

**PROJECT INFORMATION DOCUMENT / INTEGRATED SAFEGUARDS DATA  
SHEET (PID/ISDS)  
CONCEPT STAGE**

Report No.:PIDISDS117815

Date Prepared/Updated: 24-May-2017

**I. BASIC INFORMATION**

**A. Basic Project Data**

|                                                               |                                                                                                                                                                         |                                    |                              |
|---------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|------------------------------|
| <b>Country:</b>                                               | Bangl<br>adesh                                                                                                                                                          | <b>Project ID:</b>                 | P161869                      |
|                                                               |                                                                                                                                                                         | <b>Parent Project ID (if any):</b> |                              |
| <b>Project Name:</b>                                          | Bangladesh Scaling-up Renewable Energy Project (P161869)                                                                                                                |                                    |                              |
| <b>Region</b>                                                 | SOUTH ASIA                                                                                                                                                              |                                    |                              |
| <b>Estimated Appraisal Date:</b>                              | 01-Aug-2017                                                                                                                                                             | <b>Estimated Board Date:</b>       | 22-Mar-2018                  |
| <b>Practice Area (Lead):</b>                                  | Energy & Extractives                                                                                                                                                    | <b>Lending Instrument:</b>         | Investment Project Financing |
| <b>Borrower(s)</b>                                            | People's Republic of Bangladesh                                                                                                                                         |                                    |                              |
| <b>Implementing Agency</b>                                    | Electricity Generation Company of Bangladesh (EGCB), Infrastructure Development Company Limited (IDCOL), Sustainable and Renewable Energy Development Authority (SREDA) |                                    |                              |
| <b>Financing (in USD Million)</b>                             |                                                                                                                                                                         |                                    |                              |
| <b>Financing Source</b>                                       |                                                                                                                                                                         |                                    | <b>Amount</b>                |
| BORROWER/RECIPIENT                                            |                                                                                                                                                                         |                                    | 0.00                         |
| International Development Association (IDA)                   |                                                                                                                                                                         |                                    | 136.00                       |
| Strategic Climate Fund Credit                                 |                                                                                                                                                                         |                                    | 26.39                        |
| Strategic Climate Fund Grant                                  |                                                                                                                                                                         |                                    | 2.86                         |
| IDA Guarantee                                                 |                                                                                                                                                                         |                                    | 80.00                        |
| Financing Gap                                                 |                                                                                                                                                                         |                                    | 0.00                         |
| Total Project Cost                                            |                                                                                                                                                                         |                                    | 245.25                       |
| <b>Environmental Category</b>                                 | FI-1 Financial Intermediary Assessment                                                                                                                                  |                                    |                              |
| <b>Concept Review Decision</b>                                |                                                                                                                                                                         |                                    |                              |
| <b>Is this a Repeater project?</b>                            | No                                                                                                                                                                      |                                    |                              |
| <b>Is this a Transferred project? (Will not be disclosed)</b> |                                                                                                                                                                         |                                    |                              |
| <b>Other Decision (as needed)</b>                             |                                                                                                                                                                         |                                    |                              |

## **B. Introduction and Context**

### **Country Context**

Bangladesh is a low lying country located on the Ganges-Brahmaputra Delta – Asia’s largest and the world’s most densely populated delta. Approximately 162 million people live in a total area of 144,415 square kilometers, giving it the highest population density in the world among large countries, and twelfth highest overall. About 34.9 percent of the population is urban, with the remaining 65.1 percent living in rural areas. Seventy-five percent of the country is less than 10 meters above sea level and more than 700 rivers run through its borders, increasing the vulnerability to the risk of climate change and natural disasters.

With per capita income of US\$1,409 in 2016, it is well above the lower middle income country category threshold which it crossed in FY14. During recent years, economic conditions improved in the country with headline inflation declining to 5.9 percent in FY16 from 7.3 percent in FY14, while the fiscal deficit was contained at around 3.1 percent of Gross Domestic Product (GDP) in FY16. The FY17 budget targets 5 percent deficit with 28.7 percent growth in expenditures. The current account surplus rose to 1.7 percent of GDP in FY16. The GDP grew well above the average for developing countries in recent years, averaging 6.5 percent since 2010, with an officially reported growth of 7.1 percent in in FY16, driven by manufacturing and services.

The recent sustained growth has created higher demand for electricity, transport, and telecommunication services and has contributed to widening infrastructure deficits in Bangladesh as demand for infrastructure has risen faster than investments. Public investment in infrastructure is less than 2 percent of GDP in Bangladesh, compared to more than 7 percent of GDP in countries like China, Thailand, and Vietnam. Bangladesh is ranked 106th on Global Competitiveness Index, out of 128 countries, and 110th on quality of electricity supply. In the Doing Business Indicator, Bangladesh is ranked 176 out of 190 economies of the world and in the indicator of ‘Getting Electricity’, it is ranked the fourth lowest out of 190 economies. The infrastructure bottlenecks are becoming increasingly critical constraints for growth in Bangladesh.

