.9 percent to 24.5 percent between 2000 and 2016, while extreme poverty declined from 34.3 percent to 13.0 percent. However, the pace of poverty reduction slowed in recent years even as growth accelerated, particularly in urban areas and in the west of the country. Annual consumption growth of the bottom 40 percent (1.2 percent) trailed that of the overall population (1.6 percent) from 2010 to 2016.

2. **While growth rebounded in FY21 and FY22, significant new headwinds have emerged.** Real GDP growth rebounded as pandemic-related restrictions were progressively lifted in FY21, accelerating to an estimated 7.2 percent in FY22 as private consumption and investment growth strengthened. Exports rose by 31.3 percent (year on year), buoyed by a gain in the readymade garment market share in Europe and the United States. However, the economy faces new headwinds. Inflation rose to 7.5 percent as of July 2022 from 5.3 percent a year ago following a global surge in commodity prices, prompting the Bank of Bangladesh, the country’s central bank, to raise the main policy rate by 100 basis points. The current account deficit widened as imports rose, exacerbated by a decline in official remittances inflows. A series of import suppression measures were subsequently adopted, including rolling electricity blackouts, reductions in imports of liquified natural gas (LNG), and reduced business and market hours. The overall balance of payments deficit rose to US\$5.4 billion in FY22, and gross foreign exchange reserves declined to US\$36.5 billion by September 2022.



3. **Structural reforms are needed to support a faster pace of growth over the medium term.** Shocks to all major components of domestic demand imply that GDP growth will remain just above 6 percent until FY24. The balance of payments is projected to return to surplus as import growth moderates over the medium term, if appropriate monetary and exchange rate policies are adopted. To achieve the vision of attaining upper-middle-income status by 2031, Bangladesh needs to create jobs and employment opportunities by creating a competitive business environment, diversifying exports, increasing human capital, building efficient infrastructure, deepening the financial sector, and establishing a policy environment that attracts private investment.

4. **Bangladesh faces a high level of vulnerability to the effects of climate change.** The Global Climate Risk Index ranks Bangladesh as the world's seventh most affected country in 2000–2019. Rising temperatures leading to more intense and unpredictable rainfalls during the monsoon season and the already high probability of cyclones is expected to further increase, resulting in increased tidal inundation. Flooding in Bangladesh is a near-constant phenomenon, recurring with varying magnitude and intensity, affecting a greater population than any other natural hazard. Floods and riverbank erosion in Bangladesh affect about 1 million people annually and can be substantially higher. Once every three to five years, up to two-thirds of Bangladesh is inundated by floods. Addressing these climate risks will support sustainable economic development, ensuring that the vulnerable populations are not left behind.

#### Sectoral and Institutional Context

5. **Natural gas is the primary energy source of Bangladesh,** comprising 68 percent of the primary energy consumption in 2021, with oil (23 percent) and, increasingly, coal (8 percent) comprising the balance (hydropower and renewable energy contribute 0.4 and 0.3 percent, respectively). Over half (52 percent) of the power generation capacity in 2021 was gas based.<sup>1</sup> Currently, 20 domestic gas fields produce about 25.2 billion cubic meters (Bcm) of natural gas, and about 7 Bcm of imported LNG—22.5 percent of supply to the domestic market—are being added to the national gas grid. Consumption of coal, driven by growing power generation needs (8.3 percent of the installed generation capacity in 2020), has also increased by an average of 11 percent per year in the last decade, significantly contributing to the rapid growth of total carbon dioxide (CO<sub>2</sub>) emissions from energy, which have doubled from 50.6 million tCO<sub>2</sub> in 2010 to 100.9 million tCO<sub>2</sub> in 2021.<sup>2</sup> According to the 2016 Power System Master Plan, coal imports of approximately 5 million tons that year were expected to increase to 30 million tons by 2030. In addition, starting in 2018, natural gas consumption exceeded domestic production. The deficit was compensated for by installing two imported LNG floating storage and regasification units in 2018 and 2019, with a total capacity of 10 Bcm per year which, while solving the immediate demand-supply gap, exposes the country to an increasing energy import dependence and balance of payments and fiscal costs. With domestic gas production expected to decline in the coming years, Bangladesh may have little choice but to increase its reliance on coal and LNG imports to cover supply shortages amid rising demand for energy. As a result, Bangladesh's energy and fiscal resilience, vulnerability to international fluctuations in the price of imported LNG and coal, and its carbon footprint will likely continue to deteriorate.

