



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

Appraisal Stage | Date Prepared/Updated: 10-Oct-2018 | Report No: PIDISDSA21873



BASIC INFORMATION

A. Basic Project Data

| | | | |
|------------------------------|---------------------------------|---|----------------------------|
| Country | Project ID | Project Name | Parent Project ID (if any) |
| Bangladesh | P161869 | Bangladesh Scaling-up Renewable Energy Project | |
| Region | Estimated Appraisal Date | Estimated Board Date | Practice Area (Lead) |
| SOUTH ASIA | 12-Oct-2018 | 30-Nov-2018 | Energy & Extractives |
| Financing Instrument | Borrower(s) | Implementing Agency | |
| Investment Project Financing | People's Republic of Bangladesh | Infrastructure Development Company Limited (IDCOL), Sustainable and Renewable Energy Development Authority (SREDA), Electricity Generation Company of Bangladesh (EGCB) | |

Proposed Development Objective(s)

The Project Development Objective is to increase installed generation capacity of, and mobilize financing for, renewable energy in Bangladesh.

Components

- Feni Utility-scale Solar PV
- Renewable Energy Financing Facility (REFF)
- Technical Assistance

PROJECT FINANCING DATA (US\$, Millions)



SUMMARY

| | |
|---------------------------|--------|
| Total Project Cost | 413.72 |
| Total Financing | 413.72 |
| of which IBRD/IDA | 156.00 |
| Financing Gap | 0.00 |

DETAILS

World Bank Group Financing

| | |
|---|--------|
| International Development Association (IDA) | 156.00 |
| IDA Credit | 156.00 |

Non-World Bank Group Financing

| | |
|---|--------|
| Counterpart Funding | 49.47 |
| Borrower | 16.47 |
| Borrowing Country's Fin. Intermediary/ies | 33.00 |
| Trust Funds | 29.25 |
| Strategic Climate Fund Credit | 26.38 |
| Strategic Climate Fund Grant | 2.87 |
| Commercial Financing | 120.00 |
| Unguaranteed Commercial Financing | 120.00 |
| Other Sources | 59.00 |
| Bilateral Agencies (unidentified) | 59.00 |

Environmental Assessment Category

B-Partial Assessment



Decision

The review did not authorize the team to appraise and negotiate

Other Decision (as needed)

B. Introduction and Context

Country Context

1. Bangladesh is a low-lying country with the highest population density in the world among large countries having population of over 10 million, and high vulnerability to the risk of climate change and natural disasters. About 35 percent of the population is in urban and 65 percent in rural areas. Its per capita income was US\$1,480 in 2017, well above the lower middle-income country category threshold which it crossed in Fiscal Year 2014. The poverty incidence has declined from 44.2 percent in 1991 to 13.8 percent in 2016 (latest available poverty data). Bangladesh's performance against most of the Millennium Development Goal indicators is impressive against the South Asia Region average. Driven by manufacturing and services, the Gross Domestic Product (GDP) grew well above the average for developing countries in recent years, averaging 6.5 percent since 2010.

2. The recent sustained growth has created higher demand for electricity, transport, and telecommunication services. This 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 in countries like China, Thailand, and Vietnam. Bangladesh was ranked 106th in the 2016-17 Global Competitiveness Index, out of 128 countries, and 110th on quality of electricity supply. In the Doing Business Indicator (2017), Bangladesh was ranked 176 out of 190 economies and in the indicator of 'Getting Electricity', it was ranked the fourth lowest out of 190 economies. Infrastructure bottlenecks are consequently becoming increasingly critical constraints for growth in Bangladesh.¹

Sectoral and Institutional Context

3. The power sector in Bangladesh has grown rapidly over the last decade. Maximum generation increased from a little over 4,000 Mega-Watt (MW) in 2009 to more than 9,400 MW in 2017. About 66

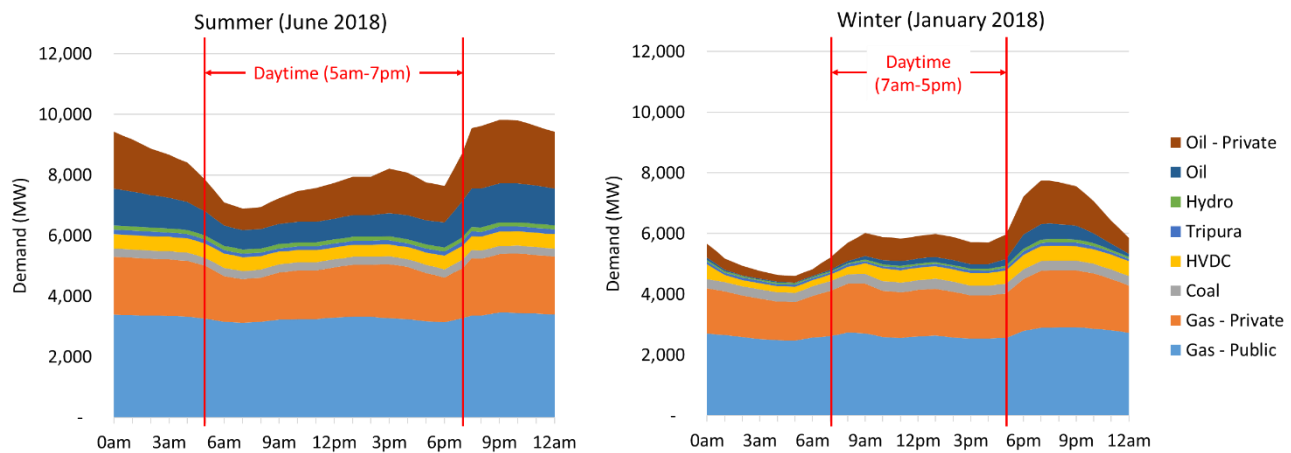
¹ Additional country context information can be found in the World Bank Group Country Partnership Framework (CPF) for FY2016-2020.



percent of electricity generation is based on natural gas. Rest of the generation is from liquid fuel, coal and hydropower. Annual per capita electricity consumption in Bangladesh is relatively low at 470 kilo-Watt-hours (kWh), compared to 1,100 kWh for India, 4,300 kWh for China, and 12,000 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. Bangladesh has also been successful in increasing access to electricity. A decade ago, less than 50 percent of Bangladeshis had access to electricity; today, about 80 percent have access to grid electricity. Furthermore, Bangladesh has implemented one of the most successful off-grid access programs in the world. Managed by the Infrastructure Development Company Limited (IDCOL) in partnership with non-governmental organizations, the solar home systems program has reached more than 4 million households and businesses in remote rural areas of Bangladesh. It is expected that Bangladesh will achieve universal access to electricity much ahead of the Sustainable Energy for All (SE4ALL) 2030 target.

4. Considerable challenges, however, remain for ensuring that people connected to the grid get uninterrupted electricity supply. Supply still lags peak demand resulting in demand curtailment (load shedding) particularly in the rural areas during the peak summer months. Bangladesh’s reserves of natural gas are estimated to deplete from 2020 if no new gas reserves are discovered or if technology does not allow a higher rate of extraction. Consequently, the share of coal-based generation is expected to grow in the future, based on the Government’s energy sector master plan. Shortage of gas and growing electricity demand has also resulted in an increasing reliance on expensive, imported fuel oil. The share of oil-fired electricity increased from 5 to 22 percent between 2009 and 2017. While the peak demand occurs during the evening hours due to lighting load, there is a significant use (500-2,500 MW) of expensive liquid fuel-run generation during daytime (Figure 1), which can be cost-effectively replaced by renewable energy. To resolve some of the challenges, The Government is taking steps to incentivize off-shore exploration of gas, import liquefied natural gas, increase efficiency of existing power plants, and import more electricity.