### **Sectoral and Institutional Context**

The power sector in Bangladesh has grown rapidly over the last decade - maximum generation increased from a little over 3,000 MW in 2009 to more than 8,000 MW in 2016. However, supply still lags behind peak demand resulting in supply curtailment (load shedding) particularly in the rural areas during the peak summer months. While the peak demand occurs during the evening hours due to lighting load, there is a significant use (500-1,000MW) of expensive liquid fuel-run generation during daytime, which can be cost-effectively replaced by solar. Annual per capita energy consumption in Bangladesh is relatively low at 370 kWh, compared to 1,010 kWh for India, 2,600 kWh for China, and 13,246 kWh for the United States. With a little over 13 percent of transmission and distribution losses and accounts receivable of 2 months of sales equivalent, performance of Bangladesh’s power sector compares favorably with that of its larger South Asian neighbors.

Non-commercial energy sources, such as wood fuel, animal waste, and crop residues, are estimated to account for more than 40% of energy consumption in Bangladesh. About 67% of electricity generation is based on natural gas and the rest is from liquid fuel, coal and hydropower. The present share of renewable energy in grid supply is only 1.5% coming from the 230MW Kaptai hydropower project developed in the 60s.

Bangladesh has been successful in increasing access to electricity. A decade ago, less than 50 percent of Bangladeshis had access to electricity; today, 76% have access, including about 14% from renewable energy, underlining the impressive progress made by the Government of Bangladesh (GoB) in providing power to all its citizens. Bangladesh has one of the most successful off-grid access programs in the world. Implemented by the Infrastructure Development Company Limited (IDCOL) in partnership with the non-government organizations, the solar home systems program has reached more than 4 million households and shops in remote rural areas of Bangladesh with support from the World Bank and other development partners. Based on the implementation arrangements of the Solar Home System (SHS) program, IDCOL has now embarked on solar mini-grids for remote areas including river islands and an ambitious program to replace diesel irrigation pumps with solar pumps. These off-grid programs have been supported by the World Bank and other development partners. It is expected that Bangladesh will achieve universal access to electricity much ahead of the Sustainable Energy for All (SE4ALL) target of universal access by 2030.

Considerable challenges, however, remain for ensuring that people connected to the grid get uninterrupted electricity supply. The primary challenge is that Bangladesh's reserves of natural gas, which accounts for about 67% of power generation, are estimated to deplete from 2020 if no new gas reserves are discovered or if technology does not allow a higher rate of extraction from existing gas fields. Declining indigenous resources and growing electricity demand have resulted in an increasing reliance on imported fuel oil for power generation. From 2009 to 2015, the share of oil-fired electricity increased from 5 to 20 percent. This increase in oil-fired electricity contributed to the fuel cost per kWh generated rising from 1.1 to 3.42 BDT/kWh (US\$0.014 to US\$0.04) over the same period. This leaves Bangladesh's energy sector vulnerable to political and economic instability in nations from which it imports fuel, as well as from rising prices generally.

Considering the depleting gas reserves, GoB is taking steps to incentivize international oil companies to undertake off-shore exploration of gas. Import of liquefied natural gas (LNG) is in process to ensure utilization of existing natural gas based power plants. Efforts are being made to increase the efficiency of the existing power plants with newer technologies (converting simple cycle operations to combined cycle) with one such project currently under implementation with Bank support. Import of electricity from India, a cheaper option than running liquid fuel-run plants, has started and more interconnections with India are being planned. GoB is also exploring the long-run option of tapping into the hydropower resources of Nepal and Bhutan that could provide much needed relief and a climate-friendly option for the energy shortage experienced throughout the region.

Bangladesh however lags behind in its efforts to tap into its own renewable energy potential for grid-tied electricity generation despite the tremendous success of its off-grid renewable energy program. Installed renewable energy generation capacity is currently 430MW, with the 230MW Kaptai hydropower project being the only grid-connected renewable energy resource. The remaining is mostly from off-grid solar homes in rural areas (175MW), some (15MW) from urban rooftop solar, and the rest from biogas and biomass based captive plants. Resource assessments indicate that Bangladesh could realize the installation of an additional 3,666 MW of renewable energy capacity (both grid and off-grid). Taking into account the prevailing land scarcity in Bangladesh, this estimate excludes arable land needed for agriculture. The total potential for ground-mounted solar and wind and solar rooftop is about 2,600 MW.

GoB has an ambitious plan for renewable energy development. As per the National Renewable Energy Policy 2008, generation capacity of 2,000 MW is planned to be added by 2020 from renewable sources. GoB has also set renewable energy development targets for several technologies for each year from 2015 to 2021 ("RE Development Targets"), which call for an additional 3,100 MW of renewable

energy capacity to be installed by 2021. Furthermore, the Power System Master Plan 2010 set goals for fuel diversification with an emphasis on increasing the role of renewable energy in the power generation mix. To promote renewable energy and also energy efficiency, the Sustainable and Renewable Energy Development Agency (SREDA) was established in 2014.