<sup>1</sup> Bangladesh Power Development Board, 2021.

<sup>2</sup> BP Statistical Review of World Energy, 2022.



6. **The upstream energy supply chain weighs heavily on greenhouse gas (GHG) emissions in Bangladesh and presents a short- to medium-term, cost-effective opportunity for decarbonization.** The bulk of the country's CO<sub>2</sub> emissions stems from the production and use of oil and natural gas. Methane (CH<sub>4</sub> or natural gas) emissions, which are 25 times more potent than CO<sub>2</sub> at trapping heat in the atmosphere, from venting and leakages in the oil and gas (O&G) value chain were estimated at 257 kilotons (kT), roughly equivalent to 7.7 million tCO<sub>2</sub>, mainly from the upstream and midstream links of the value chain.<sup>3</sup> The International Energy Agency (IEA) has indicated that reducing emissions from O&G operations is among the most cost-effective and impactful actions that governments can take to improve energy efficiency, achieve global climate goals,<sup>4</sup> address the carbon intensity of energy supply, and help meet Nationally Determined Contribution (NDCs) commitments. Irrespective of the pace of transition toward cleaner, renewable energy sources in the energy supply matrix or of the expected medium- to long-term trend in gas production and use from domestic and imported sources, decarbonization of O&G operations presents a 'low-hanging fruit' opportunity to address the carbon intensity of the energy supply chain since the pathways and technologies for abatement are both clear and cost-effective. This is particularly true in the gas sector, where it is possible to avoid more than 70 percent of methane emissions with existing technology and around 45 percent can be avoided at no—or negative—net cost.

7. **Conscious of both its increasing GHG emissions level and its increasing exposure to climate risks, the Government of Bangladesh (GoB) committed to achieving an ambitious climate change agenda.** The GoB revised its NDCs in August 2021, calling for 6.73 percent unconditional and 15.12 percent conditional reductions in GHG emissions by 2030, primarily from actions taken in the energy sector. Bangladesh's revised NDCs indicate actions such as improving energy efficiency in the industrial sector and reducing fugitive methane emissions, which include leakages from gas production, processing, transmission, and distribution pipeline networks, to contribute more to achieving Bangladesh's NDCs than all actions in the transport, agriculture, and commercial sectors combined. The GoB's climate strategy also targets reduction of downstream gas and electricity use by households, as current consumption levels represent the fourth largest source of GHG emissions in the country. Such a strategy would also benefit the country's economic and fiscal position, given that enhancing gas demand efficiency would reduce the need for LNG imports, relieving the country's energy import dependence.

8. **However, addressing gas sector GHG emissions will be challenging without adapted monitoring systems and pricing strategies.** First, in Bangladesh, gas network monitoring capabilities are weak. Residential gas consumption in Bangladesh has historically not been metered. Non-metered residential consumers pay a monthly gas bill amounting to BDT 1080 for each double burner stove, irrespective of the gas volume consumed. As a result, there is little incentive for efficient use of this resource or avoiding potential overbilling of the most vulnerable groups. Likely fraud, pilferage and suspected unauthorized connections are also present in the residential and commercial areas. Second, in Bangladesh, monitoring of gas flows in the distribution network is lacking as the Supervisory Control and Data Acquisition (SCADA) system<sup>5</sup> is limited only to the transmission network, hampering a comprehensive and efficient supervision of gas leakages at critical points of the distribution system. Third, gas pricing strategies are not optimal as prices in Bangladesh are among the lowest in the South Asia region, despite price hikes in 2019 and June

<sup>3</sup> IEA Methane Tracker, 2021.

<sup>4</sup> Driving Down Methane Leaks from the Oil and Gas Industry, IEA, January 2021.