Figure 1. Average Daily Load Curve for Summer and Winter 2018





5. Bangladesh is yet to achieve its potential for renewable energy for electricity generation. The total installed renewable energy generation capacity is currently only 461 MW and the share of renewable energy in grid supply 1.5 percent. Most of the renewable energy generation is coming from a single plant, the 230 MW Kaptai Hydropower Project developed in the 1960s. The remaining is mostly from off-grid solar homes in rural areas (175 MW), two solar PV plants (31 MW), some (15 MW) from urban rooftop solar for captive consumption, and the rest from biogas and biomass based captive plants. Most of the 15 MW in solar rooftop photovoltaics (PV) systems have been installed in the main cities. This is mainly because of a requirement for a percentage of lighting loads to come from solar as a condition for a new grid connection. Given this motivation, there was often inadequate quality control and monitoring of the installations. As a result, most of this capacity produces little or no energy. Also, even though over 13,000 tons of solid waste is produced daily in Bangladesh, there is no waste-to-energy facility in operation.

6. The potential for increased renewable energy generation in Bangladesh is significant. Resource assessments included in the Bangladesh Climate Investment Funds Scaling Up Renewable Energy Program (CIF-SREP) investment plan indicate that Bangladesh could realize an additional 3,666 MW of renewable energy capacity.² The CIF-SREP investment plan's estimate of total potential for ground-mounted solar and wind and solar rooftop is about 2,600 MW.

7. To exploit this potential, the Government of Bangladesh has put in place several plans and targets for renewable energy development. The National Renewable Energy Policy of 2008 called for 2,000 MW of capacity to be added by 2020. In 2016, the Government updated the year-wise plan for renewable energy development from 2017 to 2021. The Renewable Energy Development Targets call for 2,458 MW of renewable energy capacity to be newly installed by 2021. Most of the new capacity is planned from solar (1,270 MW, or 52 percent) and wind (1,150 MW, or 47 percent), and there are also targets for biomass (30 MW), biogas (2 MW) and small hydro (6 MW). Similarly, the Power System Master Plan 2016 sets goals for fuel diversification with an emphasis on increasing the role of renewable energy in the power generation mix. Finally, Bangladesh has developed and submitted its Nationally Determined Contribution (NDC) to the Paris Climate Agreement. The NDC for the power sectors sets a somewhat more conservative, but still ambitious, objective of adding 1,000 MW of solar PV and 400 MW of wind power generation by 2030. Regardless of the variation of the specific targets in these plans, they can all be considered ambitious given the limited progress in renewable energy deployment to date. To further promote renewable energy and energy efficiency, the Sustainable and Renewable Energy Development Agency (SREDA) was established in 2014.

8. Despite the Government commitment, progress on increasing the share of renewable energy has been slow. There are number of reasons for this, including:

- *Need for project implementation experience and strengthening institutional capacity:* There have been no utility scale wind projects, and only two small to medium size solar projects, implemented in Bangladesh to date³, and the rooftop PV market is nascent. There is therefore very limited

² Including solar parks, solar rooftop, solar home systems and irrigation, wind farms, biomass, biogas, waste to energy, small hydropower plants and mini-grids. Considering the prevailing land scarcity in Bangladesh, this estimate excludes arable land needed for agriculture.

³ To date the largest solar PV project is 28 MW in Teknaf in the Cox Bazar region which became operational in September 2018.



relevant project implementation experience and information in the country on various aspects related to the technologies, risks, costs, and grid integration of renewables. Consequently, the knowledge base and institutional capacities of the relevant Government agencies, as well as of public utilities and financial institutions, are low. In addition, the lack of experience and information leads to limited institutional capacity in negotiating terms and tariffs of power purchase agreements with independent power producers (IPPs). So far, all renewable energy IPPs' projects have been awarded on an unsolicited basis, so PPA tariffs have been determined through bilateral negotiations with private sector developers, who have more information.⁴ No transparent competitive tenders have been organized for renewable energy projects. Finally, the standard Power Purchase Agreement used for renewable energy projects requires further refinements.⁵ Such deficiencies are weakening the Government's ability to implement its stated policy goals and to move the market towards sustainable, private sector driven models.

- *Financing Market Challenges:* In Bangladesh there is a lack of deep domestic financing market to provide long term financing to projects, lack of due diligence capacity and lack of a functioning syndication market. Commercial banks support the infrastructure financing market in Bangladesh mostly through trade financing and balance sheet financing to corporates. Project financing market is still nascent with tenors usually only up to around seven years. Other key issues include lack of experience and knowledge of utility scale renewable energy projects, low risk appetite, and very limited foreign currency financing capacity. Institutional investor base is small and capital markets are not sufficiently developed to support infrastructure financing at this stage.
- *Land constraint:* Land is the major challenge for developing utility-scale RE in Bangladesh. Utility scale solar or wind require large amount of land (e.g., 1 MW of solar will require 3.5-4 acres of land given the solar irradiance of Bangladesh). Being a densely populated country, land has alternative uses including agriculture, residential and commercial/industrial uses. To ensure food security, the Government has adopted a policy not to use agricultural land for other purposes, limiting the availability of land for utility-scale solar or wind. The land most suitable for renewable energy is government-owned land on river islands and in low-lying areas with seasonal flooding. This makes the land unsuitable for habitation or other productive uses. Such challenging conditions pose additional risks to development of renewable energy.
- *Project Development Challenges:* These barriers include insufficient data on resource availability, lack of technical studies, and inadequate preparation and due diligence of projects. The currently available solar and wind resource datasets are from satellite-based models. Ground-based

The project was implemented by a local developer in collaboration with an international EPC partner. The second, smaller project has 3 MW capacity and was constructed through a public-private partnership on a build-own-operate basis on eight acres of land allocated by the Bangladesh Power Development Board (BPDB).

⁴ As a single buyer, BPDB procures electricity supply from independent power producers (IPPs), rental power plants, corporatized generation companies and other publicly-owned power plants based on tariff rates negotiated in power purchase agreements (PPAs). Tariff rates are negotiated bilaterally between two parties based on financial analysis and projections, which may be affected by asymmetric information.

⁵ As part of the Project preparation, the Bank has provided technical support to BPDB and EGCB in reviewing the template of power purchase agreement and implementation agreement.



measurements have been done on a few sites, allowing limited information for project developers. Few comprehensive feasibility studies have been completed, especially for projects on public land sites. There is also lack of local experience on development of bankable projects and due diligence on utility scale projects, including among private sector project developers and potential commercial financiers.

9. The severity of these barriers is demonstrated by the lack of progress on the unsolicited proposals for grid-tied solar and wind received by the Power Division over the past few years. The project sponsors include a mix of domestic and international developers, many with relatively limited previous experience. The proposed projects range from 5MW to 200MW, with most below 40MW. All but one of the unsolicited proposals are proposed to be implemented on private land, which the developers have difficulty to fully secure. Power Purchase Agreements were signed for about 540 MW of solar, and Letter of Intent issued for another about 480 MW of solar. In addition, about 270 MW of wind projects have been submitted by private developers, but a Power Purchase Agreement has been issued for only one 60MW wind project. Tariff offered ranged from US\$ 11.95/kWh to US\$ 18.99/kWh for solar and US\$ 12/kWh for wind. However, only one of these projects has progressed to financial closure or implementation due to the reasons above. Given that some the tariffs offered are relatively high compared to recent international experience, some of the Letters of Intent may not get converted into Power Purchase Agreements. The signed Power Purchase Agreements have an expiration clause, potentially requiring some of them to be renegotiated or cancelled; to date two PPAs have expired.