Despite the government commitment, there has been no utility-scale solar PV projects delivered in Bangladesh. There are a number of reasons for this including land constraints, project development challenges, and financing market challenges. A number of unsolicited proposals for grid-tied solar and wind were received by the Power Division over the past few years. However, due largely to non-availability of land, none of the projects awarded have progressed to financial closure or implementation. Even if some of these projects managed to secure land from the market, financial closure will continue to be a challenge. The infrastructure financing market in Bangladesh is primarily supported by commercial banks, albeit mostly through balance sheet financing to corporates and/or trade financing. Project financing market is still nascent with tenors usually around 7 years. Key issues for commercial banks include lack of experience and knowledge of utility scale renewable energy projects, lack of technical capacity to conduct due diligence, implementation and monitoring, low risk appetite for long term lending, and very limited foreign currency capacity. Institutional investor base is very small and capital markets are not sufficiently developed to support infrastructure financing at this stage which leaves commercial banks to play an important role in financing renewable energy projects.

About 15 MW in solar rooftop PV systems have been installed in the main cities as a result of a government requirement for a certain percentage of lighting loads to come from solar for getting a new grid connection. However, due to the absence of rigorous quality control and monitoring, most of this capacity produces little or no energy.

About 13,383 tons of solid waste are produced daily in Bangladesh, with more than 4,379 tons coming from Dhaka alone. Despite this vast municipal waste production, there is no waste-to-energy facility in operation in Dhaka, and the actual technical potential cannot be estimated without established procedures for delivering the waste to a power plant. A pilot is planned under the proposed Project that will establish the waste collection practices and demonstrate the viability of such plants.

To realize the renewable energy potential, GoB, in cooperation with the World Bank, the International Finance Corporation (IFC), and the Asian Development Bank (ADB), has developed an Investment Plan to access concessional climate finance resources from the Scaling-up Renewable Energy Program (SREP) of the Climate Investment Funds (CIFs). The SREP Investment Plan for Bangladesh was approved by the SREP Sub-committee in November 2015 for a total of US\$75 million in funding. The Bank was assigned to implement US\$29.25 million of SREP funding (US\$2.86 million grant and US\$26.39 million non-grant) to support grid-connected renewable energy and waste-to-energy pilot.

In addition to US\$29.25 million of SREP funding, US\$156 million of IDA funds is expected to be allocated for the Project, potentially providing US\$136 million of IDA credit and US\$80 million of IDA guarantee (leveraged using US\$20 million of the IDA allocation) to de-risk projects and mobilize additional investments from the private sector.

The proposed Project aims at supporting a solar PV plant in the public sector on a government-owned land as a pilot to give the concerned utility the opportunity to develop capacity for operation and maintenance of utility scale renewable energy and also allow an opportunity for the grid operator to develop the capacity to integrate intermittent renewables into the grid. By supporting additional capacity through a private sector approach in parallel on the same government-owned land through a financing facility, the proposed Project is expected to help establish a mechanism that will address the

land constraints issue by matching availability of public land with private sector expertise in installation, operation, and maintenance of utility scale renewable energy. The financing facility will be flexible to support other private sector projects on government-owned land or on private land subject to appropriate due diligence on the economy and efficiency of the projects, and competence and credit-worthiness checks of the project sponsors.

#### Relationship to CAS/CPS/CPF

The proposed Project is consistent with the World Bank Group's Country Partnership Framework (CPF) for Bangladesh (FY2016-2020), which stresses the importance of boosting economic growth and competitiveness through, inter alia, increased power generation capacity and access to clean energy. The primary objective of the CPF is to increase engagement in the five transformational priorities identified by the Systematic Country Diagnostic, where concerted actions could have a profound impact on the pace of progress towards eliminating poverty and boosting shared prosperity. The activities in the CPF are structured around three focus areas consistent with the South Asia Regional Strategy - growth, social inclusion and climate and environmental management. Under the Growth and Competitiveness pillar (Focus Area 1), a transformational priority is given to narrowing the growing gap between demand and supply of power, through increased power generation capacity and access to clean energy. The Project is designed to directly contribute to this objective under the CPF.

The availability of IDA and SREP from the Climate Investment Funds through creation of a financing facility and provision of IDA guarantees, will provide the private investors and lenders the necessary confidence in the deliverability of the Project. By building a track record, the Project will help unlock the private investment potential to support renewable energy development. Once initial phase is implemented under the proposed Project, Bangladesh can replicate the proposed structure with minimum modifications to scale-up renewable energy development.

### **C. Proposed Development Objective(s)**

#### **Development Objective(s) (From PCN)**

The Project Development Objective is to increase installed generation capacity of renewable energy in Bangladesh.