<sup>5</sup> The SCADA system offers the opportunity for operators to monitor in real time pressures and flows in the distribution network. This requires installing suitable instruments such as pressure transducers and flow meters at strategic locations within the network (such as pressure reducing stations).



2022. Power producers pay significantly less for gas in Bangladesh than in any other country in South and South-East Asia, leading to massive inefficiencies and distortions.

9. **Addressing these issues will require short-, medium-, and long-term strategies that the GoB is currently working on.** Implementing this strategy will require investments in the upstream and midstream natural gas value chain links and in downstream gas distribution networks and a sustained program of engagement. In the short term, however, it seems clear that, to contribute to national decarbonization efforts and energy security, strengthening demand-side energy efficiency and network monitoring capacity will be a critically needed start. Until all gas consumption in the country is properly metered, it will be difficult, if not impossible, to determine, much less control, how and where gas losses and leakages are occurring in the system. In 2020, the GoB adopted a program to begin this process at the residential level. Thus far, progress has been positive but needs to be accelerated, with at least 2 million meters needed over the next two to three years.

10. **Bangladesh's relevant institutions are keen to answer these challenges, with support from the World Bank and other development institutions.** The gas sector is regulated by the Bangladesh Energy Regulatory Commission (BERC). Domestic natural gas exploration, production, transmission, and distribution are mainly managed by public companies owned by Bangladesh Oil, Gas, and Mineral Corporation (Petrobangla), a state-owned company under the authority of the Energy and Mineral Resources Division (EMRD) of the Ministry of Power, Energy and Mineral Resources (MPEMR). Petrobangla is the main public company in the O&G sector in Bangladesh, owning 12 companies throughout the entire O&G value chain—exploration and production, transmission, distribution, compressed natural gas, liquified petroleum gas, and mining. Petrobangla is the delegated state authority to conclude production-sharing contracts (PSCs) with international oil companies (IOCs) for exploration and development of O&G resources in Bangladesh. O&G exploration and production rights are granted under PSCs, which in effect provide regulation by contract that enables operators in the upstream sector to carry out their activities. Moreover, under Petrobangla's authority, the transmission network is managed by the Gas Transmission Company Limited (GTCL) while the distribution network is managed by six other companies. Among these companies, Titas Gas Transmission and Distribution Company Limited (TGTDC) is the largest gas distribution company, supplying 55 percent of the total gas produced in the country, with a 13,238.09 km including 46.93 km built during the FY20-21<sup>6</sup>. Pashchimanchal Gas Company Limited (PGCL) is another, smaller gas distribution subsidiary of Petrobangla that owns and operates 1,671 km of gas pipeline network to meet its residential, commercial, and industrial customer demand.

11. It is within this context that the GoB requested World Bank support to (a) install 1,100,000 prepaid gas meters in TGTDC's Dhaka region and 128,000 meters for PGCL, which would cover PGCL's entire residential customer base; (b) install a SCADA system on PGCL's network; (c) undertake a small pilot program to test the impact of using smart meters at select industrial customers to improve efficiency and monitoring of their gas consumption; and (d) provide Petrobangla with technical assistance (TA) to assess and prioritize decarbonization opportunities in the O&G sector.

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<sup>6</sup> Source: Titas and Petrobangla FY2021 annual report



### C. Proposed Development Objective(s)

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Development Objective(s) (From PAD)

To improve efficiency of gas distribution and end-use, and support decarbonization of the gas sector

#### Key Results

12. The Project Development Objective (PDO) level indicators proposed for this project are
  - Total greenhouse gas emissions avoided as a result of the Project (kT of CO<sub>2</sub> equivalent);
  - Projected gas savings: average amount of gas saved per meter (cubic meters);
  - Endorsement of an action plan for decarbonization of sector operations (Yes/No); and
  - Endorsement of an Action Plan for the development and implementation of a sector policy, legal, institutional, regulatory and contractual framework for sustained sector decarbonization (Yes/No).