10. The Project complements several other World Bank Group operations that enhance the country's enabling environment for a higher penetration of renewable energy and increase power system capacity to integrate variable renewable energy. They include IDA investments in gas power generation, strengthening and optimization of power dispatch, strengthening and expansion of transmission and distribution, and rural access to renewable energy. Related World Bank technical assistance has included analysis of options to increase power generation and integration of renewables. Building on these operations, together with resources and efforts of the International Finance Corporation (IFC) in the renewable energy sector, the proposed Project significantly strengthens the World Bank Group impact in scaling up renewable energy and expanding opportunities for the private sector in Bangladesh. The Project also complements and has been coordinated with the efforts of other development partners, notably those of the United States Agency for International Development (USAID), United Nations Development Program (UNDP), Asian Development Bank and KfW related to market and feasibility assessments and rooftop solar PV.⁶

⁶ The USAID has supported ground-based wind resource measurement at nine sites and UNDP is expected to support ground-based solar resource measurement at different locations. Asian Development Bank is supporting preliminary assessment of potential sites for renewable energy parks as part of the technical assistance package with the Power Cell. KfW has conducted an assessment on rooftop PV potential in Bangladesh and is currently preparing a project with IDCOL to provide financing to rooftop solar PV, as well as related technical assistance.



C. Proposed Development Objective(s)

PDO

11. The Project Development Objective is to increase installed generation capacity of, and mobilize financing for, renewable energy in Bangladesh.

PDO-Level Results Indicators

12. The PDO level results indicators are: (1) Generation capacity of energy constructed or rehabilitated (MW); and (2) Private capital mobilized (US\$).

D. Project Description

Project Components

13. The PDO will be met through a combination of measures that address the barriers and gaps and engage both the public and private sectors. The proposed Project will increase installed capacity of renewables through piloting and gradually scaling up investments in key market segments. It will mobilize financing through provision of dedicated financing to the private sector, designed to leverage other sources of capital. These outcomes are enabled through technical assistance and institutional capacity building, notably for identification and development of public land sites for competitive tenders to bring in the private sector.

14. The design of the Project therefore considers the strategy of the Government to develop a pilot through a public power generation utility in parallel to development of competitive tenders on public land for private sector IPPs. It also considers the state of the renewable energy project and financing market in Bangladesh, the need to strengthen policy and procedures, and the gaps and asymmetries in information and experience. It furthermore builds on lessons learned from other countries and operations. Accordingly, the Project consists of three components as described below.

15. **Component 1: Feni Utility-Scale Solar PV (US\$89.85 million total investment cost, including US\$74.15 million IDA credit and US\$15.70 million counterpart funding from Government of Bangladesh and EGCB).** Component 1 supports a first-of a kind 50 MW⁷ pilot phase of a renewable energy park developed by the Electricity Generation Company of Bangladesh (EGCB). The pilot is implemented in the Feni district on a site acquired by EGCB for renewable energy development. The Component will be implemented by EGCB on about 170 acres of a larger 999.65-acre land area it has acquired. Once fully developed, the EGCB Feni park can accommodate up to 200 MW of renewable energy.

16. The Feni pilot project would be the first large-scale grid-tied solar PV project in Bangladesh and a significant milestone in scaling up solar PV in Bangladesh. The pilot allows the country to gain experience

⁷ Generation capacity of Component 1 is rated on AC basis.



in renewable energy project procurement, risk mitigation, implementation, operation and maintenance. It will demonstrate to the market the viability of a solar PV plant on a difficult low-lying land area with annual seasonal flooding. This provides both the Government and private sector project developers invaluable experience and information as most sites under consideration for developing utility-scale solar PV are expected to have similar characteristics.⁸ The pilot will also provide the market a transparent cost breakdown and benchmark for large-scale solar PV, including on the flood mitigation infrastructure specific to the country's geography, currently lacking in Bangladesh. The investment will furthermore test several other parameters for competitive tendering of further capacity. They include technical specifications, legal agreements, effectiveness of the tender procedure, solutions to implementation, operation and maintenance (O&M) challenges, demonstration of financial viability, and the regulatory framework. It provides the off-taker, BPDB, and the system operator, Power Grid Company of Bangladesh (PGCB), their first experience in implementing a power purchase agreement for solar PV at scale and integrating a large scale solar project to the national power system. Finally, the reduced asymmetry of information and experience will enhance Government ability to engage with the private sector going forward. Component 1 is therefore addressing the barriers related to lack of implementation experience and institutional capacities. Furthermore, the demonstration and learning effects of the pilot will help de-risk further investment in similar sites and encourage private sector participation, contributing to the expected impacts and outcomes of Components 2 and 3.

17. The Project will finance the 50 MW pilot solar PV generation plant and the required infrastructure. The infrastructure includes evacuation lines from the site to the nearest grid sub-station, pooling sub-stations, civil engineering structures for mitigating flooding risks, and roads within the project site. 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, including the power evacuation infrastructure. The O&M arrangement will cover the first three years after commissioning; the cost of the O&M will be covered by EGCB. Besides the EPC contract, Component 1 will finance the costs of an owner's engineer, safeguards consultants, and international technical and procurement experts to be included in the bid evaluation committee.

18. A feasibility study has been completed by the Power Cell and EGCB with assistance from international consultants for the Feni site to inform technical, economic and financial feasibility and environmental and social safeguard issues of the solar PV plant. As the site seasonally inundates during the monsoons⁹, the flooding risks and mitigation measures were carefully analyzed. The project design will include protection against the flooding through a combination of a dike, elevation structures for the PV panels, and water pumping for drainage inside the dike.¹⁰ Based on available satellite irradiation data, the site is one of the promising available sites in Bangladesh. To complement the feasibility study, ground-

⁸ Given the high population density and the Government policy of not using agriculture land for any other purpose, low-lying uninhabitable lands with seasonal flooding risks can be considered potential sites for solar PV.

⁹ Meteorological data shows that the highest flooding ever recorded was over five meters above the site level (16.33m above the sea level)

¹⁰ The feasibility study also assessed options for establishing fisheries within the Feni site to promote economic activity in the Feni district. EGCB has yet to decide whether and how the fisheries would be implemented so it is not included in the scope of the proposed Project.



based solar and wind resource assessment at the site commenced in June 2017.¹¹ The ground measurement data is expected to be made available in the EPC procurement process to help bidders optimize the technical specifications of the solar PV systems offered. The results of wind resource assessment will inform the viability of wind generation at the site.

19. **Component 2: Renewable Energy Financing Facility (REFF) (US\$108.23 million, including US\$81.85 million IDA credit and US\$26.38 million CIF-SREP loan; US\$212 million of counterpart funding to be leveraged).** Component 2 establishes a dedicated Renewable Energy Financing Facility (REFF), hosted and managed by IDCOL, to provide financing to private sector projects. The Facility will channel IDA and concessional CIF-SREP resources of US\$108.23 million, including US\$81.85 million IDA credit and US\$26.38 million CIF-SREP loan.¹² It will provide financing for both utility scale renewable energy and rooftop solar PV sub-projects.

20. The REFF provides financing to private sector developers of competitively tendered utility scale projects on public land sites, notably those identified and developed under Component 3. In addition, recognizing the high land scarcity in Bangladesh, the component supports opening and scaling-up the rooftop solar PV market, building on the recent experience in India and other countries. In both segments, the Facility supports private sector first movers to create markets and bring in other financiers. It will offer long term financing to private sector renewable projects, currently not readily available in the Bangladesh financing market. The REFF financing will leverage domestic and international private developers and commercial financiers; in case the REFF funding is evenly deployed to utility-scale renewable energy and rooftop solar PV, it is expected to leverage US\$212 million from other sources of financing.¹³ The co-financing of sub-project investments will provide commercial financiers an opportunity to understand and reduce their risks, and gain experience in the due diligence and financing of such sub-projects. The Project will also build the capacity of IDCOL as a development finance institution, and its ability to leverage commercial financing. These activities include development of innovative financing products that IDCOL could offer to the market. Other activities include promotion of the rooftop PV market and strengthening IDCOL's technical due diligence capacity for both utility scale and rooftop PV, benefiting the private sector project sponsors and commercial financiers as well.