#### **Key Results (From PCN)**

The achievement of the Project Development Objective will be assessed using the following key outcome indicator:

- Generation capacity of energy constructed or rehabilitated (MW)

In addition, the following intermediate result indicators will be used:

- Investment mobilized for renewable generation capacity (US\$)
- Net greenhouse gas emissions (tCO<sub>2</sub>/year)
- Renewable energy resource national atlas published
- Waste-to-energy pilot completed

### **D. Concept Description**

The proposed Project is aimed at supporting the development of grid-connected renewable energy, particularly solar PV and wind, and waste-to-energy through a combination of investment financing

and technical assistance by matching availability of public lands with the interest and expertise of the private sector in installation, operation and maintenance of utility scale renewable energy. It will also address the barriers by providing access to capital, de-risking investments, and conducting resource assessments. The proposed Project will support a public sector PV plant as a pilot to allow for development of public sector capacity in operation and maintenance of utility scale renewable energy and also allow an opportunity for the grid operator to develop the capacity to integrate intermittent renewables into the grid.

The proposed Project will be comprised of four components as described below.

**Component 1: Feni Utility-Scale Solar PV.** This component will support the first phase of the development of a renewable energy park starting with a 50MW pilot. The renewable energy park can eventually support a capacity between 150-170 MW of solar PV and around 20MW of wind. This component will finance the common infrastructure (civil works, risk mitigating measures and fencing), for the entire site (1,000 acres) in Feni District, and the first phase of the solar PV generation plant, with a capacity of around 50 MW. This project would be the first-ever large scale grid-tied solar PV in Bangladesh, at a site owned by the state-owned generation utility, Electricity Generation Company of Bangladesh (EGCB). The generation facility will be developed as public investment through IDA credit. The EGCB will procure, through a competitive bidding procedure, an engineering, procurement and construction (EPC) and operation and maintenance (O&M) contract for the solar PV plant that covers O&M of the facility for the first five years after commissioning. Options are being considered for a performance based contract that will mimic the payment structure for the EPC and O&M contracts to that of a Build, Operate, and Transfer (BOT) model (for a shorter duration of the O&M contract period) to allow for a better risk sharing with the contractor. The construction of evacuation lines, between the Feni site and the national grid, will be done by the Power Grid Company of Bangladesh Limited (PGCB) as part of its transmission expansion, within the scope of Bank's upcoming lending operation on transmission expansion.

A separate feasibility study has been launched by the client for the Feni site to inform technical, economic and financial feasibility and environmental and social safeguard issues of the solar PV plant. The feasibility study is expected to be completed by June 2017. As the site is prone to seasonal inundation during the monsoons, the flooding risks are being analyzed and mitigation measures being considered. The typical and highest water levels on wet season in the site are being confirmed. The closest meteorological data shows that the highest flooding ever recorded was above five meters above the site level (16.33m above the sea level). The project design will include protection against the risk. The preliminary draft of the feasibility analysis shows that a combination of a dike, elevation structures for the PV panels and water pumping for drainage inside the dike may be required to mitigate the risk of flooding. The dimensioning of these systems and the cost of the different alternatives are being refined by analyzing complete hydrologic data as part of the feasibility study.

**Component 2: Renewable Energy Financing Facility (REFF).** The Project will support the establishment of a dedicated Renewable Energy Financing Facility (REFF) hosted in a financial intermediary (IDCOL). The Facility will primarily have a Lending Window with IDA and SREP resources of US\$82.39 million, including US\$56 million of IDA credit and US\$26.39 million of SREP loan. The Facility will offer necessary financing products, including long-term loan and other suitable products to support a series of sub-projects on renewable energy and associated technical assistance. While the primary focus of technology will be utility-scale solar PV and wind as well as rooftop solar PV, with a target of supporting 200 MW of installed capacity, other renewable energy technologies such as waste-to-energy will also be supported, if and when feasible. In addition, the Facility may also have a Guarantee Window. Considering the capacity limitations of IDCOL in offering credit

enhancement products at this stage, it is proposed that the Bank provides a series of IDA guarantees to sub-projects, amount to a maximum of US\$80 million, to support an initial set of projects to build track record. Once IDCOL's capacity is sufficiently enhanced through learning from IDA guarantees to sub-projects, IDCOL can develop new REFF guarantee products to be offered through REFF Guarantee Window. Until such time, it is proposed that IDCOL will continue to build their capacity through learning from the proposed series of IDA guarantees for the sub-projects. While IDCOL will undertake full due diligence of sub-projects for the REFF Lending product<sup>1</sup>, they may undertake early stage screening or sub-projects and propose the need of guarantees to the task team. The task team will review the proposal and/or undertake further due diligence to assess the need for IDA guarantees to the sub-projects. Depending on market feedback, the IDA and SREP funding allocation between Lending and Guarantee amounts will be finalized. The Facility will address the barrier of affordability and lack of commercial financing by offering concessional credit and, where solicited, guarantee instruments to attract private developers and commercial financiers.