### D. Project Description

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13. **The proposed US\$300 million operation is divided into the following components:**

**Component 1 (US\$294 million) - Strengthening the gas sector monitoring and control capabilities downstream**

*Subcomponent 1.1 (US\$286 million) - Enhancing the efficiency of the gas distribution network and end-use through metering systems for residential and industrial consumers*

14. This subcomponent will contribute to the reduction of wastage of natural gas by residential and industrial end users and contribute to strengthening the monitoring capabilities of the gas sector. It will focus on installing and commissioning metering solutions and chromatographs/analyzers tailored to each targeted consumer group as follows:

- (a) **For residential consumers (US\$283 million)** up to 1,100,000 by TGTDCI in the greater Dhaka area and 128,000 prepaid gas meters would be installed by PGCL in its service territory. TGTDCI's plan to install its prepaid meters over a four-year period is envisaged to result in about 54 percent of its residential customers having a metered gas supply, an increase from



the current level of 15 percent completed in an earlier Japan International Cooperation Agency (JICA) funded project. PGCL is planning to install 128,000 prepaid gas meters for residential end users within its Rajshahi, Sirajgonj, Bogura, Pabna, Ishwardi, Baghabari, and Bera-Santhiya Regional Offices over a four-year period to achieve 100 percent metering coverage for all its residential customers.

- (b) **For industrial consumers (US\$3 million)**, a limited pilot for rolling out smart meters to a select number (a maximum of 60) of TGTDCCL's and PGCL's industrial customers is expected to be carried out to demonstrate viability of smart meters to better manage gas use by industrial customers and improve monitoring of gas use. This activity would include installing the optimal smart gas meter models (based on cost constraints, localization, and structure of current meters of targeted industrial consumers) to enhance monitoring capabilities of network operations and improving operational and commercial efficiency. Generally large industrial private consumers will be selected for smart metering on the basis of average daily consumption of 4,000 (CFH) Cu Feet per Hour or more.

15. Under Subcomponent 1.1, any personal data collected or processed through the metering systems installed will be subject to an appropriate data protection strategy, in line with the World Bank policy on data privacy.

*Subcomponent 1.2 (US\$4 million) - Reducing gas leakages on PGCL's distribution network through reinforced monitoring and upgraded distribution infrastructure*

16. This subcomponent will focus on effective reduction of gas leakages through installation of SCADA systems for PGCL. In Bangladesh, currently GTCL (Gas Transmission Company Limited) only does have the SCADA. Under this activity, PGCL will have the SCADA for its major distribution lines. As a result of installation of SCADA a better monitoring and operation of the distribution network will be possible resulting in . and store secure, efficient, and effective gas distribution company. ia more transparent accounting for gas usage will be possible due to installation of the SCADA.

17.

18. This component will also support the development and operationalization of a Geographic Information System (GIS) database framework. The GIS database will capture, store, check, and display data related to positions on Earth's surface, creating a database framework for the gas pipeline networks of the PGCL franchise area. Based on a mapping of gas network pipe records the GIS database develops, the installed SCADA system would

- (a) Be connected to the metering systems installed under Subcomponent 1.1, providing key data on gas flow volumes and operating pressures in the network to be combined with regular physical leakage surveys (functional independence measure, infrared, and so on) as well as other leakage detection methods (combustible gas indicator, pinpointing, and so on) and
- (b) Provide a strong data-based analytical foundation to determine efficiency of gas equipment as well as support future network planning and, to the extent necessary, expansion, contributing to the overall increase of efficiency of the gas sector in Bangladesh.

19. In consideration of climate hazards and extreme weather event risks, the monitoring systems installed will include climate and weather conditions and associated asset and system performance to





inform the development of appropriate Operation and Maintenance (O&M) plans and standardized protocols for mitigating climate risk. Since the SCADA system is designed to monitor changes in pressure throughout the monitored network, it is expected to increase resilience of PGCL's network in response to climate events, such as flooding, landslides, etc. PGCL should be able to quickly detect any resulting impacts on the network and initiate either protective or repair actions.