21. Through the above elements, therefore, Component 2 is addressing barriers related to both the under-developed renewable energy financing market as well as institutional capacity and project development challenges. It will benefit from the implementation experience and lessons learned under Component 1, and is directly linked to Component 3 as REFF financing will be offered to the bidders participating in the competitive tenders on public land, supported under Component 3.

22. **REFF Technical Scope.** IDCOL will function as a financial intermediary, carrying out due diligence of sub-projects, approving sub-loans, and taking credit risk, as further specified in the Operations Manual.

¹¹ As a separate Bank-executed activity supported by the Asia Sustainable and Alternative Energy Program (ASTAE) and the Energy Sector Management Assistance Program (ESMAP)

¹² The CIF-SREP funding for the Project was endorsed by the CIF-SREP sub-committee on August 25, 2017.

¹³ After the Project closing, IDCOL may utilize the REFF sub-loan reflows to finance further RE projects, thus further increasing the leveraging impact of the Project.



The primary technology focus of REFF will be utility-scale solar PV, wind and rooftop solar PV.¹⁴ Other renewable energy technologies such as waste-to-energy can also be supported, if found feasible. The Facility will have flexibility to support transactions on a first come first serve basis among the eligible technologies. Indicatively, the Facility can support a total of 260 MW of installed capacity. The installed capacity target will be adjusted during implementation, reflecting market uptake from the two targeted market segments.

23. For utility-scale solar PV and wind, the REFF will focus on providing debt financing to private sector developers that participate in competitive auctions on government-owned land, including those identified under Component 3. Unsolicited proposals from private sector developers will be considered on an exceptional basis, subject to further detailed due diligence. Wind sub-projects will be considered where the wind resource potential has been demonstrated, including through any site-specific wind resource assessments supported by Component 3. The Facility will support grid-connected utility-scale solar PV and wind sub-projects for an initial target of 150 MW at different locations.¹⁵

24. For rooftop solar PV, the proposed Project will initially be focused on industrial rooftops, targeting 110 MW of installed capacity in aggregate. For example, there are about 7,000 garment factories in Bangladesh, many of which are larger buildings with extended rooftops well-suited for solar PV. Solar PV on industrial rooftops is also economically more feasible due to the higher industrial electricity tariff than the ones paid by residential and commercial consumers. Government and institutional rooftops, such as public universities, are also promising sub-project candidates as some of them are advanced in preparation. Various business models will be explored by IDCOL during implementation to find the most suitable rooftop PV implementation models for Bangladesh. This will be supported by the technical assistance to IDCOL. The models to be explored include rooftop owner's CAPEX model¹⁶, renewable energy service company (RESCO) model under which a third-party service company leases rooftop space to generate and provide electricity to the rooftop owner, aggregation of rooftops by RESCOs to minimize transactions costs, etc. The expected adoption of a net metering policy soon will incentivize surplus electricity generation from rooftop PV systems, contributing to the scale up of individual systems and market demand.¹⁷

25. **REFF Financing Products and Terms.** The Facility will primarily offer senior loans to support a series of sub-projects. Based on market demand and viability, sub-ordinated loans would be made available to effectively mobilize financing from other sources through proper risk mitigation. Sub-ordinated loans and other financial instruments that are catalytic to leveraging financing, e.g. equity, guarantee and insurance, will be explored and developed through technical assistance support during implementation.

26. For utility scale projects, the Facility will provide standard financing products to bidders participating in RE tenders. Under this arrangement, a standard set of financing options can be offered by

¹⁴ Individual utility-scale sub-projects may be about 50 MW of capacity, whereas the rooftop PV sub-project would typically be less than 1MW in size.

¹⁵ Potential sites are being considered by the Government in several districts in various regions of the country.

¹⁶ In this model the owner of the rooftop invests in and owns the rooftop PV assets.

¹⁷ A net metering policy has been developed and is pending a final approval by the Government.



IDCOL to private sector participants in an auction process. The bidders may choose a combination of financing products for each sub-project as part of their bid. The selected bidder may also apply for REFF financing ex-post the auction. For rooftop PV, REFF financing will be offered on terms that can make the levelized cost of electricity from rooftop systems slightly lower than the retail price of electricity.¹⁸ This will provide an incentive both for generating electricity for self-consumption and supplying to the grid once the net metering policy is adopted.

27. To optimize the use of IDA and CIF-SREP resources and to mobilize commercial financing, the REFF share of financing for each sub-project is capped. For utility scale sub-projects, the REFF can finance only up to 25 percent of total capital expenditure (CAPEX) of utility-scale sub-projects, as specified in the Operations Manual. The rest of the financing of each sub-project would come from commercial banks, other development finance institutions and project sponsors, or from IDCOL's own resources.¹⁹ For rooftop PV sub-projects²⁰, the REFF can support up to 50 percent of CAPEX, as specified in the Operations Manual. For each sub-project, the private sector sponsors, rooftop owners or RESCOs contribute 20 percent as equity, and IDCOL will finance the rest from its own resources or through loan syndication with commercial financiers.

28. The REFF will be able to extend long-term loans at a lower end of the market rate range. Pricing of the REFF loans will be determined without subsidization, reflecting actual cost of financing which includes, at a minimum, (i) the cost of the funds to IDCOL, (ii) IDCOL operating costs, (iii) a credit risk margin, and (iv) contribution to loan loss reserves. Considering the different natures, viability and risks between utility-scale solar PV and wind sub-projects and rooftop solar PV sub-projects, financing terms will be differentiated. At the beginning of implementation, the REFF is expected to offer senior loans in local currency to utility-scale renewable energy sub-projects for up to 15 years with up to 3 years of grace period. For rooftop solar PV, senior loans will be offered for up to 10 years with a 1-year grace period. Loans that might be offered on different terms would be assessed case by case on an exceptional basis. The REFF financing terms will be reviewed and revisited after 2 years of implementation and thereafter periodically, as defined in the Operations Manual, to reflect changing market conditions and project economics, which are expected to improve over time with the expansion of the market.

29. **IDCOL Capacity Building and Market Development.** IDCOL will receive US\$1.5 million of the CIF-SREP loan from the Ministry of Finance on grant terms for technical assistance and capacity building. This funding will support: (i) Developing new business models and financing instruments catalytic to mobilizing financing for renewable energy and strengthening IDCOL financing capacities. Support to development of new instruments will be provided in the form of external advisory assistance, training and knowledge sharing;²¹ (ii) Strengthening IDCOL capacity for technical due diligence and supervision of utility-scale renewable energy and rooftop solar PV. IDCOL has been building its capacity in due diligence of rooftop solar PV through its recently approved loans for six rooftop PV projects with 4 MW capacity in aggregate.

¹⁸ The tariffs can be as high as BDT 9.24/kWh (US\$ 11.8/kWh) at peak for industrial consumers.

¹⁹ IFC may participate in development finance institution financing both on its own and using IFC managed CIF-SREP funds to finance winning bidders.

²⁰ And any other renewable energy technologies that may be supported by the REFF

²¹ These activities can build on a similar exercise planned under the Bank-funded Investment Promotion and Financing Facility II project (P159429) which mainly targets the Bangladesh Infrastructure Finance Fund Limited.



The Project will further enhance IDCOL's capacity to appraise both rooftop PV and utility scale sub-projects; (iii) Creating a market and developing pipeline of rooftop PV. To build a strong sub-project pipeline and create market demand, IDCOL will conduct business development activities which include marketing, region- and sector-specific consultations, workshops and knowledge exchanges among customers, as well as media campaigns and outreach; and (iv) Project management costs. These activities will be coordinated with the technical assistance for rooftop PV enabling environment conducted by SREDA under Component 3.²²

30. **Component 3: Technical Assistance (US\$3.64 million total cost, including US\$2.87 million CIF-SREP grant and US\$0.77 million counterpart funding from Government of Bangladesh).** This component is implemented by SREDA. It will support technical assistance and capacity building activities to improve the enabling environment to scale up renewable energy, and support development of a project pipeline for private sector participation.

