

**Environmental & Social Management  
Framework (ESMF)**

**For**

**BANGLADESH SCALING-UP RENEWABLE  
ENERGY PROJECT  
(Waste-to Energy Pilot)**

**Sustainable and Renewable Energy Development Authority  
(SREDA)**

**May 2018**

## **EXECUTIVE SUMMARY**

### **Project Context**

As per the National Renewable Energy Policy 2008 (NREP), generation capacity of 2,000MW is planned to be added by 2020. Government of Bangladesh (GoB) has also set renewable energy development targets for several technologies for each year from 2015 to 2021 (“RE Development Targets”). The RE Development Targets call for an additional 3,100 MW of renewable energy capacity to be installed by 2021. Most of the new capacity is planned from solar (1,676 MW, or 54 %) and wind (1,370 MW, or 44 %), and there are also targets for waste-to-energy (40 MW), biomass (7 MW), biogas (7 MW) and small hydro (4 MW). The Power System Master Plan 2010 sets goals for fuel diversification with an emphasis on increasing the role of renewable energy in the power generation mix. To promote renewable energy and energy efficiency, the Sustainable and Renewable Energy Development Agency (SREDA) was established in 2014.

The Government of Bangladesh is implementing the Scaling up Renewable Energy Project (SREP) with financing from the World Bank. SREP focuses on exploring a new approach of a public-private partnership (PPP) to overcome the current barriers to unlock the potential of utility-scale RE – private sector-driven development on the public sector-owned land. Private sector expertise in installation, operation, and maintenance of utility-scale RE is planned to be brought to those sites for further development. The Project will provide technical assistance support to complement GoB’s ongoing effort to identify suitable sites and conduct preparation activities for developing utility-scale RE. In addition, to address limited access to finance by the private sector, a financing facility will be established to allow private sector developers for long-term debt financing to leverage further investment at scale.

The objective of the project is to increase installed generation capacity of, and mobilize financing for, renewable energy in Bangladesh. The Project’s direct beneficiaries are (a) people in Bangladesh who will benefit from better quality of supply and cleaner air due to the electricity generated from RE; (b) private sector developers of RE subprojects, including their employees, supported through the Renewable Energy Financing Facility; (c) industry in terms of reduced technological and integration risks and increased technical capacity; (d) people in selected municipalities benefiting from improved waste management through the waste-to-energy pilots.

Under Component 3 of the SREP, SREDA intends to use World Bank finance for a pilot on municipal waste-to-energy project in collaboration with city corporations that manage the municipal waste collection. The location where the pilot will be implemented is unknown at this stage and will only be identified during project implementation to know the site specific environmental and social issues and impacts. A Resettlement Policy Framework (RPF) and a Tribal Peoples Framework (TPF) was prepared for managing involuntary resettlement and indigenous peoples' issues likely to associate with implementation of the Renewable Energy Resource Assessment, Piloting and Technical Assistance Project. This Environmental and Social Management Framework (ESMF) has been prepared for the Waste-to-Energy Project in tandem with the RPF and TPF to guide the onward preparation of site specific plants. The project is classified as "category B" on the expected impact according to WB OP 4.01 on environmental assessment.

### **ESMF Objective**

This ESMF addresses the municipal waste-to-energy pilot to be financed under Component 3 of the SREP and implemented by SREDA in collaboration with city corporations that manage the municipal waste collection. The purpose of the ESMF is to assist SREDA to administer necessary environmental and social management (including risk management of environmental and social impacts) procedures and measures of proposed sub-project(s) whose infrastructure design and location are unknown and may change during project implementation. The ESMF comprises the guidance document required for the environmental and social management plan (ESMP) and other planning instruments (i.e., SECDP, ARAP or RAP) to be applied at project appraisal and formulation when detailed feasibility studies and technical design details become available.

The ESMF is a guidance and decision-support tool for SREDA and stakeholders. As an overarching guideline document, the ESMF provides assurances that:

- Sub-projects and technical assistance (TA) consider potential environmental and social issues, especially for different populations who would be directly impacted (positively or adversely) by the sub-project;
- Sub-projects and TA consider socio-cultural and gender sensitivities and environmental values prevailing in areas where the proposed sub-project(s) would be implemented;
- During project formulation and design, adverse environmental and social impacts may arise during construction and operational phases and appropriate

mitigation/enhancement measures need to be designed with a monitoring plan developed to track implementation of site-specific safeguards instruments;

- Environmental and social management safeguard instruments such as ESMP, SECDP, ARAP/RAP and Environmental Codes of Practices (ECoP) are suitably prepared and/or will be prepared; and
- Safeguard instruments are compliant with WBG environmental and social assessment (ESA) operational policies and procedures as well as national laws and regulations.

### **Project Description and Baseline**

The location of the proposed waste to energy plant is yet to be finalized. However, one option may be located within Rajshahi City Corporation (RCC). Therefore, this report includes baseline data for RCC. Once the site location is finalized, the baseline information needs to be updated.

In this project, waste from slaughterhouse (including dung from lairage section, stomach parts/contains of slaughtered cattle, blood and wash/waste water) is accumulated to feed in to the Inlet Chamber of Biogas Plant on daily basis. Freshly accumulated waste is mixed with water in equal ratio at the Biogas Inlet Chamber to flow to the Digester. Mixed waste is exposed to Anaerobic Digestion [decomposition of carbon source by anaerobic bacteria in absence of air/oxygen] inside Digester to produce Biogas. Retention time required for complete digestion and liberation of free gas is 40-45 days.

### **Regulatory Framework: Policy, Act and Rules**

The legislative basis for Environmental Impact Assessment (EIA) in Bangladesh is the Environmental Conservation Act 1995 (ECA'95) and the Environmental Conservation Rules 1997 (ECR'97). Department of Environment (DOE), under the Ministry of Environment and Forests (MOEF), is the regulatory body responsible for enforcing the ECA'95 and ECR'97. It is the responsibility of the proponent to conduct an Environmental Assessment (EA) of the development proposal and the responsibility to review EIAs for the purpose of issuing Environmental Clearance Certificate (ECC) rests on the DOE.

The main policies, acts and rules relevant to this project include:

- Bangladesh Environmental Conservation Act (ECA), 1995 (amended 2006 and 2008)
- Environment Conservation Rules (ECR), 1997
- Nationally Designated Ecologically Critical Areas
- Renewable Energy Policy of Bangladesh, 2008

- Remote Area Power Supply Systems (RAPSS) Guideline, 2007
- Bangladesh Labor Act, 2006
- Bangladesh Factories Act, 1965
- Building Construction Act, 1952
- Building Construction Rules, 2008
- Bangladesh National Building Code (BNBC), 2014
- Bangladesh Acquisition and Requisition of Immovable Property Act , 2017

The World Bank has ten environmental, social, and legal safeguard policies, the relevant ones to this project are listed in below:

- **Environmental policies:**
  - OP/BP 4.01 Environmental Assessment
  - OP/BP 4.04 Natural Habitats
- **Social Policies:**
  - OP/BP 4.10 Indigenous Peoples
  - OP/BP 4.12 Involuntary Resettlement

### **Impact Screening and Scoping Process**

The project activities and their environmental & social information (Surrounding area) will initially be reviewed during screening. A checklist has been prepared and attached in Annex 2, which will help to identify the screening components that need to be investigated in detail during the preliminary stages of the assessment or to conclude that insignificant adverse impacts are anticipated. Accordingly, the significant impacts will be further assessed along with the appropriate mitigation measures.

### **Potential Environmental and Social Impacts and Mitigation Measures**

Some of the potential impacts on the biological environment during the construction stage of the waste-to-energy plant include:

- Noise disturbances to fauna
- Dust impact on fauna and flora
- Habitat loss – temporary or permanent loss of habitat due to land conversion and/or tree felling
- Vibration impacts – during piling and heavy vehicle movement can disturb fauna
- Unintentional runoff from site causing pollution to water bodies and harming aquatic flora and fauna

During the operation phase, the potential impacts include:

- Noise disturbances to fauna
- Unintended gaseous emissions from the plant affecting surrounding fauna
- Pollution caused by handling of slaughter house wastes impacting surrounding flora and fauna
- Untreated wastewater discharge/ runoff to adjacent waterbodies
- Odours from plant can affect surrounding fauna
- Insects infestations
- Residue after digestion improperly managed and disposed

Potential impacts on physical environment during construction stage of the waste-to-energy plant include:

- Impacts on Air: Air quality may be affected for short duration in and around the construction site due to various construction activities and heavy vehicular movement. A certain amount of dust and gaseous emissions will be generated from vehicle movements.
- The impact of Noise: During construction of the Project, noise might be generated from construction work. Movement of construction materials, handling of equipment can cause significant noise which has an impact on the physical environment.
- Runoff from the site: Heavy rainfall can cause runoff from the site, which can cause pollution to surrounding land and waterbodies.
- Untreated wastewater discharge can pollute adjacent waterbodies in the areas

During the operation phase, the potential impacts include:

- Plant operations can increase ambient noise levels
- Unintended gaseous emissions from the plant can affect surrounding air quality
- Pollution caused by handling of slaughter house wastes impacting surrounding land and water quality
- Odours from the plant/ slurry drying pits can affect surrounding air quality

Potential impacts on workers' health and safety during the construction stage of the waste-to-energy plant include:

- Accidents: Injury or death can occur due to accidents around the construction site due to various construction activities and heavy vehicular movement.