## **Component 2 (US\$6 million) - Technical assistance for the decarbonization of the oil and gas value chain**

20. **The development and introduction of a policy, legal, institutional, regulatory, and contractual framework for the decarbonization of the O&G value chain** will hinge on a granular assessment of decarbonization options in sector upstream, midstream, and downstream operations based on (a) the detection and inventory of CO<sub>2</sub> and CH<sub>4</sub> (methane) emissions, their volume, intensity, concentration, and location, leading to the identification and prioritization of interventions to abate emissions; address energy efficiency gaps; adopt low-carbon power, heat, and combustion processes in operations; integrate electricity and grid and/or on-site renewable energy sources in operations; and assess sector-specific carbon capture and storage (CCS) options; (b) the assessment of their technical, economic, and commercial feasibility and the development of a marginal abatement cost curve (MACC)<sup>7</sup> for the value chain; and (c) the preparation of a prioritized Action Plan -to be eventually endorsed and adopted by the MPEMR- to properly sequence on-the-ground decarbonization interventions in the short to medium term. The selection and prioritization of proposed actions will be based on the MACC output, including consideration of parameters such as the absolute volume of potentially abated emissions, the identification of optimal technologies for decarbonization interventions, the assessment of costs and of the feasibility of applicable mitigation, and/or abatement options and of CCS opportunities in depleted aquifer and natural gas reservoirs. The MACC will also provide an indication of the needs and space for required state and private sector investment.

### *Subcomponent 2.1 (US\$4 million) - Action Plan for decarbonization of sector operations*

21. Assessment, selection, and prioritization of short- to medium-term decarbonization options in the upstream, midstream, and downstream of sector value chain operations, involving the following:

- (a) **Inventory of GHG emissions.** Detection and measurement of CO<sub>2</sub> and CH<sub>4</sub> emissions from combustion, venting, and leakage sources in sector value chain operations through the progressive, phased-in application of satellite, aerial, drone, and ground-based detection technologies with the objective of (i) identifying system-wide source, volume, intensity, and persistence of emissions and (ii) selecting specific facilities, plants, or assets for detailed assessment.
- (b) **Identification of decarbonization options.** Assessment of (i) CO<sub>2</sub> and CH<sub>4</sub> abatement opportunities and prioritization and selection of measures to address them, including the integration of leak detection and repair (LDAR) protocols, installation of vapor-recovery units

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<sup>7</sup> A marginal abatement cost curve—MACC—presents the costs or savings expected from different opportunities, alongside the potential volume of emissions that could be reduced if implemented. MACCs measure, compare, and prioritize the financial cost and abatement benefit of individual actions. They use the metric of dollars per ton of carbon dioxide equivalent—usually represented as US\$/tCO<sub>2</sub>e.



or upgrade of seal technologies such as the deployment of double mechanical seals on pumps or dry gas seals on compressors, and elimination of routine gas flaring; (ii) energy efficiency opportunities (for example, replacing conventional gas boilers with more efficient solutions); (iii) electrification options for the displacement of high carbon fuels in combustion and heat processes in value chain operations, including the integration of grid-based or on-site renewable energy; (iv) space for and feasibility of the adoption of low-carbon power and heat sources; and (v) opportunities and feasibility of deployment of O&G sector-specific CCS and for repurposing depleted gas or aquifer reservoirs for CO<sub>2</sub> storage.

- (c) **Assessment, selection, and prioritization of short- to medium-term interventions.** Development—in consultation with sector regulators and operators—of system-wide and prioritized asset MACCs for selection of optimal technologies to address energy efficiency, GHG emissions, and carbon intensity challenges in sector operations, including the assessment of deployment costs, investment needs, their economic/commercial feasibility, and identification of potential funding sources.
- (d) **Decarbonization Action Plan for sector operations.** Based on the above, development of a short- to medium-term sector Decarbonization Action Plan for prioritized and optimally sequenced intervention.