31. The technical assistance activities address the biggest barrier to renewable energy development in Bangladesh – land constraint – through identification of project sites by the public sector. The activities support the preparation of sites for competitive tendering through resource assessment, feasibility and impact assessments, as well as through support to the development of the tendering procedure. Furthermore, it will build institutional capacity through trainings and other form of capacity building to both Government agencies and the market at large. Finally, it will strengthen the enabling environment for rooftop solar PV, including through promotion of the net-metering policy. This component will therefore address institutional capacity, land availability, and project development related barriers, and help develop a pipeline of private sector projects to be financed by Component 2 and other financiers. All SREDA activities will be coordinated with the IDCOL technical assistance to ensure complementarity and to avoid overlaps.

32. The planned sub-components and activities are as follows:

- a) Resource Assessment. This sub-component will contribute to ground-measured data collection and validation which will refine the existing satellite-based resource data and inform policy makers and potential solar and wind developers. Given other planned or ongoing wind and solar resource assessment activities in the country²³ and rapidly improving global resource atlases, the Project will specifically focus on solar or wind resource measurement on public land sites identified for development of utility-scale RE parks. Such site-specific measurement provides more accurate information on resource potential to de-risk private sector investment. Bank-executed ASTAE-ESMAP support will complement the validation exercise to supplement existing global atlases. The outputs will be freely and widely accessible following open data principles.
- b) Site identification and development. This sub-component will support preparatory activities for upcoming utility-scale renewable energy parks for IPPs on public land, which will be further

²² KfW is expected to provide grant funding to support IDCOL's business development as part of a rooftop solar PV project under preparation. The Project activities have been designed in close coordination with the KfW. The coordination of World Bank and KfW activities will be continued during Project implementation.

²³ USAID has supported ground-based wind resource measurement at nine locations and the UNDP is expected to support ten solar measurement stations.



identified during implementation. Alternative options to develop utility-scale solar PV, such as floating solar PV, use of canals, or idle land at other facilities (e.g. airports, railways, etc.), will also be explored during Project implementation. The scope of activities will include pre-feasibility and feasibility studies, grid integration and load flow studies, environmental, and social and disaster impact assessments. The activities will also include capacity building to SREDA and other entities on design of a competitive tender procedure.²⁴

- c) Rooftop PV enabling environment. This sub-component will include technical assistance activities for creating and scaling up a rooftop solar PV market. SREDA will work on formulation and promotion of an enabling policy and regulatory framework for rooftop solar PV. Planned activities include raising awareness of rooftop solar PV and the upcoming net metering policy, strengthening relevant policies and regulations as needed, and supporting distribution utilities in the implementation of the net metering policy.
- d) Capacity building and training. Capacity building will be provided to relevant government agencies to enhance their capacity on renewable energy development and maximize the benefit of the finalized resource assessments. Activities will include training and workshops for renewable energy development, maintaining and further updating resource assessment data, and integrating geospatial information and tools into national renewable energy development planning.
- e) Waste-to-energy technology pilot. This sub-component will support feasibility assessment and deployment of a small-scale waste-to-energy technology pilot.²⁵ The pilot will be developed in collaboration with city corporations that manage municipal waste collection. An investment grant of up to US\$370,000 will be provided. One of the potential candidate is the Rajshahi City Corporation for an installation of a biogas plant to utilize slaughterhouse waste. The City Corporation will provide the land required and GIZ will provide technical support for the small-scale pilot. The pilot is expected to inform technical and commercial feasibility of waste-to-energy sub-projects. It will also help establish waste collection practices and government schemes to support waste-to-energy in municipalities. Subject to funds availability, other small-scale pilots of renewable energy technologies could also be supported. Financing to municipalities may be in the form of grants.
- f) Project management. This sub-component includes SREDA staff costs, office and training/workshop facilities and equipment, and logistics costs, related to the management of the activities under Component 3. All of these costs are covered by Government counterpart funding. In addition, this sub-component includes the costs of hiring consultants for procurement, financial management and safeguards, which are funded from CIF-SREP grant.

²⁴ In addition, the Government will need to engage a transaction advisor at the advanced stages of preparing for an auction procedure. A Bank-executed ESMAP grant may also provide support to these activities at the early stages of Project implementation.

²⁵ The implementation of a waste-to-energy pilot is a part of the approved CIF-SREP Investment Plan. The Government of Bangladesh has requested that the pilot be implemented as a part of the proposed Project.



E. Implementation

Institutional and Implementation Arrangements

33. **Component 1:** EGCB will be the implementing agency of Component 1. EGCB will implement the first phase of solar PV development at the Feni site. The Ministry of Finance will be the borrower of IDA credit that will be on-lent to EGCB to finance the development as public investment.

34. EGCB has since 2008 been working with the Bank as an implementing agency of the Siddhirganj Power Project that supports the construction of a gas-fired power plant as public investment. Throughout the project EGCB has been following and applying Bank's policies and procedures that are applicable to an EPC contract-based investment. However, this Project supports the first utility-scale solar PV investment by EGCB. It needs to gain experience in operation and maintenance of a solar PV plant after commissioning. This is ensured by including an O&M contract for three years in the procurement of the EPC contract and by transitioning of O&M skills and responsibility to EGCB staff during the period.

35. EGCB will establish a Project Implementation Unit for the Project, headed by a Project Director reporting to the EGCB Managing Director. The Project Director would be appointed before disbursement for Component 1 starts. The team is comprised of six officers, including a Deputy Project Director and engineering, finance and accounting specialists. EGCB will also hire a safeguards consultant to support management and implementation of the safeguards instruments. Procurement will be managed by the EGCB corporate procurement team. The Project Implementation Unit will be supported by an owner's engineer, funded by the Project, that will assist in all aspects of design, tendering, negotiation, and implementation of the EPC and O&M contract. EGCB will furthermore contract an international procurement specialist and an international technical specialist to be part of the EPC bid evaluation committee. EGCB would contract the procurement and technical specialists as early as possible and in any event no later than three months after Project effectiveness. A technical project management team will also be placed at the Feni site.

36. **Component 2:** The REFF will be hosted and operated by IDCOL, a state-owned financial institution. IDCOL will act as the Financial Intermediary of IDA credits and CIF-SREP loans. IDCOL will be responsible for day-to-day management of the Facility following Bank's safeguards policies and fiduciary guidelines and procedures. It will also be responsible for monitoring of the Component 2 activities and results, and submission of quarterly/semi-annual reports to the Bank.

37. IDCOL has a demonstrated track record in managing a large volume of donor funding through similar financing facilities and in implementing renewable energy programs. It has managed the successful World Bank Rural Electrification and Renewable Energy Development Projects (RERED and RERED II), which includes the flagship solar home system program. IDCOL has been replicating the public-private partnership arrangement of the solar home system program for renewable energy based mini-grids, solar irrigation pumps, improved cook stoves, and biogas digesters for cooking. IDCOL has also gained experience in financing large scale IPPs and other infrastructure projects in the private sector through a Bank-financed Private Sector Infrastructure Development Project, and more recently through a similar Asian Development Bank financed project. Hosting and operating the REFF as a financial intermediary will



require additional capacity, particularly for assessing utility-scale RE and rooftop PV sub-projects where IDCOL has limited experience. Necessary capacity building support has been provisioned by the Project.

38. The Project will be managed by IDCOL's Renewable Energy Department. The REFF will be operated as one of the business lines under the management and supervision of the Head of Renewable Energy Department and IDCOL's top management. A team of at least five staff will manage the REFF. The team will be supported by IDCOL's renewable energy safeguards specialist and procurement and financial management teams. In addition, IDCOL may hire additional technical consultants as needed, using Project funds. Following its internal procedure, IDCOL's Board of Directors approves the funding proposals under the REFF.