***Utility-scale solar PV and wind.*** According to the SREP Investment Plan, Bangladesh has the potential for about 2,600 MW of ground mounted solar PV, wind and solar rooftop. Given the limited amount of public finance, even after taking into account all development financing options available for Bangladesh, developing renewable energy projects solely through public investment is insufficient to unlock such potential. Recent studies indicate that a number of countries have benefitted from the use independent power producer (IPP) or solar park models that brought long term competitive tariffs and private sector expertise to develop, finance and implement renewable energy projects. For instance, the solar park model, through which public sector provides land, shared infrastructure and evacuation; and private sector finances, builds and operates generation facility, would allow a more effective use of scarce public resource on scaling up grid-connected solar PV in Bangladesh. In this case, public sector part can be supported directly through the Government of Bangladesh using IDA credit. In parallel, alternative options to develop utility-scale solar PV, such as floating solar PV, use of canals or idle land at other facilities (e.g. airport, railways, etc.) will be further explored during project preparation. Wind sub-projects will be considered where resource potential turns out to be feasible, through wind resource assessment to be supported by the proposed Project (Component 3). The Facility will be flexible in supporting sub-projects developed on either public land or private land. The majority of potential pipeline however is expected to be on government-owned land given the significant land scarcity in Bangladesh and the challenges in procuring land due to fragmented ownership of private land. The team will work closely with GoB appointed Transaction Advisor for structuring the competitive auction for solar PV generation on the government-owned lands.

***Rooftop solar PV.*** Rooftop solar PV is critical to scale up renewable energy in a highly land-constrained country like Bangladesh. Development of grid-connected rooftop solar PV under the proposed Project will be focused initially on industrial rooftops, targeting 30 MW of installation capacity in aggregate. There are about 7,000 garment factories in Bangladesh (2015), many of which are larger buildings with extended rooftop and well-suited for rooftop solar. Industrial rooftops are economically more feasible due to relatively higher tariff than residential and commercial consumers. Government and institutional rooftops, such as public universities, will be also candidates as some of them are advanced in preparation. To incentivize the development of rooftop solar PV, the cost and tenor of financing will need to be set in a manner that will make the levelized cost of solar rooftop to slightly lower than the retail price of electricity, which is as high as BDT 9.24/kWh (US¢ 11.8/kWh) at peak for industrial consumers. The Facility will be flexible to support solar rooftop that supplies to the grid once the government adopts the appropriate policy for grid-connected solar rooftop. To minimize transactions costs, the option of aggregators will be explored who would lease rooftop areas from

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<sup>1</sup> In conjunction with the provisions of Operations Manual, to be developed.

building owners and operate rooftop solar PV on aggregated sites. Depending on the need, IDA guarantees may be offered to mitigate any public sector obligations, such as regulatory risk associated with feed-in tariff or payment default on public sector offtake contracts. The need for IDA guarantees will be further explored during the preparation stage.

The Facility will have flexibility to support transactions on a first come first serve basis, between utility-scale solar PV/wind and rooftop solar PV. The Lending Window is envisaged to provide more support to rooftop solar PV, where financing options might be limited to local sources, and potential public sector expenditure such as a small scale pilot of ground-mounted solar PV or shared infrastructure for solar parks, while IDA Guarantees will focus more on mobilizing co-financing from the private sector and other financiers for utility-scale solar PV, and wind if feasible.

**Component 3: Renewable Energy Resource Assessment and Technical Assistance.** This component will support resource assessment to facilitate further scale up of solar and wind power development in Bangladesh. In coordination with other agencies and funding sources, this component will cover data collection, validation, finalization, and publication of resource atlas at the national level which will inform policy makers and potential solar and wind developers. The component will also include support for formulation of an enabling policy and regulatory framework for rooftop solar PV. US\$2.36 million of SREP grant is proposed to be allocated to this activity implemented by SREDA.

The resource assessment support under this component will include installation of dedicated solar measuring stations in different climate zones to collect sufficient data to generate a high-accuracy atlas at the national level complemented by the ground measurement at Feni site. The United States Agency for International Development (USAID) supported wind masts at nine locations throughout the country have been collecting wind data. This initiative will complete in late 2017. Depending on the needs, additional wind measurement can be supported to cover the national wind atlas. Bank-executed ASTAE-ESMAP support will be complementing the validation and finalization exercise for the national level solar and wind atlas. The outputs will be freely and widely accessible following open data principles.

Furthermore, technical assistance and capacity building will be provided to relevant government agencies by this component to maximize the benefit of the measuring equipment procured and the finalized resource assessment. Activities will include maintaining and further updating resource assessment data; and integrating geospatial information and tools into national planning of renewable energy development. This component is also expected to support an assessment of rooftop potential using satellite imagery technologies.