*Subcomponent 2.2 (US\$1 million) - Action Plan for a decarbonization framework*

22. Support and advisory services will be provided to MPEMR; the Ministry of Environment, Forest and Climate Change (MEFCC), BEREC, and Petrobangla for (a) the development of a sector decarbonization framework including enabling decarbonization policy, legal, institutional, contractual, and regulatory instruments to support sustained decarbonization action, and (b) an Action Plan -to be eventually endorsed and adopted by the MPEMR- for its implementation. The proposed decarbonization framework will contemplate the adoption of carbon intensity standards and targets and the introduction of regulatory measurements; monitoring, reporting, and verification (MRV) and LDAR protocols; and incentive mechanisms for private investment in decarbonization interventions and GHG abatement action.

23. Based on the activities described in Subcomponent 2.1., Subcomponent 2.2 will focus on the following:

- (a) Identification of gaps in the existing policy, legal, institutional, regulatory, and contractual framework for decarbonization of sector operations.
- (b) Recommendations to address them, including the definition of sector decarbonization policy; institutional roles; regulatory and oversight responsibilities; coordination mechanisms; introduction and adoption of sector carbon intensity and decarbonization targets in upstream, midstream, and downstream operations; and adoption of GHG emissions standards and LDAR and MRV protocols.
- (c) Assessment of hurdles for private capital mobilization for targeted investments in decarbonization and development of a framework to enable private investment in commercially viable intervention options identified in Subcomponent 2.1.



- (d) Based on (a) and (b), preparation of an Action Plan for the development and phased introduction of a policy, legal, institutional, regulatory, and contractual framework for sustained decarbonization of sector operations.
- (e) Capacity building and advisory support to the MPEMR, MEFCC, BEREC, and Petrobangla for the initial phases of implementation of the Action Plan in (d).

*Subcomponent 2.3 (US\$1 million) - Implementation Support and Institutional Capacity Building*

24. Support and advisory services will be provided to TGTDC and PGCL for project implementation activities and activities to improve their institutional capacity to adequately deliver the project and ensure sustainability beyond the project end date. The subcomponent will support enhancement of project management capacities and sustainability of PGCL and TGTDC. Given the limited experience of TGTDC and PGCL in handling World Bank Investment Project Financing (IPF) projects and limited organizational capabilities with information technology (IT) supported automated management, this subcomponent will provide training and hands-on support, with an emphasis on the sustainability and institutionalization of the know-how within the implementing agencies (IAs). Further, this subcomponent will support training and capacity building of PGCL's and TGTDC employees on the relevant World Bank policies and procedures. The consultant and advisory services will focus on building the capacity of the Project Implementing Units (PIUs) to adequately assess procurement needs, internal control, documentation, information dissemination, administration of contracts including delivery follow-up, payments, handling of variations and amendments, complaint handling, and so on.

Legal Operational Policies

	Triggered?
Projects on International Waterways OP 7.50	No
Projects in Disputed Areas OP 7.60	No

Summary of Assessment of Environmental and Social Risks and Impacts

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25. Based on the nature of proposed activities, it is expected that the E&S impacts will be localized and minor, entailing primarily the generation of noise and dust associated with the installation of the meters, which will be addressed through adequate mitigation measures and related guidelines to be incorporated in the ESCoP. Minor OHS related risks related to the installation of meters can be expected. Adequate safety measures must be ensured to avoid accidents from gas leakage, if any. Community and worker health and safety (CHS and OHS) and SEA/SH risks (which is low) and the newness of the ESF to the IAs. The IAs will need guidance on mitigating Labor management, stakeholder engagement, gender,



CHS, OHS and SEA/SH risks and issues. The risk of exclusion, however, is small as TGTDCCL usually applies an area/block/street based plan for coverage, covering households connected to the main feeder line, and there is normally a technical reason/explanation if someone is left out (e.g. connected to a different feeder line).

26. **The proposed project follows the Environmental and Social Framework (ESF).** From the likely activities, the project environment and social risk is rated Moderate. The key relevant environmental and social standards are ESS1 - Assessment and Management of Environmental and Social Risks and Impacts, ESS2 - Labor and Working Conditions, ESS4 - Community Health and Safety, and ESS10 - Stakeholder Engagement and Information Disclosure.