39. **Financial Intermediary Financing.** A Bank review has been conducted to ensure that the Project, particularly Component 2 on establishing the REFF, meets good practices and requirements on financial intermediation. The review confirmed that the Project complies with World Bank requirements for financial intermediary financing, and that the REFF and its flow of funds is designed properly to address existing barriers in the local financial sector for utility-scale renewable energy and large-scale rooftop solar PV. IDCOL is assessed to have adequate capacity to act as a financial intermediary, with technical assistance and capacity building support planned under the Project. Per the recommendation of the review, an intermediate results indicator (ratio of non-performing loans) to monitor the quality of the REFF portfolio has been added to the results framework.

40. **Component 3: SREDA** will be the implementing agency for Component 3 of the Project. SREDA is responsible for the coordination of Bangladesh's CIF-SREP program. As the Government agency with the mandate to promote renewable energy and energy efficiency in Bangladesh, SREDA has the functional authority to coordinate CIF-SREP activities in Bangladesh. Established in 2014 under the Power Division of the Ministry of Power, Energy and Mineral Resources, SREDA is best positioned to coordinate between ministries and departments and facilitate enabling environment for renewable energy, such as laws, policies and regulations.

41. SREDA has recently strengthened its capacity with an increased number of staff. The Project will include technical assistance and capacity building support to further strengthen SREDA's technical capacity on RE. As a recently established institution, SREDA has no previous experience in implementing Bank projects. Capacity strengthening needs to implement Component 3 have been identified through Bank's fiduciary and safeguards capacity assessment. The Bank will provide financial management and procurement training to SREDA staff. SREDA will also hire a procurement consultant for the initial stages of the Project.

42. SREDA will establish a Project Implementation Unit, led by a Project Director and consisting of four staff. The Project Director would be appointed before disbursement of Component 3 starts. The Project Director would report to SREDA Board Members and SREDA Chairman. The team will also hire consultants for safeguards, procurement and financial management to assist SREDA staff. The consultants would be contracted by SREDA as early as possible and in any event no later than three months after Project effectiveness.



43. **Project Coordination Committee.** A Project Coordination Committee will be established to coordinate Project activities, exchange information and help disseminate the lessons learned among Project Components implemented by the three Implementing Agencies. The Committee will be chaired by the Power Secretary and include EGCB, IDCOL and SREDA. Other Government agencies may be asked to participate on an as-needed basis. The Committee will have a meeting at least twice a year, and facilitate information sharing across Implementing Agencies and coordination of activities as relevant.

44. **Overall Structure of Financial Flows:** The Ministry of Finance will be the borrower of IDA credit and CIF-SREP loan that will be on-lent to EGCB and IDCOL. The IDA and CIF-SREP financing will be on-lent to IDCOL by the Ministry of Finance on a blended basis; US\$1.5 million of the CIF-SREP loan will be on-lent on grant terms to support IDCOL capacity building and market development, as described above. CIF-SREP grant will be provided to SREDA under a Grant Agreement between the Government and the Bank.

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

The 1st proposed subproject involves a 50MW grid-tied solar PV plant at Feni Site located at the Purbo Barodhuli mauza in Char Chandia union of Sonagazi Upazila of Feni District, northwest of the confluence of Feni & Choto Feni River. The site is situated left of the Choto Feni River north bank & falls within the Young Meghna Estuarine. It is bordered by the Sandwip channel to the south, agricultural land & village to the north, Feni River to the east & an existing road to the west. There are no large tree species or other significant environmental components on the project site. The site is almost flat & continuously inundated for 4-5 mo during monsoon season to depths up to 11 in. The Musapur Dam on Choto Feni River is only 800m away & the substation at Baraiyarhat in Mirsharai Upazila is about 20km North East. The Musapur Regulator & a forest cluster are located southwest of the project at distances of 2.15km & 1.40km respectively. The site is a single cropped medium high land used mainly for aman rice & is occasionally used by nearby villagers for cattle grazing. There is no settlement or any utility in the project location & habitation is mainly present in the western & northern parts of the project vicinity (within 2km). The nearest residential, sensitivity & infrastructure properties in each compass direction, from the Project Site boundary, are as follows (ca.): Purbo Barodhuli Village 250m north; Ashrayan/Adarsha Village 400m west-north-west; Musapur Dam 700m south-west; Musapur Regulator 2.15km south-west; Musapur Reserve Forest 1.4km south-west. EGCB is also installing transmission lines, but the route & exact length of the line(s) is not yet known. According to preliminary screening, the general area of the proposed alternative routes & overall project does not affect indigenous people. The proposed land for the RE site was acquired as a public land by EGCB. There are large numbers of absentee owners as per the Social Impact Assessment & RAP census survey. The RAP puts in place a system to compensate the identified owners & a process to report on new claimants/owners & their compensation status through Quarterly Progress Reports. For Sub-projects under REFF & waste to energy pilot, locations will be identified during project implementation; it is not known yet whether these activities will be in areas with tribal people.



G. Environmental and Social Safeguards Specialists on the Team

Sabah Moyeen, Social Specialist
Md. Akhtaruzzaman, Social Specialist
Iqbal Ahmed, Environmental Specialist
Lulwa N GH H Ali, Environmental Specialist

SAFEGUARD POLICIES THAT MIGHT APPLY

| Safeguard Policies | Triggered? | Explanation (Optional) |
|-------------------------------------|------------|--|
| Environmental Assessment OP/BP 4.01 | Yes | <p>The project includes three types of interventions that triggers the policy: (i) a grid-tied solar PV generation plant with a capacity of 50 MW, and the required infrastructure, including evacuation lines from the site to the grid sub-station, pooling sub-stations, civil engineering structures for mitigating flooding risks and roads within the project site, in Feni District. The potential associated impacts include a change in land use, loss of cultivable land, change in natural drainage patterns, surface water pollution, solid waste (including hazardous waste) generation and disposal, dust generation and exhaust emission, increased traffic and transport activities, visual and noise pollution, and occupational health and safety issues. These impacts are expected to be moderate and can be mitigated. An ESIA/ ESMP was prepared to manage these impacts. An ESMF has also been prepared for the power transmission line which will be identified during implementation; (ii) a series of sub-projects on renewable energy primarily utility-scale and rooftop solar PV of 250 MW in total of installed capacity implemented by a Financial Intermediary (FI). To ensure compliance with the Bank safeguards policies and the environmental legislation of Bangladesh, Environmental and Social Management</p> |



System (ESMS) has been prepared by the FI which contains provisions for sub-projects screening, environmental assessment, mitigation, and delineation of roles and responsibilities to review and manage the E&S issues and risks; (iii) pilot project on waste to energy which will use the slaughterhouse waste as feedstock to produce biogas. ESMF has been prepared to help project developer to comply with the national regulatory framework as well as the World Bank safeguards policies and EHSs.

Performance Standards for Private Sector Activities OP/BP 4.03

No

The project will apply OP/BP 4.01 for all the components, hence this policy is not triggered.

Natural Habitats OP/BP 4.04

Yes

While the project will not lead to loss of natural habitat, this policy is triggered as all subprojects under component 2 can only be identified during implementation and it is possible that any of the subprojects might affect natural habitats. The ESMS includes screening for impacts on natural habitats and measures to address these impacts, including not financing any subprojects that will degrade or convert critical natural habitats.

Forests OP/BP 4.36

No

The Project is expected to 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

No impact on landscape with archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance is expected from the Project.

Indigenous Peoples OP/BP 4.10

Yes

There are no indigenous people in the Component 1 EGCB Feni project area. It is not known at this stage whether the Component 2 and Component 3 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 by SREDA. IDCOL ESMS will also include relevant provisions. Site-specific Tribal People’s Plans will be prepared for sites where social screening shows tribal people are present at the location and their characteristics are assessed to be unique as per OP 4.10.