**Component 3: Waste-to-Energy Pilot.** This component will support feasibility assessment and small scale pilots of municipal waste-to-energy applications. US\$0.5 million of SREP grant will be used to finance the pilot in collaboration with city corporations that manage municipal waste collection. One of the potential pipeline is the Rajshahi City Corporation for an installation of a biogas plant to utilize slaughterhouse waste. The City Corporation will provide the land required (subject to environment and social assessment as per Bank requirements) and GIZ will provide technical support for the small-scale pilot. Pilots are expected to inform technical and commercial feasibility of waste-to-energy applications and to help establish waste collection practices and government schemes to support waste-to-energy in municipalities. This component is expected to be implemented by SREDA.

**Institutional Arrangements.** SREDA is responsible for the coordination of Bangladesh's SREP Program. As the institution established by the GoB to promote renewable energy (and energy efficiency) in Bangladesh, SREDA has the functional authority needed to coordinate the activities and

ensure compliance with monitoring and evaluation requirements of development partners. SREDA will be the implementing agency for the resource assessment and waste-to-energy components of the Project.

The EGCB will be the implementing agency of Component 1. To develop the Feni site for a renewable energy park, the EGCB will develop common infrastructure for the entire land, including civil works, risk mitigating measures and fencing, and implement the phase 1 of solar PV development, which will be 50 MW solar PV generation facility through the EPC and O&M contract. Developing common infrastructure upfront and demonstrating 50 MW scale at the site will help attract private sector developers to bid for the solar park by mitigating uncertainties and risks and reducing upfront cost burden. The Ministry of Finance will be the borrower of IDA credit that will be on-lent to the EGCB to finance the development as public investment.

The Renewable Energy Financing Facility (REFF) is proposed to be hosted and operated by IDCOL, a state-owned financial institution that has demonstrated a strong track record in managing a similar financing facility for the off-grid renewable energy program pooling resources from the World Bank and other development partners. IDCOL would act as the Financial Intermediary of IDA credits through Lending window following World Bank processes and procedures. For the initial set of projects, IDA guarantees would be directly offered to private sector. IDCOL will be responsible for day-to-day management of the Facility following Bank's safeguards policies and fiduciary guidelines and procedures. For the IDA guarantees, IDCOL will provide early screening of projects and propose the need for guarantees, which will be used as a basis for the WB task team to undertake further due diligence. It will also be responsible for monitoring of the Component 2 activities and results, and submission of quarterly/semi-annual reports to SREDA.

The proposed Project will take advantage of the New Procurement Framework of the Bank, which offers flexible and fit-for-purpose procurement arrangements. A simplified project procurement strategy for development (PPSD) is under preparation which will spell out the appropriate procurement strategy for this Project.

The proposed Feni site under component 1 is low-lying and it goes under water for considerable time of the year. There is no settlement there, occasional cattle grazing by nearby villagers are the only economic activity on the ground. Part of the land was given to local people by the government as part of a "land for the poor and homeless" program a few years ago. The land was found to be un-habitable and the people who received land live in nearby villages and are no longer homeless. Sounds/vibration and visual impacts are the main public concerns of wind turbines. For Component 1, a detailed Environment and Social Impact Assessment (ESIA) is currently being carried out by EGCB for the Feni site. An ESIA and a RAP will be prepared, which would include compensation measures for land along with other mitigation measures for all identified impacts. There are no indigenous people identified in the project area according to preliminary screening.

The location and degree of impact of potential sub-projects in the public sector (shared infrastructure within the solar park, transmission evacuation, resource assessment, and waste-to-energy) are not yet known. Therefore a framework approach is adopted for managing environment and social safeguard in accordance with the Bank Safeguards Policy 4.01. An Environment and Social Policies and Procedures (ESPP) is being developed jointly by SREDA and IDCOL in accordance with Bank Safeguards Policies. The ESPP will include a Tribal People's Framework (as it is not clear at this stage whether or not the project will work in areas where tribal people live) and a Resettlement Policy Framework (RPF). The ESPP will also assess gender and inclusion aspects and provide guidance on actions to incorporate these aspects within the project design and service delivery.

For potential sub-projects under the REFF (Component 2) that are designed, owned, constructed, and/or operated by a Private Entity, World Bank Group's Operational Policy OP 4.03 (Performance Standards for Private Sector Activities) will be applied. The ESPP mentioned above will be a guiding document for preparing necessary safeguard instruments for the sub-projects to be implemented by private entity. The instrument will provide the guideline to review of the Private Entity's environmental and social management system ("ESMS") and environmental and social impact assessment and any related documentation, when the subprojects will be identified during the implementation stage.

The team and GoB will work together to ensure that, in all cases, land acquisition is in compliance with the World Bank safeguards requirements, and an environmental and social management plan (ESMP) for the public investments in Feni site and an Environment and Social Policies and Procedures (ESPP) for public and private sub-projects that are not yet identified will be developed as part of project preparation consistent with the requirements of the World Bank Group. The ESPP will include a Resettlement Policy Framework (RPF) and a Tribal Peoples Framework (TPF), in case the project activities are carried out in areas where tribal people live. The ESPP will assess gender and inclusion aspects and provide guidance on actions to incorporate these aspects within the project design and service delivery. Where sites are already identified, social screening will be conducted and where required, site-specific resettlement action plans will be prepared.