- Noise: Large sound levels can cause hearing injury to site workers.
- Unsafe working conditions: Can cause health risks to site workers.
- Contaminated drinking water and unhygienic sanitation can cause diseases and other health risks to site workers.

Potential impacts on workers' health and safety during operation stage of the waste-to-energy plant include:

- Biogas plants process large quantities of combustible and toxic gases which pose an increased fire, explosion or suffocation hazards in case of faults in design, materials or control. In the event of an incident at the plant, people may be injured, property damaged and the environment (air and water) polluted. Operators violating these duties risk that the operation of their plants is no longer in compliance with the law, which may result in a shutdown of the plant and in restriction or even loss of insurance coverage.
- Health and safety risks due to unsafe working conditions.

Potential impacts on community health and safety during the construction stage of the waste-to-energy plant include:

- Accidents: Injury or death can occur due to heavy vehicular movements to/from the site. Also, without proper signage and fencing, the public may enter construction site risking injury or death.
- Noise: Excessive sounds can disturb community within project influence area.
- Labor influx: social tensions may arise between local community and construction workers.

Potential impacts on community health and safety during operation stage of the waste-to-energy plant include:

- Combustible or toxic gases may escape from the plant causing a fire, explosion, injury/death to surrounding community and/or property damage.
- Pollution of air/land/water can harm local community.

Depending on the location of the waste-to-energy plant, there may also be potential cultural heritage, resettlement and tribal peoples impacts.

A summary of the likely issues and potential impacts & mitigation measures is presented in Table A.

**Table A: Framework Environmental & Social Management Plan**

| <b>Activity</b>               | <b>Potential Environmental &amp; Social Impacts</b> | <b>Proposed Mitigation Measures</b>   | <b>Institutional Responsibilities</b> |
|-------------------------------|---|---|---------------------------------------|
| <b>Pre-Construction Stage</b> | Loss of land / and other physical assets            | <ul style="list-style-type: none"> <li>• Carrying out analysis of alternatives to avoid/minimize involuntary taking of land and other physical assets.</li> <li>• Compensation at replacement cost</li> </ul>   | Client                                |
|                               | Loss of livelihood                                  | <ul style="list-style-type: none"> <li>• Preferable employment with developer</li> <li>• Alternative livelihood options and training for skill enhancement</li> <li>• Corporate Social Responsibility (CSR) activities to be undertaken by the developer will ensure alternative livelihood opportunities</li> </ul>  | Client / Developer                    |
|                               | Loss of Access rights                               | <ul style="list-style-type: none"> <li>• Project to ensure thorough analysis of alternatives that access enjoyed by the community remains intact.</li> <li>• In case of unavoidable circumstances, alternative access will be provided.</li> </ul>  | Client                                |
| <b>Site Preparation</b>       | Soil Erosion;<br>Alteration of natural drainage;    | <ul style="list-style-type: none"> <li>• Construction facilities to be placed 500 meters from water bodies, natural flow paths;</li> <li>• Minimize cut &amp; fill operations, the site clearing and grubbing operations should be limited to specific locations only.</li> <li>• Any disruption of socially sensitive areas with regard to human habitation and areas of cultural significance will be avoided.</li> <li>• The existing slope and natural drainage pattern on the site should not be altered.</li> <li>• Trees on private lands are felled or damaged during construction operations, compensation shall be paid to the owner as determined by the forest/horticulture departments.</li> <li>• The contractor shall ensure that site preparation activities do not lead to disruption of activities of the local residents.</li> </ul> | Client /Developer                     |
| <b>Construction Activity</b>  | Noise from construction works                       | <ul style="list-style-type: none"> <li>• Construction activity shall be restricted to daytime as far as possible to avoid disturbance to surrounding areas.</li> <li>• Wherever required, personal protective equipment (PPE) such as ear plugs, earmuffs, helmets etc. should be provided to the persons working in high-</li> </ul>   | Client /Developer                     |

| Activity                                       | Potential Environmental & Social Impacts                            | Proposed Mitigation Measures   | Institutional Responsibilities |
|--|---|--|--------------------------------|
|  |   | risk areas.  |                                |
| <b>Construction Activity</b>                   | Dust  | <ul style="list-style-type: none"> <li>• Construction machinery shall be properly maintained to minimize exhaust emissions of CO, SPM, PM<sub>2.5, 10</sub> and Hydrocarbons.</li> <li>• Dust generated as a result of clearing, leveling and site grading operations shall be suppressed using water sprinklers.</li> <li>• Dust generation due to vehicle movement on haul roads/access roads shall be controlled through regular water sprinkling.</li> </ul> | Client /Developer              |
| <b>Construction Activity</b>                   | Safety Issues   | <ul style="list-style-type: none"> <li>• Prevent entry of unauthorized personnel and proper storage and control of hazardous materials on site.</li> <li>• The site shall be secured by fencing and manned at entry points</li> </ul>  | Developer                      |
|  | Traffic Management  | <ul style="list-style-type: none"> <li>• Contractors to provide traffic management plans to be approved by relevant authorities</li> <li>• Adequate alternative arrangements to be made to minimize impact on motorist and pedestrians.</li> <li>• Adequate road signs to be planted on access roads to limit vehicular speeds</li> <li>• Construct properly designed speed ramps on access roads</li> </ul>   |                                |
| <b>Water for Construction</b>                  | Conflicts with existing users due to the scarcity of resource base. | <ul style="list-style-type: none"> <li>• A detailed assessment of the available resources and consent of the local representative for withdrawal of water from existing surface water sources shall be taken.</li> <li>• If ground water is withdrawn, adequate approvals from the appropriate department need to be undertaken before setting up bore wells.</li> </ul>   | Client / Developer             |
| <b>Road safety and traffic management plan</b> | Increase in road accidents  | <ul style="list-style-type: none"> <li>• The movement of heavy machinery and equipment's shall be restricted to defined routes.</li> <li>• Proper signage's to be displayed at major junctions.</li> <li>• Road diversions and closures to be informed well in advance to the local residents.</li> <li>• The vehicular movement to be controlled near sensitive locations viz. schools, colleges, hospitals identified along designated vehicular</li> </ul>    | Client / Developer             |

| Activity  | Potential Environmental & Social Impacts   | Proposed Mitigation Measures  | Institutional Responsibilities |
|---|--|---|--------------------------------|
| <b>Base Camp Construction Activity – Labour Camp Management</b> | Conflicts with the local residents – labour influx   | <p>transportation routes.</p> <ul style="list-style-type: none"> <li>• An assessment of the risks associated with labor influx will be undertaken to identify risks and issues following the WBG Labor Influx Guidance Note.</li> <li>• An alternate arrangement for fuel wood, heating and cooking should be made to meet fuel wood requirement of the labor</li> <li>• Work force should be prohibited from disturbing the flora, fauna including hunting of animals, wildlife hunting, poaching and tree felling.</li> <li>• Adequate facilities ensuring sanitation for labour camps.</li> <li>• Treated Water will be made available at Site for Labour drinking purpose.</li> <li>• Adequate accommodation arrangements for labour</li> </ul> | Client / Developer             |
| <b>Waste Management</b>   | Improper management and handling of hazardous and non-hazardous waste during construction.   | <p>Preparation of a waste management plan covering the following aspects</p> <ul style="list-style-type: none"> <li>• Residual waste from the plantWaste from the temporary accommodation facilities for labor</li> <li>• Waste from equipment maintenance/vehicles on-site.</li> <li>• The scrap material generated from the erection of structures and related construction activities will be collected and stored separately in a stack yard and sold to local recyclers.</li> <li>• Hazardous waste viz. waste oil etc will be collected and stored in the paved and bounded area and subsequently sold to authorized recyclers.</li> <li>• Applicability of the Hazardous Waste Management Rules</li> </ul>                                   | Client / Developer             |
| <b>Health and Safety risks</b>                                  | <ul style="list-style-type: none"> <li>▪ The potential for exposure to safety events such as tripping, working at height activities, fire from hot works, smoking, failure in electrical installation, mobile plant</li> </ul> | <ul style="list-style-type: none"> <li>▪ All construction equipment used for the execution of the project works shall be fit for purpose and carry valid inspection certificates and insurance requirements.</li> <li>• The risk assessment shall be prepared and communicated prior to the commencement of work for all types of work activities on site.</li> <li>• Provide walkways that are clearly designated as a walkway; all walkways shall be provided with good conditions underfoot; signposted and with adequate lighting.</li> </ul>   | Client / Developer             |