27. **Summary of interventions.** The investment activities under the project are mainly installation of prepaid meters with minor civil and basic works at the existing consumer connection points. The project shall cover greater Dhaka, Bogra, Sirajgonj, and Pabna, and the project beneficiaries (residential and industrial) will be selected within these districts. None of the activities will require any significant construction works. In addition, the project will entail TA activities targeting mid-stream and upstream decarbonization efforts, which would consist of a detailed assessment of decarbonization opportunities of the O&G value chain.

28. **Environmental risks and impacts.** The project's overall environmental impacts will be vastly positive and contribute to improvement of the environment, and the minor negative impacts can be managed with appropriate measures. The project's overall environmental benefits are reduction of GHG emission and reduced exposure to air pollution. Environmental risks and impacts of project investments related to installation of prepaid meters are minor air pollution, gas leakage, noise pollution, and so on. Also, during installation of the gas meters and application of the SCADA system, some minor occupational health and safety (OHS) related risks are anticipated, and adequate safety measures will be ensured to avoid accidents from gas leakage. These risks and impacts will be addressed through adequate mitigation measures, as incorporated in the Environment and Social Code of Practices (ESCoP). The related environmental and social scopes have been included in the TOR of the detailed assessment of decarbonization opportunities. Although there are low/minor environmental risks associated with the project's activities, the project's environmental risks are rated Moderate because the IAs are new to a project following ESF. Capacity enhancement of the IAs will be developed to manage the environmental and social risks.

29. **Social risks and impacts.** The overall social risk is rated Moderate considering the risks related to the potential exclusion of residential and industrial customers, as the project will install 1,228,000 meters under Component 1 while TGTDCCL's and PGCL's customer base exceeds that number; community and worker health and safety (CHS) and OHS; sexual exploitation and abuse/sexual harassment (SEA/SH) risks (which are rated low); and novelty of ESF to the IAs. The project activities do not pose adverse livelihood impacts for the residential and industrial customers. The project will not require land acquisition, resettlement, or restriction to land use. To manage the labor and worker OHS risks related to meter installations, Labor Management Procedures (LMP) have been prepared by TGTDCCL and PGCL. CHS concerns such as incidents and accidents associated with gas connections, SEA/SH, COVID-19, and so on among project workers and communities will be managed by adopting OHS and CHS measures (including SEA/SH and COVID-19 provisions) incorporated in the LMP and ESCoP, respectively. The LMP also outline the grievance redress mechanism (GRM) for project workers. TGTDCCL and PGCL have prepared their



respective Stakeholder Engagement Plans (SEPs). As part of the SEP, a local and project-level GRM, which is accessible to all stakeholders (including vulnerable groups), has been incorporated. In addition, the project will include a few general mitigation measures, such as making the project GRM sensitive to SEA/SH, including possible referral to different service providers, adoption of a code of conduct for technicians (those who will install and read the meters); and the inclusion of SEA/SH checklist through ESCoP to monitor the mitigation measures through the project cycle

**Note:** To view the Environmental and Social Risks and Impacts, please refer to the Appraisal Stage ESRS Document.  
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## E. Implementation

### Institutional and Implementation Arrangements

30. **The main IAs of the proposed operation are TGTDCI and PGCI (Component 1) and Petrobangla (Component 2).**

31. **Each IA will host a PIU dedicated to the successful implementation of the subcomponent designed for its hosting IA.** The proposed operation will require a coordinating PIU at Petrobangla to act as a central focal point for Component 2 project management, to be charged with responsibility for collaboration, consultations, and coordination with MPEMR, MEFC, BERC, and sector operators subject to PSCs. Petrobangla will also play an informal oversight role, providing high level coordination among its subsidiaries to implement the Project's activities. An Inter-ministerial Project Steering Committee with focal persons from all relevant agencies will provide coordination among all stakeholders. The committee will have at least one meeting for the project every three months and can have more meetings as required.

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Web: <http://www.worldbank.org/projects>

**APPROVAL**

Task Team Leader(s):	Sameh I. Mobarek Carlos Alberto Lopez Quiroga
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**Approved By**

Practice Manager/Manager:		
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**Note to Task Teams:** End of system generated content, document is editable from here. *Please delete this note when finalizing the document.*