## **II. SAFEGUARDS**

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

The first sub-project to be supported by the Project is expected to be at a site in Feni owned by the Electricity Generation Company of Bangladesh (EGCB). The project site is located at Purbo Barodhuli mauza in Char Chandia union of Sonagazi Upazila under Feni District. The proposed project is situated about 6.5 km south-west of the Sonagazi Upazila and beside the left bank of the Small Feni River. In close vicinity of the Project site, habitation is only present in the western and northern parts and the nearest habitations are Purbo Barodhuli and Ashrayan/Adarsha villages of Purbo Barodhuli Union. The site is almost flat; land is inundated for 4-5 months of the year at various depths. There is no settlement there, occasional cattle grazing during dry season by nearby villagers is the only economic activity on the ground. Regarding impact assessment, it is anticipated renewable energy contributes to reduced environmental impacts compared to energy generated from fossil fuels. However, there might still be environmental impacts associated with renewable energy generation. Sounds/vibration and visual impacts are the main public concerns of wind turbines. Also, wind turbines might have some impacts on birds and bats. Land alteration may also be an issue when large utility scale solar or wind farms are developed and then these facilities are located on the areas.

***Feni:*** As part of the feasibility study, a detailed Environment and Social Impact Assessment (ESIA) is currently being carried out by EGCB for the Feni site flowing the requirements of OP 4.01 and OP4.12. An ESIA report and a Resettlement Action Plan (RAP) will be prepared, which would include compensation measures for land along with other mitigation measures for all identified impacts. There are no indigenous people identified in the project area according to the preliminary screening. The site is not designated as protected area or a Ramsar site, nor the site is close to those areas. There are no endangered species identified yet at the site.

***Potential sub-projects under public investment:*** An Environmental and Social Policies and

Procedures (ESPP) will be developed in accordance with Bank Safeguard Policies by IDCOL and SREDA. This ESPP will be applicable for public investment (similar to Feni), EPC pilot or shared infrastructure within the solar park where no land has been identified as yet, as well as for a waste-to-energy pilot. The ESPP will include a Tribal People’s Framework (as it is not clear at this stage whether or not the project will work in areas where tribal people live) and a Resettlement Policy Framework (RPF).

**Activities designed, owned, constructed, and/or operated by a Private Entity:** An Environmental and Social Management Policies and Procedures (ESMP) will be developed and maintained by SREDA and IDCOL, in accordance with OP4.03 – Performance Standards for Private Sector Activities – for sub-projects under the Renewable Energy Financing Facility (REFF) that are designed, owned, constructed, and/or operated by a Private Entity. Environmental and Social Risks and Impacts (as required by OP/BP4.03) will be established during preparation of subprojects and reviewed by the Bank.

**Disclosure:** All safeguards instruments described above will be prepared and disclosed by appraisal.

**B. Borrowers Institutional Capacity for Safeguard Policies**

Infrastructure Development Company Limited (IDCOL) where the Renewable Energy Financing Facility (REFF) is expected to be hosted has been implementing Bank-financed projects for years and has adequate knowledge of Bank safeguards policies. IDCOL has two full-time environment and social specialist, both of which were trained adequately on Bank safeguards policies. IDCOL has demonstrated its capacity to ensure compliance of Bank safeguards policies in sub-projects through its implementation of Bank-financed projects in renewable energy. EGCB has also implemented Bank-financed project Siddhirganj Power Plant and experience in Bank safeguard policy. It has an environment cell staffed by one Deputy General Manager (DGM), one Manager. Additional capacity building measures would be necessary for preparation of appropriate documents and maintaining compliance with OP4.03 which is new for the client. Such capacity building needs and consequent plans will be identified and implemented during preparation.

Sustainable and Renewable Energy Development Agency (SREDA) will be responsible for implementing the resource assessment component and the waste-to-energy pilot. Being a relatively new agency, SREDA is yet to acquire full knowledge of Bank safeguards policies. The capacity gap will be assessed during project preparation and appropriate steps will be taken to address the capacity gap.