| Activity | Potential Environmental & Social Impacts  | Proposed Mitigation Measures  | Institutional Responsibilities |
|----------|---|---|--------------------------------|
|          | <p>and vehicles, and electrical shocks.</p> <ul style="list-style-type: none"> <li>▪ Exposure to health events during construction activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis.</li> </ul> | <ul style="list-style-type: none"> <li>• Signpost any slippery areas, ensure proper footwear with a good grip is worn for personnel working within slippery areas.</li> <li>• Carry out fire risk assessment for the construction areas, identify sources of fuel and ignition and establish general fire precautions including, means of escape, warning, and fighting fire.</li> <li>• Set up a system to alert workers on site. This may be temporary or permanent mains operated fire alarm.</li> <li>• Fire extinguishers should be located at identified fire points around the site. The extinguishers shall be appropriate to the nature of the potential fire.</li> <li>• Establish and communicate emergency response plan (ERP) with all parties, the ERP to consider such things as specific foreseeable emergency situations, organizational roles and authorities, responsibilities and expertise, emergency response and evacuation procedure, in addition to training for personnel and drills to test the plan</li> <li>• Electrical equipment must be safe and properly maintained; works shall not be carried out on live systems.</li> <li>• Only competent authorized persons shall carry out maintenance on electrical equipment, adequate Personal Protective Equipment (PPE) for electrical works must be provided to all personnel involved in the tasks.</li> <li>• An adequate number of staff and first aiders shall be on site in accordance with Bangladesh Labor Law requirements.</li> <li>• First aid kit with adhesive bandages, antibiotic ointment, antiseptic wipes, aspirin, non-latex gloves, scissors, thermometer, etc. shall be made available by the contractor on site.</li> <li>• Emergency evacuation response shall be prepared by the contractor and relevant staff shall be trained through mock-up drills.</li> <li>• Ensure all equipment is suitable for jobs (safety, size, power, efficiency, ergonomics, cost, user acceptability etc.), provide the lowest vibration</li> </ul> |                                |

| Activity              | Potential Environmental & Social Impacts  | Proposed Mitigation Measures   | Institutional Responsibilities |
|-----------------------|---|--|--------------------------------|
|                       |   | <p>tools that are suitable and can do the works.</p> <ul style="list-style-type: none"> <li>• Ensure all tools and other work equipment are serviced and maintained in accordance with maintenance schedules and manufacturer's instructions.</li> <li>• Regular noise exposure assessments and noise level surveys of noisy areas, processes and equipment shall be carried out in order to form the basis for remedial actions when necessary</li> <li>• Awareness training sessions should be established and provided to all personnel involved during the construction phase in order to highlight the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, dehydration.</li> <li>• Ensure adequate quantities of drinking water are available at different locations within the site,</li> <li>• Eliminate the risk of exposure whenever possible, provide proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities.</li> <li>• Ensure that all workers exposed to a risk are aware of the possible dangers. They should be given thorough training in how to protect themselves and there should be effective supervision to ensure that the correct methods are being used</li> </ul> |                                |
| Decommissioning Phase | <ul style="list-style-type: none"> <li>▪ Post-design life is expected to involve rehabilitation, upgrading, and modernization of the facility, with a possible expansion (retrofitting and the addition of new technology). As a result, impacts from decommissioning are not expected to arise in the near future unless retrofitting and upgrade of the facility was not feasible. However, the ESIA Study should consider potential decommissioning impacts in case there was a need for the facility to be dismantled and end operations.</li> <li>▪ The main mitigation and monitoring measures to minimize or reduce the environmental and social impacts during decommissioning are anticipated to be similar to those identified for the construction phase.</li> </ul> |  | Client / Developer             |



### **Environmental and Social Screening**

In order to avoid significant negative social and environmental impacts a detailed screening is essential. It will minimize negative social and environmental impacts. The purpose of “environmental/social screening” is to get a preliminary idea about the degree and extent of potential environmental and social impacts for project intervention. SREDA will be responsible for carrying out environmental/social screening. The environmental/social screening would involve: (i) reconnaissance of the project areas and their surroundings; (ii) identification of the major project activities and (iii) preliminary assessment of the impacts of these activities on the biological, physico-chemical and socio- economic environment of the project surrounding areas.

In general, the environmental/social screening process identifies what impacts will be generated and what type of mitigation measures will be required for the project intervention. Also, the screening will help in determining whether a proposed project should follow the Environmental Code of Practices (ECoP) to mitigate/avoid the impacts or need further detail assessment with preparation of separate environmental/social management plan. The level of environmental and social assessment (ESA) of this project will primarily depend on the class/category of the project according to OP 4.01, OP 4.10, OP 4.12 and ECR 1997. The safeguard policies which are triggered in this case include: Environmental Assessment OP/BP4.01; Natural Habitats OP/BP4.04; Indigenous Peoples OP/BP 4.10, and Involuntary Resettlement OP/BP4.12. Furthermore, the World Bank Group General Environmental, Health and Safety (EHS) Guidelines are also applicable. All the above-mentioned instruments/safeguards documents will be prepared and disclosed before appraisal. As noted earlier, in the ECR 1997, project category has been assigned based on the nature of projects, not the anticipated impacts. According to ECR 1997, for “Orange A” Category sub-projects, no further environmental assessment would be required, but some additional information would be required; for “Orange B” category sub-projects Initial Environmental Examination (IEE) and Environmental Management Plan (EMP) would be required; while for Red Category sub-projects, full-scale EIA (including SIA) may be required.

### **Stakeholder Engagement, Community Participation and Consultations:**

Community/stakeholders will be engaged through meaningful consultations throughout the project cycle, with varying focus on issues relating to the subproject activities and the people who may have stakes therein. More formal consultations, focus group discussions and interviews of knowledgeable local persons will start with feasibility study, social (and

environmental) screening, PAP census and impact assessment, and preparation and implementation of the impact mitigation plans. Focus of consultations will generally shift from wider audience to specific groups who have direct stakes in the project.

SREDA will conduct consultation meeting with local community before selecting sites/right of way of the project. The project will seek to get feedback from the communities and affected persons and incorporate in the project document. If any mitigation measures are suggested by the stakeholders, those will be incorporated. Table B describes the consultation and disclosure roles and responsibilities.

**Table B: Consultation and Disclosure Roles and Responsibilities**

| <b>Project Phase</b>                 | <b>Activities</b>  | <b>Details</b>   | <b>Responsible Agency</b>  |
|--------------------------------------|--|--|----------------------------|
| <b>Project Initiation Stage</b>      | -Subproject information dissemination on various components.<br>-Disclosure of preliminary plans for proposed land acquisition.<br>-Preliminary Information sharing about the tentative alignment/sites with the APs in case of temporary impact on business, income and livelihood. | -Leaflets posted or distributed containing information on the project.<br>-Public notice issued in public places including newspapers and direct consultation with DPs.                              | SREDA                      |
| <b>RAP /ARAP Preparation Phase</b>   | Stakeholder consultations.   | -Further consultations with DPs and households, titled and non-titled.<br>-Summary RPF made available to all DPs at the convenient place which is easily accessible and should be in local language. | SREDA                      |
|                                      | Disclosure of final entitlements and rehabilitation packages and disclosure of draft RAP/ARAP.   | RAPs disclosed to all DPs in local language  | SREDA                      |
|                                      | Finalization of RAP/ARAP.  | -Review and approval of RAP by EA.<br>-Review and clearance of RP by World Bank (prior to award of contract).<br>Web disclosure of the RAP.<br>Disclosure of the Final RP to DPs                     | EA/IA                      |
| <b>RAP/ARAP Implementation Stage</b> | Ongoing consultation with DPs during RAP implementation.   | -Continued discussions and information disclosure to DPs;  | SREDA/<br>Implementing NGO |

| Project Phase | Activities | Details   | Responsible Agency |
|---------------|------------|---|--------------------|
|               |            | <ul style="list-style-type: none"> <li>-Payment of entitlements (all compensation must be paid before displacement occurs.</li> <li>-Grievance Redress Mechanism activated.</li> <li>-Written notification from EA/IA to WB that all compensation paid before displacement occurs.</li> <li>Construction can begin on sections where compensation is paid and community notified of start date of civil works.</li> <li>- DPs with unresolved grievances or disputes over land ownership, compensation amounts, etc. are notified of any compensation payments set aside by EA/IA in separate escrow accounts to be paid when disputes are resolved.</li> </ul> |                    |

### Gender

Mainstreaming gender equity and empowerment is a focus area in the project. In the activities related to livelihood, restoration will address women’s needs. Once the project site will be selected, gender analysis will be part of the social assessment and the analysis will be based on findings from gender specific queries during the primary and secondary data collection process. The quantitative and qualitative analysis will bring out sex disaggregated data and issues related to gender disparity, needs, constraints, and priorities; as well as understanding whether there is a potential for gender based inequitable risks, benefits and opportunities. Based on the analysis, the specific interventions will be designed and if required gender action plan will be prepared. The overall monitoring framework of the project will include sex disaggregated indicator and gender relevant indicator.