Component 1. Component 1 activities includes establishment of a Renewable Energy Park in Sonagazi, Feni. EGCB has already acquired a 1000 acres of land in Feni (gazette notification October 19, 2017) for the establishment of the renewable energy park. The feasibility study concluded for the site estimates that the site could house up to 200MW of solar PV capacity. The Bank will fund 50 MWs of generation, requiring about 165.5 acres within the acquired lands. The relevant piece of land is a low-lying area, salinity prone and inundated for most part of the year. During the dry season it is a one crop land (paddy). There are no structures, residential or commercial on the land. The government has been leasing out the land (1000 acres and plots in the vicinity) to landless people, from the 1970s; the lease terms vary, but all stipulate a time period until which the land cannot be sold. But many of them have violated the lease conditions and sold out their sub-plots, and moved away years ago; the majority of them do not live in the locality.. The DC’s office is still in the process of identifying the (original) lease owners. Official records exist for 61 owners, although there are 139 sub-plots on the 165 acres. Out of the 61 only 18 owners and successors of original owners could be physically located during social impact assessment following several rounds of consultations done with local communities and the DC’s Office. No top-ups will be required to make up for replacement cost of land to the lease owners as the DC rate is higher than the assessed market price.

Involuntary Resettlement OP/BP 4.12

Yes



EGCB has prepared a draft Resettlement Action Plan (RAP) for the 165.5 acres of the land proposed for Bank investment. The draft RAP also lists 22 tenant-farmers and share-croppers, who will bear livelihood impacts, and includes appropriate mitigation measures. The RAP addresses all other impacts (access to common resources etc.), gender and inclusion aspects, consultation and communication strategy, a plan for grievance redress, and a robust system of monitoring and evaluation that is especially cognizant of the fact that no one yet has been compensated for the acquired 165.5 acres, and that regular reporting on the identified affected households and future claimants is required. Those identified at this stage and listed in the current RAP must be compensated before civil works can start for the project.

EGCB will also undertake the installation of transmission lines under this component. The route and exact length of the line(s) is not known at this stage. Hence EGCB has prepared an ESMF (including an RPF) to address this component. However the general area of the proposed alternative routes do not affect any indigenous people.

There is an existing access road adjacent to the renewable energy park which is to be upgraded in the near future, but currently no such upgradation works is incorporated in the Local Government Engineering Department's plans for the area (cross-checked by Bank team). The upgradation of the existing road is not expected to be undertaken contemporaneously, and the Bank project is not dependent on the upgradation; hence it is not considered an "associated" activity. There are no indigenous people in the project area.



The draft RAP has been reviewed and approved by the designated Practice Manager; it has been duly disclosed on the client's website on October 7, 2018.

Component 2: The REFF will be hosted and operated by IDCOL, playing the role of a financial intermediary for the establishment of renewable energy parks, roof-top solar PV, etc. Exact location and volume of activities will be known at the implementation stage only. An Environmental and Social Management Systems (ESMS) has therefore been prepared by IDCOL to describe their institutional capacity to handle safeguards issues and ensure compliance with Bank policies. A gap analysis has been carried out to identify differences between relevant IDCOL policies and Bank safeguards policies, IDCOL's internal practices and processes to handle their own compliance issues and plug gaps to meet up to the Bank's standards. IDCOL is expected to revise the ESMS draft as per Bank comments and disclose by April 26, 2018.

Component 3. SREDA will be piloting of waste to energy facility. It is likely that SREDA will establish such a facility within government land designated by a municipal corporation in Rajshahi, there may be a small possibility that land may have to be acquired to choose a centralized location accessible to a large number of butchers and meat vendors (instead of catering to a particular bazaar or market place). The location has not been fixed yet. Therefore, an ESMF including a Resettlement Policy Framework (RPF) been prepared by SREDA and will be disclosed by April 26, 2018. A Feasibility study is being conducted by GIZ to confirm the site for the planned pilots, after which SREDA will prepare an ESIA/ ESMP and RAP for the pilot implementation. The RPF will be followed to prepare a RAP in case appropriate public land free from all encumbrances cannot be found. Any public land designated for the pilot will be screened in accordance with the RPF; if there are



squatters, livelihood activities, lease holdings etc. found, then an appropriate RAP will be prepared and implemented before any civil works can be started. No indigenous people will be impacted.

Out of project scope, SREDA is currently assessing a couple of potential sites; once the lands are acquired through government funds, they will be auctioned to bidders who are willing to undertake solar power (or other renewable energy, e.g. wind) generation. The bidders may or may not opt for Bank funding provided through the IDCOL component.

| | | |
|--|-----|--|
| Safety of Dams OP/BP 4.37 | Yes | The project design includes construction of a 5.0 m high dike for flood protection around the project site. |
| Projects on International Waterways OP/BP 7.50 | No | The Project activities will not take place along international waterways which are shared with Riparian countries. |
| Projects in Disputed Areas OP/BP 7.60 | No | There are no disputed areas in the Project area of influence. |

KEY SAFEGUARD POLICY ISSUES AND THEIR MANAGEMENT

A. Summary of Key Safeguard Issues

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

The key environmental impacts associated with the development of the 50 MW grid-tied Solar PV in Feni site include change in land use, loss of cultivable land (though poor quality and low-yield), change in natural drainage patterns, surface water pollution, solid waste (including hazardous waste) generation and disposal, dust generation and exhaust emission, increased traffic and transport activities, visual and noise, and occupational health and safety issues. The above impacts have been assessed and were found to be of medium scale and site specific, which can be mitigated. As the project site is in the coastal region, extreme weather events such as flood, cyclone and tidal surge are highly likely to take place. Hence, a disaster risk management plan to address the impacts of the above has been developed along with related mitigation measures. Accordingly, the project design will include protection measure against the flooding risks including dike and elevation structures for the PV panels as well as water pumping for drainage inside the dike.



There are no settlers on the site, however, negative impacts in terms of economic losses are likely to result and are associated with a potential restriction on access for grazing and cultivation of rice on the project site. As discussed above, there are many absentee owners who have not yet responded to the land acquisition notifications. They do not live in the vicinity of the project areas as confirmed through multiple consultation sessions with local communities. Their whereabouts cannot be determined at this stage. Out of the 139 plots on the 165.5 acres, the DC Office has records for 61 owners, and out of these only 18HHs (including successors) could be physically identified. The RAP has also identified 22 sharecroppers. EGCB has paid the DC Office the entire amount for acquiring the full 1000 acres, including land compensation for legal owners and their standing crops. The DC is still verifying the papers and paying compensation to those vetted as legal owners. Since the DC's rate for land value is higher than the market value, no top-ups will be required on EGCB's side. EGCB will compensate all sharecroppers, pay vulnerability allowances and implement a livelihood restoration program. All identified project affected people as per the RAP (18HHs and 22 sharecroppers) will be duly compensated by the DC and EGCB respectively, before any civil works can start. The status regarding future claimants/owners will be reported upon by EGCB in close liaison with the DC office on a quarterly basis. The money for absentee owners will be held in the DC's designated account for the life of the project.

The impacts associated with the development of the subprojects planned under component 2 (Renewable Energy Financing Facility (REFF)) are expected to be moderate, as these subprojects involve the development of a total of 250 MW. Out of this total, about 50 % is in the form of rooftop solar panels of less than 5 MW each (in most of cases expected to be less than 1MW). The other 50% include ground-mounted solar panels sub-projects of about 50 MW. The associated impacts of all the subprojects will be identified and assessed during the project implementation phase along with the appropriate mitigation measures.

The development of waste to energy pilot planned under component 3 is also expected to result in some impacts. The potential impacts are associated with the emissions, odor, wastewater discharge and residual waste related to the use of slaughterhouse waste as feedstock. Assessment of these impacts and identifying the appropriate mitigation measures will be undertaken once the site is identified during project implementation.