**C. Environmental and Social Safeguards Specialists on the Team**

Iqbal Ahmed( GEN06 )

Sabah Moyeen( GSU06 )

**D. POLICIES THAT MIGHT APPLY**

| Safeguard Policies                  | Triggered ? | Explanation (Optional)                                                                                                                  |
|-------------------------------------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Environmental Assessment OP/BP 4.01 | Yes         | Given the financial intermediation proposed for majority of the investment, the environmental assessment (EA) category will be FI-1 and |

|                                                                     |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------------------------------------------------|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                     |     | OP4.01 is triggered. The expected environmental and social impacts can be mitigated through implementation of appropriate environmental code of practice and environmental management plan, social management plans. The Environmental, Health, and Safety (EHS) Guidelines of the World Bank Group is also applicable to the Project.                                                                                                                                                                                                                                                                                                                                                                               |
| OP/BP 4.03 – WB Performance Standards for Private Sector Activities | Yes | Performance Standards for Private Sector Activities will be applied for sub-projects under the Renewable Energy Financing Facility (REFF) that are designed, owned, constructed, and/or operated by a Private Entity. The project will develop and maintain an Environmental and Social Policies and Procedures (ESPP), covering all levels of the project – that should incorporate, depending on the nature of the sub-projects, key elements of the ESPP described in Performance Standard 1 on Assessment and Management of Environmental and Social Risks and Impacts (as required by OP/BP4.03). ESPP of IDCOL/SREDA will be established and reviewed by the Bank during project preparation as per OP/BP4.03. |
| Natural Habitats OP/BP 4.04                                         | Yes | As a precautionary approach the policy is triggered though it is highly unlikely that any natural habitat formed largely by native plant and animal species will be affected or modified due to the Project activities                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Forests OP/BP 4.36                                                  | No  | The Project is expected have no impacts on the management, protection, or utilization of natural forests or plantations. As such, the policy has not been triggered.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Pest Management OP 4.09                                             | No  | The Project is not expected to finance any synthetic chemical pesticides activities and the policy has not been triggered.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Physical Cultural Resources OP/BP 4.11                              | No  | Since the activity is limited to solar, wind and a waste-to-energy pilot, no impact on landscape with archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance is expected.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Indigenous Peoples OP/BP 4.10                                       | Yes | It is not known at this stage whether project activities will be carried out in areas where tribal people live. As a precaution OP 4.10 will be triggered upfront and Tribal People’s Framework will be prepared. Site-specific Tribal People’s Plans will be prepared for sites where social screening shows tribal people are                                                                                                                                                                                                                                                                                                                                                                                      |

|                                                |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|------------------------------------------------|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                |     | present at the location.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Involuntary Resettlement OP/BP 4.12            | Yes | The policy has been triggered for the project since it is anticipated that small scale impacts may be identified in the implementation stage. An Abbreviated Resettlement Action Plan (ARAP) will be prepared and disclosed for the sites which have been identified. A Resettlement Policy Framework (RPF) will be included in the ESMF to address future project activities where sites have not been pre-identified. .<br>The ESMF will include gender and inclusion aspects. However OP4.03 – Performance Standards for Private Sector Activities will be applied for sub-projects under the Renewable Energy Financing Facility (REFF) that are designed, owned, constructed, and/or operated by a Private Entity. |
| Safety of Dams OP/BP 4.37                      | No  | The Project will not finance any dams, nor do project activities depend on any existing dams.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Projects on International Waterways OP/BP 7.50 | No  | The Project activities will not take place along international waterways which are shared with Riparian countries.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Projects in Disputed Areas OP/BP 7.60          | No  | There are no disputed areas in the Project area of influence.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

## E. SAFEGUARD PREPARATION PLAN

### 1. Tentative target date for preparing the Appraisal Stage ISDS:

30-Aug-2017

### 2. Time frame for launching and completing the safeguard-related studies that may be needed. The specific studies and their timing should be specified in the Appraisal-stage ISDS.

- ESIA and RAP to be prepared by EGCB and disclosed by August 20, 2017
- ESPP to be prepared by IDCOL and SREDA and disclosed by August 20, 2017

## III. Contact point

### World Bank

Contact: Zubair K.M. Sadeque

Title: Senior Energy Specialist

Contact: Joonkyung Seong

Title: Energy Specialist

### Borrower/Client/Recipient

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Title: Additional Secretary  
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### **Implementing Agencies**

Name: Infrastructure Development Company Limited (IDCOL)  
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Name: Sustainable and Renewable Energy Development Authority (SREDA)  
Contact: Siddique Zobair  
Title: Member  
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### **IV. For more information contact:**

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### **V. Approval**

|                      |                                               |                     |
|----------------------|-----------------------------------------------|---------------------|
| Task Team Leader(s): | Name: Zubair K.M. Sadeque, Joonkyung Seong    |                     |
| <i>Approved By:</i>  |                                               |                     |
| Safeguards Advisor:  | Name: Maged Mahmoud Hamed                     | Date: June 27, 2017 |
| Practice Manager:    | Name: Jari Vayrynen (Acting)                  | Date: July 27, 2017 |
| Country Director:    | Name: Rajashree S. Paralkar (Country Manager) | Date: July 30, 2017 |

<sup>1</sup> Reminder: The Bank's Disclosure Policy requires that safeguard-related documents be disclosed before appraisal (i) at the InfoShop and (ii) in country, at publicly accessible locations and in a form and language that are accessible to potentially affected persons.