The participation of beneficiaries and focus on poverty reduction are two other key determinants of the effectiveness and sustainability of any project. Any project must address the constraints on women’s participation in project design, construction, and monitoring and evaluation (M & E). Three major tools will be used to identify and deal with gender issues in the project cycle: gender analysis, project design, and policy dialogue.

Gender analysis will be an integral part of the initial social assessment at the screening stage itself. The issues identified can be scaled up during the feasibility and detailed analysis can be carried out during the project preparation stage. The findings and recommendations from the gender analysis during project planning and feedback from beneficiaries during implementation must be discussed thoroughly to determine the need for further action.

The capacity building component will also create a scope for women empowerment. At least 20% of the training facility will be provided to women who are involved in RE business. Women employees from government/non-government/NGO/private sectors will get equal chance to have international standard training on renewable energy.

### **Grievance Redress Mechanism (GRM)**

SREDA has already undertaken several consultation activities. These need to be continued as part of stakeholder engagement activities, as detailed in this ESMF. An effective Grievance Redress Mechanism (GRM) also needs to be put in place before construction phase of the project. Grievance mechanisms are an integral part of stakeholder engagement process. The Projects will have a multi-level process for addressing grievances from project-affected communities.

SREDA will establish a grievance mechanism to receive and facilitate resolution of affected communities' concerns and grievances about the project. The GRM is an important part of stakeholder engagement process and should be scaled to risks and adverse impacts of the project, address concerns promptly, use an understandable and transparent process that is culturally appropriate and readily accessible to all segments of the affected communities, and do so at no cost to communities and without retribution. SREDA will inform the affected communities about the mechanism in the course of its community engagement process.

The project will constitute a three-member Grievance Redress Committee (GRC) comprising of an officer representing the project proponent, not below the rank of the executive engineer the elected member (local body) of the project area/location and one member of the public who is known to be a person of integrity, good judgment and commands respect among the community. The existence of the GRC will be disseminated to the affected persons through printed handouts providing details of the structure and process of redressing grievances.

The project will document all complaints received, the actions taken on each of them and send a report of the same every quarter. The GRC will address local public grievances regarding environmental impacts of the project during construction and operation. The project will address issues through GRC to receive and facilitate the resolution of affected persons'

concerns and grievances about physical and economic displacement and other project impacts, paying particular attention to the impacts on vulnerable groups. The GRC should be scaled to the risks and adverse impacts of the project.

### **Institutional Arrangements for ESMF Implementation**

The overall project will have a Steering Committee consisting of members from different ministries (Table C). This committee shall provide overall guidance and facilitate coordinated implementation of the project. The Steering Committee will be the highest decision making and supervisory body of the project. The committee will hold meetings at least once in six months for smooth implementation of the project.

**Table C: Project Steering Committee**

| <b>SN</b> | <b>Person</b>   | <b>Designation</b> |
|-----------|---|--------------------|
| 1.        | Secretary, Ministry of Power, Energy & Mineral Resources      | Chairperson        |
| 2.        | Chairman, SREDA   | Member             |
| 3.        | Additional Secretary/ Joint Secretary (Dev.), Power Division. | Member             |
| 4.        | Member, SREDA   | Member             |
| 5.        | One representative from Planning Commission                   | Member             |
| 6.        | One representative from IMED                                  | Member             |
| 7.        | Joint Chief/ Deputy Chief, Power Division                     | Member             |
| 8.        | One representative from Finance Division                      | Member             |
| 9.        | PD of the project   | Member Secretary   |

The overall project will also have a Technical Advisory Committee (TAC). The TAC shall advise the Executing Agencies, when requested, to identify proper consultants, to evaluate the impact of pilot projects in renewable energy development and to advise the Executing Agencies concerning any technical issues (Table D). Meetings will be convened when there is a need for technical advice/support. The Chairperson will instruct the secretariat to arrange and call for the meetings. SREDA will also establish a Project Implementation Committee (PIC). The PIC will look after implementation of the waste to energy pilot project and resolve any issues that may arise (Table E). The Committee will hold meetings at least once every three months to discuss implementation progress and monitoring.

**Table D: Technical Advisory Committee (TAC)**

| <b>SN</b> | <b>Person</b>   | <b>Designation</b> |
|-----------|---|--------------------|
| 1.        | Chairman, SREDA                                       | Chairperson        |
| 2.        | One representative from executing agency              | Member             |
| 3.        | An academic expert from higher education organization | Member             |
| 4.        | An expert consultant from the renewable energy field  | Member             |

|    |                   |                  |
|----|-------------------|------------------|
| 5. | PD of the project | Member Secretary |
|----|-------------------|------------------|

**Table E: SREDA Project Implementation Committee (PIC)**

| SN | Person   | Designation      |
|----|--|------------------|
| 1. | Chairman, SREDA  | Chairperson      |
| 2. | One representative from INGO/Consulting firm   | Member           |
| 3. | Member, SREDA  | Member           |
| 4. | Safeguard Specialist of SREDA  | Member           |
| 5. | Senior Assistant Chief, Power Division   | Member           |
| 6. | A representative from Rajshahi City Corporation (or alternative City Corporation/Municipality) Engineering Section | Member           |
| 7. | PD of the project  | Member Secretary |

The Project proponent (SREDA) will have overall responsibility for the implementation of this ESMF (which includes the RPF and TPF) as well as all subsequent safeguards instruments, such as ESIA, ESMP, RAP, SECDP, etc. Training will be arranged involving PIC, TAC, consultants, and contractors to awareness and knowledge on issues related to environmental and social safeguards. Environment and Social Specialists need to be on Board as soon the PIC is set up. They will be responsible for ensuring the adequacy of ESIA (incl. ESMP) an environmental component in the Bidding Documents (such as BOQ) and ensure the quality of Environmental Action Plan (EAP) submitted by the contractor. The specialists will also be responsible for monitoring at the field level on a regular basis during the construction phase. The Contractor’s Environment Supervisor also has an important role during the construction phase.

The Engineering Section of the relevant City Corporation will be a key element of the operation and maintenance arrangements of the waste to energy facility. Dedicated Engineer (at Executive Engineer grade) will be part of the O&M staff and will be responsible to prepare and then implement the relevant environmental and social mitigation measures including ensuring health and safety during project operation and maintenance phase.

The DoE is also responsible for monitoring and enforcement of conditions specified in the ECC an annual basis.

### **Capacity Building**

Environmental and social training will help ensure that the requirements of the ESMF and subsequent ESIA and ESMP are clearly understood and followed by all project personnel throughout the project period (Table F). The PIC and PMU will ensure, in collaboration with the PSC, that these training are provided to all Project personnel. The environmental and social

training program will be finalized and completed before the commencement of the project. The training will be provided to the SREDA staff, the City Corporation staff, the construction contractors, and other staff engaged in the Project. Training will cover all staff levels, ranging from the management and supervisory to the skilled and unskilled categories. The scope of the training will cover general environmental and social awareness and the requirements of the ESIA and the ESMP, with special emphasis on sensitizing the project staff to the environmental and social aspects of the area.

**Table F: Environmental and Social Safeguards Training**

| <b>Contents</b>  | <b>Participants</b>                               | <b>Responsibility</b> | <b>Schedule</b>  |
|--|---|-----------------------|--|
| General environmental and socioeconomic awareness;<br>The environmental and social sensitivity of the project area;<br>Key findings of the ESIA;<br>Mitigation measures;<br>ESMP; Social and cultural values of the area.              | Selected SREDA staff;<br>PIC; PMU,<br>Contractors | PIC                   | Prior to the start of the Project activities.<br>(To be repeated as needed.)             |
| General environmental and socioeconomic awareness;<br>The environmental and social sensitivity of the project area;<br>Mitigation measures;<br>Community issues;<br>Awareness of transmittable diseases<br>Social and cultural values. | PIC; PMU;<br>Selected contractors' crew           | PIC                   | Prior to the start of the field activities.<br>(To be repeated as needed.)               |
| ESMP;<br>Waste disposal;<br>HSE  | Contractors,<br>Construction crew                 | PMU                   | Prior to the start of the construction activities.<br>(To be repeated as needed.)        |
| Road safety;<br>Defensive driving;<br>Waste disposal;<br>Cultural values and social sensitivity.   | Drivers   | Contractors           | Before and during the construction activities.<br>(To be repeated as needed.)            |
| Restoration requirements;<br>Waste disposal.   | Restoration teams                                 | Contractors           | Before the start of the restoration activities.  |
| HSE during Operation Phase   | Selected SREDA staff; RCC staff                   | PSC                   | Prior to the Start of the Project Operation and when required during the operation phase |

| Contents   | Participants                    | Responsibility | Schedule  |
|--|---------------------------------|----------------|---|
| Social safeguards issues including involuntary resettlement and small ethnic community issues. | Selected SREDA staff; RCC staff | PMU            | At preparation and implementation of social management plans before start of civil works. |

During the O&M phase of the Project, these training will continue to be conducted by HSE staff for all relevant O&M personnel at each facility.