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

Overall, the project is expected to contribute to the filling of the energy demand-supply gap in Bangladesh. This would be realized through the facilitation of both public and private sector investment in Renewable Energy projects to substitute non-renewable energy supplies and to scale up existing Renewable Energy based electricity productions. This is expected to result in positive impact at both the social and the economic levels. In addition, cumulative long-term benefits which are associated with the reduction of GHG emission through the use of renewable energy as alternatives to fossil fuel options. Examples of some other positive impacts may include the economic/ employment opportunities associated with the construction and operation of the Feni utility-scale solar PV project, and the boost in



land price associated with the change of some land use in the region from single cropped agriculture to industrial. On the other hand, some potential negative impacts/ economic losses can result from the project implementation and could mainly be attributed to potential restrictions on land cultivation and grazing activities.

Solar panel waste will also become an environmental issue in the coming decades as old solar panels reach the ends of their useful lifespans and require disposal. Relevant regulations and guidelines to handle such waste in an environmentally sound manner in Bangladesh are currently lacking and thus required. The Department of Environment (DoE) is taking an initiative to address the e-waste management in the country. The PV related waste may also be considered under this initiative.

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

Due to land limitation in Bangladesh, The Feni site was assessed through a feasibility study and was found to be a viable option for the development of the 50 MW Solar PV. The site has availability of a contiguous patch of predominantly government land with no settlement and high solar radiation. The project design will include protection measure against the flooding risks such as dike and elevation structures for the PV panels as well as water pumping for drainage inside the dike to minimize the adverse impacts.

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

The EGCB Agency will be responsible for the execution of the Feni utility-scale solar PV. Accordingly, it has developed the ESIA/ESMP in accordance with Bangladesh Environment Conservation Rules 1997 and the World Bank Safeguard Policies OP 4.01 – Environment Assessment. EGCB responsibilities include implementing the project plan and ensuring that relevant safeguards provisions are incorporated in the bid documents as well as obtaining necessary environmental clearances from the Department of Environment (DoE). EGCB has implemented the Bank-financed project “Siddhirganj Power Plant” and is thus familiar with the Bank safeguard policies. This Agency also has an environment cell staffed by one Deputy General Manager (DGM), and one Manager. An environmental and social safeguards consultant will also be hired by EGCB to support the implementation of the project. Furthermore, a capacity-building program was also included in ESMP to further enhance EGCB needed capacity on safeguards as pertinent to the project under consideration. EGCB has also developed the relevant RAP for the Feni site, and an ESMF including the RPF frameworks for the construction and operation of the power transmission line for which the location is yet to be identified. Being relatively new agency, SREDA is yet to acquire full knowledge of the Bank safeguards policies. The capacity gap and measures to fill this gap has been identified and included in the ESMF/RPF.

IDCOL will be responsible for the implementation of the REFF. As an FI, IDCOL has developed ESMS to guide the implementation of the subprojects. An Operation Manual has also been prepared to guide IDCOL for the operation of the REFF. IDCOL has demonstrated a capacity for compliance with Bank safeguards policies through its implementation of the Bank-financed project “Rular Electrification and Renewable Energy Development II project”.



IDCOL has one full-time environmental and social specialist, who has experience in applying the environmental and social due diligences of the Bank policies. To substantiate its capacity, specific training on safeguards were identified and included in IDCOL ESMS.

SREDA will be responsible for the implementation of the pilot on waste-to-energy. An environmental and social safeguards consultant will be hired by SREDA to support the implementation of the biogas plant during design and construction. In addition, an environmental engineer from the city cooperation will also be assigned to provide support during the pilot construction phase. The city cooperation is also expected to take the responsibility for the operation of the biogas plant after construction.

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

The Project involves various stakeholders including the employees of EGCD, IDCOL, SHREDA, Ministry of Finance, Ministry of Power, Energy and Mineral Resources. Ministry of Land, Deputy Commissioner's offices, private sector agencies, NGOs, media, the subplot lease owners, land owners of other potential sites, and communities that live in the vicinity of the sites for development renewable energy parks and associated facilities. The stakeholders will be consulted in open community meetings and national level workshops on the safeguards instruments. The implementing agencies (EGCB, IDCOL, SHREDA) and the executing agency (Ministry of Finance) will disclose the safeguards instruments (RAP, ESMF, ESMS, RPF, TPF) at their respective official websites by April 26, 2018 with an invitation for project affected parties and other stakeholders to participate in a consultation workshop. The document will then be re-disclosed after incorporating feedback by the project affected parties, where possible.

B. Disclosure Requirements

Environmental Assessment/Audit/Management Plan/Other

| | | |
|-----------------------------|-----------------------------------|--|
| Date of receipt by the Bank | Date of submission for disclosure | For category A projects, date of distributing the Executive Summary of the EA to the Executive Directors |
| 07-Oct-2018 | 10-Oct-2018 | |

"In country" Disclosure



Bangladesh

10-Oct-2018

Comments

Resettlement Action Plan/Framework/Policy Process

Date of receipt by the Bank

07-Oct-2018

Date of submission for disclosure

08-Oct-2018

"In country" Disclosure

Bangladesh

07-Oct-2018

Comments

Indigenous Peoples Development Plan/Framework

Date of receipt by the Bank

01-Oct-2018

Date of submission for disclosure

02-Oct-2018

"In country" Disclosure

Bangladesh

01-Oct-2018

Comments



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

OP/BP/GP 4.01 - Environment Assessment

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

Yes

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

Yes

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

Yes

OP/BP 4.04 - Natural Habitats

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

No

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

No

OP/BP 4.10 - Indigenous Peoples



Has a separate Indigenous Peoples Plan/Planning Framework (as appropriate) been prepared in consultation with affected Indigenous Peoples?

Yes

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

Yes

If the whole project is designed to benefit IP, has the design been reviewed and approved by the Regional Social Development Unit or Practice Manager?

NA

OP/BP 4.12 - Involuntary Resettlement

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

Yes

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

Yes

OP/BP 4.37 - Safety of Dams

Have dam safety plans been prepared?

NA



Have the TORs as well as composition for the independent Panel of Experts (POE) been reviewed and approved by the Bank?

NA

Has an Emergency Preparedness Plan (EPP) been prepared and arrangements been made for public awareness and training?

NA

The World Bank Policy on Disclosure of Information

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

Yes

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

Yes



All Safeguard Policies

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

Yes

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

Yes

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

Yes

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

Yes

CONTACT POINT

World Bank

Jari Vayrynen

Senior Energy Specialist

Joonkyung Seong

Energy Specialist



Borrower/Client/Recipient

People's Republic of Bangladesh

Kazi Shofiqul Azam

Additional Secretary

addl-secy2@erd.gov.bd

Implementing Agencies

Infrastructure Development Company Limited (IDCOL)

Mahmood Malik

Executive Director and CEO

mmalik@idcol.org

Sustainable and Renewable Energy Development Authority (SREDA)

Siddique Zobair

Member

siddique.zobair@gmail.com

Electricity Generation Company of Bangladesh (EGCB)

Ali Kausar Muhammad Firoz

Managing Director

md@egcb.com.bd



FOR MORE INFORMATION CONTACT

The World Bank

1818 H Street, NW

Washington, D.C. 20433

Telephone: (202) 473-1000

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

APPROVAL

| | |
|----------------------|----------------------------------|
| Task Team Leader(s): | Jari Vayrynen Joonkyung Seong |
|----------------------|----------------------------------|

Approved By

| | | |
|---------------------------|-------------------------|-------------|
| Safeguards Advisor: | | |
| Practice Manager/Manager: | Demetrios Papathanasiou | 12-Oct-2018 |
| Country Director: | Sereen Juma | 12-Oct-2018 |