### Implementation Budget

The total budget for ESMF implementation has been estimated to be Taka 4,770,000 (USD 57,470). This included preparation of an ESIA, training and capacity building activities, ESMP during construction and O&M phases (Table G).

**Table G: Tentative Budget for ESMF Implementation**

| SN | Item  | Amount (BDT) | Amount (USD) <sup>a</sup> | Remarks   |
|----|---|--------------|---------------------------|---|
| 1  | ESIA for waste to energy plant                              | 3,000,000    | 36,144                    | Conducted by local consulting firm after the design is completed (sample TOR provided in Annex 3) |
| 2  | Training on Environmental and Social Issues for PMU         | 300,000      | 3,614                     | 2-day training by hired Social and Environmental Consultants                                      |
| 3  | Training on Environmental and Social Issues for PIC         | 100,000      | 1,205                     | 1-day training at SREDA office by PMU Social and Environmental Consultants                        |
| 4  | Training on Environmental and Social Issues for Contractors | 150,000      | 1,807                     | To be included in Bid Documents   |
| 5  | Hiring of Environmental and Social Safeguards Consultants   | 720,000      | 8,675                     | 12 months input @ BDT 60,000/month. To be included in Bid Documents                               |
| 6  | Implementation of ESMP during the construction phase        | 500,000      | 6,024                     | To be updated during ESIA preparation.  |
| 7  | Implementation of ESMP during the operation phase           | tbd          | tbd                       | To be determined by City Corporation /Municipality  |
| 8  | Total   | 4,770,000    | 57,470                    |   |

Notes:

- Conversion rate used: USD 1 = BDT 83
- Training details provided in Section 7.2.
- ESMP during construction phase should include costs of all mitigation measures and monitoring activities.
- ESMP during operation phase should include costs of all mitigation measures and monitoring activities.



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## **ABBREVIATIONS**

|       |  |
|-------|--|
| BBS   | Bangladesh Bureau of Statistics                  |
| BNBC  | Bangladesh National Building Code                |
| CAP   | Corrective Action Plan                           |
| CSR   | Corporate Social Responsibility                  |
| DC    | District Commissioner                            |
| DOE   | Department of Environment                        |
| ECA   | Environmental Conservation Act                   |
| ECC   | Environmental Clearance Certificate              |
| ECR   | Environment Conservation Rules                   |
| EGCB  | Electricity Generation Company of Bangladesh     |
| EHS   | Environmental, Health and Safety                 |
| EMP   | Environmental Management Plan                    |
| ESIA  | Environmental and Social Impact Assessment       |
| ESMP  | Environmental and Social Management Plan         |
| EPC   | Engineering, Procurement and Construction        |
| EQS   | Environmental Quality Standards                  |
| ESIA  | Environmental and Social Impact Assessment       |
| ESMAP | Energy Sector Management Assistance Program      |
| ESSF  | Environmental and Social Management Framework    |
| ESMP  | Environmental and Social Management Plan         |
| ESMS  | Environmental and Social Management System       |
| ESPP  | Environmental and Social Policies and Procedures |
| ESSF  | Environmental and Social Safeguards Framework    |
| ETP   | Effluent Treatment Plant                         |
| FI    | Financial Intermediaries                         |
| FPIC  | Free, Prior, and Informed Consent                |
| GFN   | Good Faith Negotiation                           |

|        |   |
|--------|---|
| GIIP   | Good International Industry Practice              |
| GHG    | Greenhouse Gas                                    |
| GoB    | Government of Bangladesh                          |
| GRC    | Grievance Redress Committee                       |
| ICP    | Informed Consultation and Participation           |
| IDCOL  | Infrastructure Development Company Limited        |
| IEE    | Initial Environmental Examination                 |
| IP     | Indigenous People                                 |
| IPDP   | Indigenous People Development Plan                |
| IPP    | Independent Power Producer                        |
| IUCN   | International Union for Conservation of Nature    |
| LAP    | Land Acquisition Plan                             |
| MOL    | The Ministry of Land                              |
| MSW    | Municipal Solid Waste                             |
| NBSAPs | National Biodiversity Strategies and Action Plans |
| NREP   | National Renewable Energy Policy 2008             |
| O&M    | Operation and Maintenance                         |
| PAPs   | Project Affected Persons                          |
| PPE    | Personal Protective Equipment                     |
| PIC    | Project Implementation Committee                  |
| PMU    | Project Management Committee                      |
| PSC    | Project Steering Committee                        |
| RAP    | Resettlement Action Plan                          |
| RAPSS  | Remote Area Power Supply Systems                  |
| PRSP   | Poverty Reduction Strategic Paper                 |
| R&R    | Resettlement and Rehabilitation                   |
| RCC    | Rajshahi City Corporation                         |
| RE     | Renewable Energy                                  |
| REFF   | Renewable Energy Financing Facility               |

|       |   |
|-------|---|
| SCC   | Site Clearance Certificate                          |
| SESA  | Strategic Environmental and Social Assessment       |
| SREDA | Sustainable and Renewable Energy Development Agency |
| TAC   | Technical Advisory Committee                        |
| ToR   | Term of Reference                                   |
| VECs  | Valued Environment Components                       |
| WB    | The World Bank                                      |

# **1 PROJECT DESCRIPTION**

## **1.1 Project Context**

The power sector in Bangladesh has grown rapidly over the last decade. In 2016, maximum generation was reported to exceed 8,000 MW. About 67% of electricity generation is based on natural gas and the rest is from liquid fuel, coal, and hydropower. 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 % of transmission and distribution losses and accounts receivable of 2 months of sales equivalent, the 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 % of Bangladeshis had access to electricity; today, 78% have access. It is expected that Bangladesh will achieve universal access to electricity much ahead of the Sustainable Energy for All (SE4ALL) 2030 target. However, Bangladesh lags in its efforts to tap into renewable energy for grid-tied electricity generation, despite the tremendous success of its off-grid renewable energy program. While the total installed renewable energy generation capacity is currently 430MW, the share of renewable energy in grid supply is only 1.5%, with almost all of it coming from a single plant, the 230MW Kaptai Hydropower Project developed in the 1960s. The remaining is mostly from off-grid solar homes in rural areas (175MW), some (15MW) 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 PV systems have been installed in the main cities 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 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.

Resource assessments included in the Bangladesh CIF-SREP investment plan indicate that Bangladesh could realize an additional 3,666 MW of renewable energy capacity. Considering 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. As

per the National Renewable Energy Policy 2008 (NREP), generation capacity of 2,000MW is planned to be added by 2020. GoB has also set renewable energy development targets for several technologies for each year from 2015 to 2021 (“RE Development Targets”). The RE Development Targets call for an additional 3,100 MW of renewable energy capacity to be installed by 2021. Most of the new capacity is planned from solar (1,676 MW, or 54 %) and wind (1,370 MW, or 44 %), and there are also targets for waste-to-energy (40 MW), biomass (7 MW), biogas (7 MW) and small hydro (4 MW). The Power System Master Plan 2010 sets goals for fuel diversification with an emphasis on increasing the role of renewable energy in the power generation mix. To promote renewable energy and energy efficiency, the Sustainable and Renewable Energy Development Agency (SREDA) was established in 2014.

## **1.2 Project Objectives and Beneficiaries**

The Government of Bangladesh (GoB) is implementing the “Scaling Up Renewable Energy Project (SREP)” with financing from the World Bank for exploring a new approach of a public-private partnership (PPP) to overcome the current barriers to unlock the potential of utility-scale RE – private sector-driven development on the public sector-owned land. Private sector expertise in installation, operation, and maintenance of utility-scale RE is planned to be brought to those sites for further development. The Project will provide technical assistance support to complement GoB’s ongoing effort to identify suitable sites and conduct preparation activities for developing utility-scale RE. In addition, to address limited access to finance by the private sector, a financing facility will be established to allow private sector developers for long-term debt financing to leverage further investment at scale.

The Objective of SREP is to increase installed generation capacity of, and mobilize financing for, renewable energy in Bangladesh. The Project’s direct beneficiaries are (a) people in Bangladesh who will benefit from better quality of supply and cleaner air due to the electricity generated from RE; (b) private sector developers of RE subprojects, including their employees, supported through the Renewable Energy Financing Facility; (c) industry in terms of reduced technological and integration risks and increased technical capacity; (d) people in selected municipalities benefiting from improved waste management through the waste-to-energy pilots.

Under Component 3 of the SREP, the Bank is supporting a technical assistance and capacity building activities implemented by SREDA to improve the enabling environment to scale up renewable energy. It will contribute to data collection, validation, finalization, and publication of a national resource atlas which will inform policy makers and potential solar and wind developers. Besides the resource assessment, this component will support preparatory activities for upcoming utility-scale renewable energy parks on public land, which will be further identified by the Government of Bangladesh during implementation. Furthermore, technical assistance and 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.

This component will also support feasibility assessment and deployment of small scale pilots of renewable energy technologies. A municipal waste-to-energy sub-project is expected to be the first pilot, to be financed under this component in collaboration with city corporations that manage the municipal waste collection. One of the potential candidates is the Rajshahi City Corporation for an installation of a biogas plant to utilize slaughterhouse waste. The City Corporation will provide the land required. The pilot is expected to inform the technical and commercial feasibility of waste-to-energy sub-projects and to help establish waste collection practices and government schemes to support waste-to-energy in municipalities.

The location where the pilot will be implemented is unknown at this stage and will only be identified during project implementation. A Resettlement Policy Framework (RPF) and a Tribal Peoples Framework (TPF) were prepared for managing involuntary resettlement and indigenous peoples' issues likely to associate with implementation of the Renewable Energy Resource Assessment, Piloting and Technical Assistance Project. This Environmental and Social Management Framework (ESMF) has been prepared for the Waste-to-Energy Project in tandem with the RPF and TPF (hereinafter referred to as ESMF) to guide the onward preparation of site specific plants. The project is classified as "category B" on the expected impact according to the World Bank Operational Policy on Environmental Assessment (OP 4.01).

## **2 ENVIRONMENTAL AND SOCIAL FRAMEWORK (ESMF) OBJECTIVE**

This ESMF, together with the RPF and TPF, is developed to guide the implementation of the municipal waste-to-energy pilot to be financed under Component 3 of the SREP and implemented by SREDA in collaboration with city corporations that manage the municipal waste collection. The project is classified as Category B on the expected impacts according to the WB OP4.01. Given the specific sites and locations of project interventions have not yet been identified, the project is required to prepare an Environmental and Social Management Framework (ESMF) which would seek to mainstream all environmental and social concerns into the preparation, design and implementation of the project. The ESMF must be prepared, approved and disclosed publicly in Bangladesh and at the World Bank before the Bank will appraise the project.

The purpose of the ESMF is thus to assist SREDA to administer necessary environmental and social management (including risk management of environmental and social impacts) procedures and measures of proposed sub-project(s) whose infrastructure design and location are unknown at this stage and may change during project implementation. The ESMF comprises the guidance document required for the environmental and social management plan (ESMP) and other planning instruments (i.e., SECDP, ARAP or RAP) to be applied at project appraisal and formulation when detailed feasibility studies and technical design details become available.

The ESMF is a guidance and decision-support tool for SREDA and stakeholders. As an overarching guideline document, the ESMF provides assurances that:

- Sub-projects and technical assistance (TA) consider potential environmental and social issues, especially for different populations who would be directly impacted (positively or adversely) by the sub-project;
- Sub-projects and TA consider socio-cultural and gender sensitivities and environmental values prevailing in areas where the proposed sub-project(s) would be implemented;
- During project formulation and design, adverse environmental and social impacts may arise during construction and operational phases and appropriate mitigation/enhancement

measures need to be designed with a monitoring plan developed to track implementation of site-specific safeguards instruments;

- Environmental and social management safeguard instruments such as ESMP, SECDP, ARAP/RAP and Environmental Codes of Practices (ECoP) are suitably prepared and followed; and
- Safeguard instruments are compliant with WBG environmental assessment (EA) operational policies and procedures as well as GoB national laws and regulations.

### **3 BASELINE DATA**

#### **3.1 Introduction**

The proposed waste to energy pilot project will be located within Rajshahi City Corporation (RCC) (or alternative City Corporation/Municipality). A map of RCC is provided in Figure 3-1. The exact location of the pilot plant is yet to be determined.

In this pilot plant, waste from slaughterhouse (including dung from lairage section, stomach parts/contains of slaughtered cattle, blood and wash/waste water) is accumulated to feed in to the Inlet Chamber of Biogas Plant on daily basis. Freshly accumulated waste is mixed with water in equal ratio at the Biogas Inlet Chamber to flow to the Digester. Mixed waste is exposed to Anaerobic Digestion [decomposition of carbon source by anaerobic bacteria in absence of air/oxygen] inside Digester to produce Biogas. Retention time required for complete digestion and liberation of free gas is 40-45 days. Semi liquid residue (defined as Slurry) from Hydraulic Chamber is transferred to Slurry Pit for further processing where it is dehydrated on the sand bed and dried at sunlight to be used as Organic Fertilizer. Dehydration and drying time varies from 7 to 10 days depending on the quantity of slurry being handled and ambient condition.



Source: www.en.banglapedia.org

**Figure 3-1: Map of Rajshahi City Corporation**

## 3.2 Bio-physical Environment

### 3.2.1 Soil

The soil formation of the City area falls under the Gangetic Alluvium. It represents the riverine lands of the Gangetic plains. Soil texture varies from clay loam to sandy loam. The pH of the soils ranges from 7.0 to 8.5. The soils are moderately fertile and are characterized by calcium carbonate content and are well supplied with phosphate and potassium. (source: Banglapedia)

### 3.2.2 Climate

The climate of RCC is dominated by the South Asia Monsoon, like the rest of the country. The monthly variation in key climate parameters is provided in Table 3-1.

**Table 3-1: Monthly Averages of Key Climate Variables at Rajshahi BMD Station (2001-2013)**

| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

|                        |      |      |      |      |       |       |       |       |      |       |      |      |
|------------------------|------|------|------|------|-------|-------|-------|-------|------|-------|------|------|
| Rainfall (mm)          | 5.8  | 6    | 24.7 | 48.2 | 144.6 | 243.5 | 262.9 | 228.2 | 220  | 130.6 | 10.3 | 3.5  |
| Mean Temp (°C)         | 16.1 | 19.8 | 25.8 | 29.2 | 29.5  | 29.9  | 29.3  | 29.1  | 28.8 | 26.6  | 22.2 | 17.7 |
| Max Temp (°C)          | 26.6 | 32.8 | 38.2 | 39.7 | 39.8  | 39    | 36.1  | 36.2  | 37   | 35.3  | 31.5 | 28.7 |
| Min Temp (°C)          | 8.1  | 10.6 | 15.5 | 21.3 | 22.9  | 24.7  | 25.7  | 25.7  | 25.3 | 20    | 14.8 | 10.3 |
| Humidity (%)           | 75   | 70   | 62   | 67.7 | 76    | 82.3  | 84.7  | 86.3  | 85.3 | 82.7  | 75   | 77   |
| Avg. Wind speed(knots) | 2.2  | 2.2  | 2.4  | 2.7  | 2.6   | 2.5   | 2.6   | 2.5   | 2.4  | 2.1   | 2.1  | 2.1  |
| Max Wind Speed(knots)  | 4.6  | 4.4  | 5.1  | 4.9  | 6.0   | 6.3   | 5.5   | 5.5   | 6.5  | 5.2   | 4.2  | 3.6  |
| Sunshine (Hours)       | 5.9  | 8    | 8.2  | 8    | 6     | 5     | 5.5   | 4.8   | 5.8  | 6.5   | 6.7  | 5.9  |
| Evaporation (mm/D)     | 2.2  | 3.1  | 4.6  | 5.4  | 5.0   | 4.2   | 3.7   | 3.7   | 3.5  | 3.2   | 2.9  | 2.3  |

Source: Bangladesh Meteorological Department

### 3.2.3 Air Quality

The ambient air quality in the City is being monitored by Dept. of Environment (DoE's) continuous air monitoring station (CAMS). Monthly data for the year 2013 are shown in Table 3-2.

**Table 3-2: Ambient Air Quality Data at DoE's CAMS 10 (Rajshahi)**

| Parameter              | Unit              | Jan-13 | Feb-13 | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov-13 | Dec-13 |
|------------------------|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| SO <sub>2</sub> – 24hr | ppb               | 9.51   | 16.1   | 20.8   | 16.9   | 2.51   | 2.26   | NA     | NA     | NA     | 0.28   | 0.41   | 0.45   |
| NO <sub>2</sub> – 24hr | ppb               | 44.3   | 38.2   | 32.1   | 16.1   | 51.7   | 51.2   | 47     | 49.8   | 54.8   | 56.3   | 54.8   | 65.8   |
| CO-1hr                 | ppm               | 1.67   | 1.32   | 1.28   | 0.91   | 0.66   | 0.52   | 0.5    | 0.5    | 0.5    | 0.5    | 0.51   | 0.51   |
| CO-8hr                 | ppm               | 1.65   | 1.33   | 1.27   | 0.91   | 0.69   | 0.52   | 0.49   | 0.5    | 0.5    | 0.5    | 0.51   | 0.51   |
| O <sub>3</sub> -1hr    | ppb               | 20.4   | 24     | 29.1   | 25.3   | 13.6   | 11.2   | 6.6    | 3.64   | 3.89   | 4.3    | 12.5   | 14.7   |
| O <sub>3</sub> -8hr    | ppb               | 20.8   | 23.3   | 29.5   | 25.7   | 12.7   | 11     | 7.1    | 3.51   | 3.91   | 4.36   | 12.8   | 14.6   |
| PM2.5-24hr             | µg/m <sub>3</sub> | 175    | 101    | 103    | 76     | 35     | 31     | 23     | 27     | 16     | 38     | 84     | 113    |
| PM10-24hr              | µg/m <sub>3</sub> | 330    | NA     | 213    | NA     | NA     | 136    | NA     | 61     | 84     | NA     | NA     | NA     |

Source: Dept. of Environment

### 3.3 Socio-Economic Environment

#### 3.3.1 Demographic

The estimated population of Rajshahi City in the 2011 Census was approx. 450,000. Around 48% of the households lived in pucca structures, 41% in semi-pucca and the remaining in temporary structures.

**Table 3-3: Urban Household and Population by Type of Structure in Rajshahi City Corporation, 2011**

| Items                          | Type of House Structures |         |            |         |        |
|--------------------------------|--------------------------|---------|------------|---------|--------|
|                                | All Structures           | Pucca   | Semi-Pucca | Kutchha | Jhupri |
| Total Household                | 99,322                   | 47,446  | 40,482     | 9,628   | 1,766  |
| Percentage of Total Household  | 100                      | 47.77   | 40.76      | 9.69    | 1.78   |
| Total Population               | 447,141                  | 231,984 | 171,501    | 37,201  | 6,455  |
| Percentage of Total Population | 100                      | 51.88   | 38.36      | 8.32    | 1.44   |
| <b>General</b>                 |                          |         |            |         |        |
| Household                      | 96,718                   | 45,330  | 40,034     | 9,604   | 1,750  |
| Population                     | 404,939                  | 194,120 | 167,409    | 36,994  | 6,416  |
| Percentage of Total Population | 100                      | 47.94   | 41.34      | 9.14    | 1.58   |
| <b>Institutional</b>           |                          |         |            |         |        |
| Household                      | 332                      | 306     | 23         | 3       | -      |
| Population                     | 19,733                   | 18,880  | 714        | 139     | -      |
| Percentage of Total Population | 100                      | 95.68   | 3.62       | 0.70    | -      |
| <b>Others</b>                  |                          |         |            |         |        |
| Household                      | 2,272                    | 1,810   | 425        | 21      | 16     |
| Population                     | 22,469                   | 18,984  | 3,378      | 68      | 39     |
| Percentage of Total Population | 100                      | 84.49   | 15.03      | 0.30    | 0.17   |

Source: BBS (2014, pg-321 & 323)

According to the Bangladesh Bureau of Statistics (BBS), the population growth rate of RCC between 2001 and 2011 was 1.47%/yr. This was slightly higher than the national growth rate of 1.37%/yr. An upper estimate of the 2018 population is around 500,000 (compounding 2011 population of 450,000 by 1.47%/yr for 7 years).

#### 3.3.2 Economic

HIES (2010) estimated average monthly income per household at the current price to be of Tk. 11,479 at the national level in 2010. Monthly household income (Tk 9,342) and consumption expenditure (Tk 9,254) for Rajshahi Division was below the national average. Among various

sources of incomes, it has been reported that the majority of households in the RCC area earn their income through paid employment and business. Around 5% of the household relied on agriculture, fisheries and agricultural labour for their main income of which 3% (1965 households) earned their income from agriculture, forestry and livestock; 2% (1735 households) from agricultural labour and just 314 had fisheries as their main income source. According to a household survey conducted by the consultants for the Rajshahi Development Plan (2001-2002) it was stated that, in the RCC area trade and commerce employed about 35% of the income earners followed by government departments and autonomous bodies (28%), the informal sector (19%), skilled mechanical work (5%), non-agricultural day labour (3%) and rickshaw and van pulling (3%).

### 3.3.3 Cultural Heritage

According to Department of Archaeology of Bangladesh 23 archaeological sites are present in the Rajshahi District. Within the City Corporation area there is numerous site of cultural heritage (see Table 3-4).

**Table 3-4: List of Selected Cultural Heritage sites in Rajshahi City Corporation Area**

| <b>Name of Archaeological Site</b> | <b>Location</b>          |
|------------------------------------|--------------------------|
| Shaheed Minar                      | Near Rajshahi Zero Point |
| Varendra Research Museum           | Near Emaduddin Road      |
| Tikapara Graveyard                 | Tikapara                 |
| Shah Makhdum Jame Masjid           | Near Dorgah Road         |
| Rajshahi Central Temple            | Near Rajshahi Zero Point |
| Buddhist Temple                    | Near Mot Pukur           |

## **4 REGULATORY FRAMEWORK: POLICY, ACT AND RULES**

### **4.1 Overview of Bangladesh Legal Framework**

The legislative basis for Environmental Impact Assessment (EIA) in Bangladesh is the Environmental Conservation Act 1995 (ECA'95) and the Environmental Conservation Rules 1997 (ECR'97). Department of Environment (DOE), under the Ministry of Environment and Forests (MOEF), is the regulatory body responsible for enforcing the ECA'95 and ECR'97. It is the responsibility of the proponent to conduct an Environmental Assessment (EA) of the development proposal and the responsibility to review EIAs for the purpose of issuing Environmental Clearance Certificate (ECC) rests on the DOE.

### **4.2 Bangladesh Environmental Conservation Act (ECA), 1995**

The Environmental Conservation Act (ECA) of 1995 is the main legislative framework document relating to environmental protection in Bangladesh. This umbrella Act includes laws for conservation of the environment, improvement of environmental standards, and control and mitigation of environmental pollution. This Act established the DOE and empowers its Director General to take measures as he considers necessary which includes conducting inquiries, preventing probable accidents, advising the Government, coordinating with other authorities or agencies, and collecting & publishing information about environmental pollution. According to this act (Section 12), no industrial unit or project shall be established or undertaken without obtaining, in a manner prescribed by the accompanying Rules, an (ECC) from the Director General of the DOE.

The Act was amended in 2006 (SRO No. 175-Act/2006 dated August 29, 2006) on collection and recycling of used/non-functional batteries for the conservation of the environment, improving environmental standard and control and prevention of environmental pollution. According to this amendment, no recycling of battery will be permitted without environmental clearance of DOE. This also restricted the improper disposal of used batteries or any parts of used battery in open place, water bodies, waste bins, etc. All used batteries must be sent to the DOE approved battery recycling industry at the earliest convenience. No financial transaction was allowed for used/non-functional batteries. However, the act was amended on the same issue again in 2008 (SRO No. 29-Act/2008 dated February 11, 2008) to allow financial transaction on mutually agreed fixed cost.

#### 4.2.1 Environment Conservation Rules (ECR), 1997

The Environment Conservation Rules, 1997 (details in Annex 1) were issued by the GoB in the exercise of the power conferred under the Environment Conservation Act (Section 20), 1995.

Under these Rules, the following aspects, among others, are covered:

- Declaration of ecologically critical areas;
- Classification of industries and projects into four categories;
- Procedures for issuing the Environmental Clearance Certificate
- Determination of environmental standards;

Rule 3 defines the factors to be considered in declaring an area 'ecologically critical area' (ECA) as per Section 5 of ECA'95. It empowers the Government to declare an area 'ECA' if it is satisfied that the ecosystem of the area has reached or is threatened to reach a critical state or condition due to environmental degradation. The Government is also empowered to specify which of the operations or processes shall be carried out or shall not be initiated in the ecologically critical area. Under this mandate, MOEF has declared Sundarban, Cox's Bazar-Tekhnaf Sea Shore, Saint Martin Island, Sonadia Island, Hakaluki Haor, Tanguar Haor, Marzat Baor and Gulshan-Baridhara Lake as ecologically critical areas and prohibited certain activities in those areas.

ECR'97 (Rule 7) classifies industrial units and projects into four categories depending on environmental impact and location for the purpose of issuance of ECC as are:



All existing industrial units and projects and proposed industrial units and projects, that are considered to be low polluting are categorized under "Green" and shall be granted Environmental Clearance. For proposed industrial units and projects falling in the Orange- A, Orange- B and Red Categories, firstly a site clearance certificate and thereafter an environmental clearance certificate will be issued. A detailed description of those four categories of industries has been given in Schedule-1 of ECR'97.

Apart from general requirement, for every Orange-B and Red category proposed industrial unit or project; the application must be accompanied by feasibility report on Initial Environmental

Examination (IEE), Environmental Impact Assessment (EIA) based on approved TOR by DOE, Environmental Management Plan (EMP) along with layout plan (showing location of any ETP), time schedule of ETP, etc.

The ECR'97 also contains the procedures for obtaining ECC from the Department of Environment for different types of proposed units or projects. Any person or organization wishing to establish an industrial unit or project must obtain ECC from the Director General. The application for such certificate must be in the prescribed form together with the prescribed fees laid down in Schedule 13, through the deposit of a Treasury Chalan in favor of the Director General. Rule 8 prescribes the duration of validity of such certificate (3 years from green category and 1 year for other categories) and compulsory requirement renewal of certificate at least 30 days before expiry of its validity.

There is no clear and specific guidance about the application of renewable energy technologies in both ECA'95 and ECR'97.

#### **4.2.2 Environmental Conservation ACT (Amendment 2010)**

This amendment of the act introduces new rules and restriction on:

- Ensure proper management of hazardous wastes to prevent environmental pollution and health risk
- No remarked water body cannot be filled up/changed; in case of national interest; it can be done after getting clearance from the respective department; and
- Emitter of any activities/incident will be bound to control emission of environmental pollutants that exceed the existing emission standards

#### **4.2.3 DoE Environmental Clearance Process**

For each category of industries, there are different levels of documents to be provided at the time of seeking the Environmental Clearance Certificate (ECC). The ECC is mandatory for the existing industries as per clause 7(3) of the ECA-95 and the ECR-97 and proposed projects as per Rule 7 and Schedule 1 of ECR-97. All existing industrial units and projects and proposed industrial units and projects, that are considered to be low polluting are categorized under "Green" and shall be granted Environmental Clearance. For proposed industrial units and projects falling in the Orange-A, Orange-B and Red Categories, firstly a site clearance certificate and thereafter an environmental

clearance certificate will be required. However, the rules provide the Director General (DG, the head of DoE) a discretionary authority to grant 'Environmental Clearance' to an applicant, exempting the requirement of site/location clearance, provided the DG considers it to be appropriate. More details on the DoE environmental clearance process is illustrated in Annex 1 and the GOB process for obtaining EC certificate from DOE is given in Figure-4.

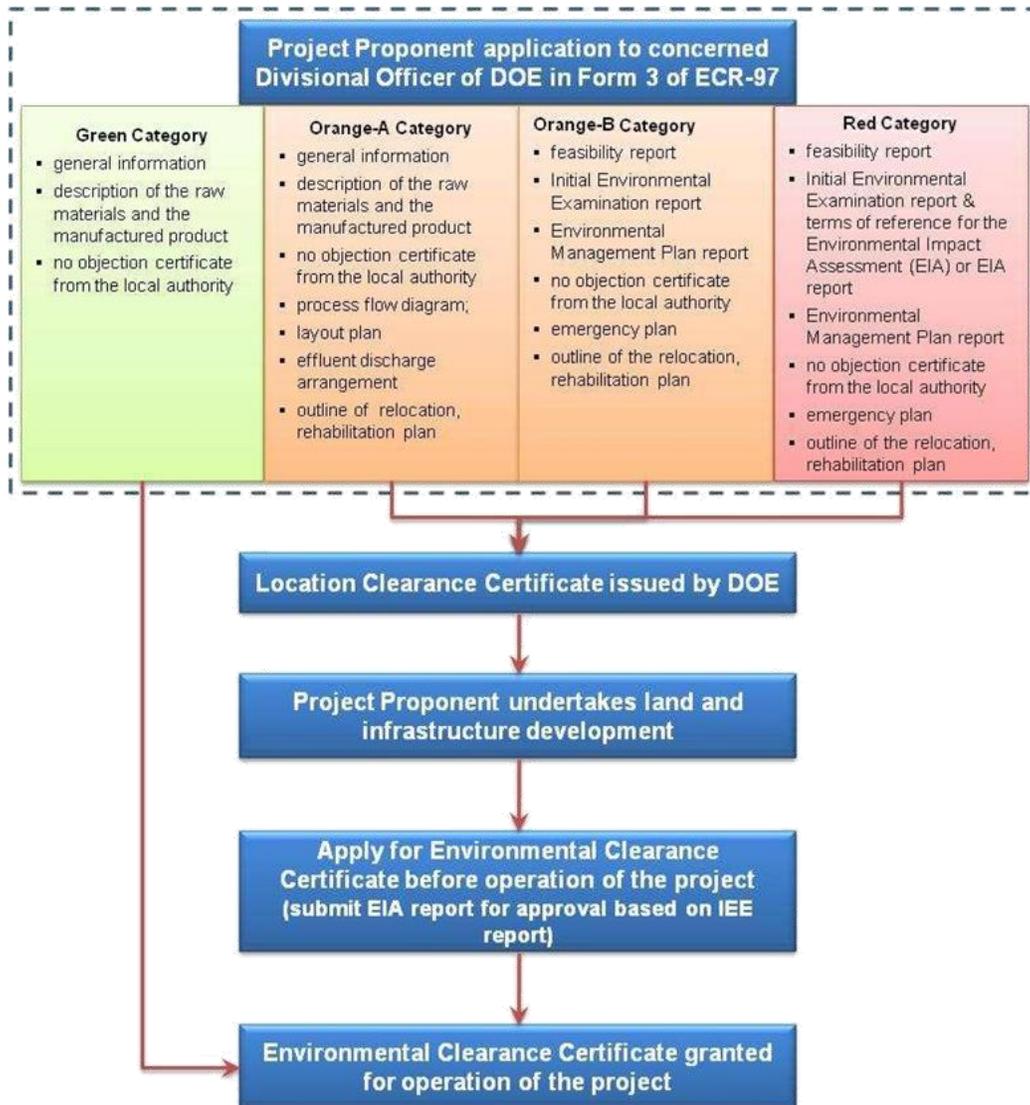


Figure 4: GOB process for obtaining EC Certificate from DOE

#### 4.2.4 Nationally Designated Ecologically Critical Areas

Ecologically Critical Areas are those having significant value in their natural state, or having socio-cultural significance or sensitivity. Ecologically Critical Areas can be defined as areas that may

contain unique features, cultural or historical sites, maintain key natural processes, support endangered, endemic or threatened plant or animal species and their habitats, or provide important breeding areas for wildlife.

If the Government is satisfied that the ecosystem of an area is in an environmentally critical situation or is threatened to be in such situation, the Government may, by notification in the official Gazette declare such area as an Ecologically Critical Area. Activities that may degrade the environment further are prohibited in the declared Ecologically Critical Areas by the Amendment of Environmental Conservation Act 1995 dated 5 October 2010.

#### **4.2.5 Renewable Energy Policy of Bangladesh, 2008**

The renewable energy policy of Bangladesh has been approved on December 18, 2008, with the target of developing renewable energy resources. This Policy laid out the target of meeting 5% of total power demand from renewable energy sources by 2015 and 10% by 2020. The policy provides an overall guidance of

- INSTITUTIONAL ARRANGEMENTS
- RESOURCE, TECHNOLOGY, AND PROGRAM DEVELOPMENT
- INVESTMENT AND FISCAL INCENTIVES
- REGULATORY POLICY

The policy promotes the appropriate, efficient and environment-friendly use of renewable energy. It also suggests that for large biomass electricity projects (i.e., greater than 1 MW) the project developer must demonstrate that the biomass is being sustainably harvested and that no adverse social impact will result from that development. It also restricted the larger scale production and use of biofuels which may jeopardize the existing crops.

#### **4.2.6 Remote Area Power Supply Systems (RAPSS) Guideline, 2007**

The Remote Area Power Supply Systems (RAPSS) guideline of 2007 allows for private sector participation in development, operation, and maintenance of electricity generation system and distribution networks in remote rural areas including isolated islands to supplement GOB efforts at achieving universal access by 2020. However, there has not been much progress in implementing the RAPSS schemes. GOB is in the process to establish the SREDA as an

autonomous body to lead its efforts in promoting renewable energy and energy efficiency in the country.

#### **4.2.7 Bangladesh Labor Act, 2006**

Labor relation in Bangladesh is governed by Bangladesh Labor Act of 2006 (Amended in 2013) and Labor Rules of 2015. The amendments to the 2006 Labor Act make it more in line with the International Labor Standards. The new labor law has 87 sections of amendments to strengthen workers' rights, including better protections related to freedom of association (i.e., to form trade unions), and improving occupational health and safety conditions.

The Bangladesh Labor Act and the Labor Rules of 2015 (made under the Act) are generally consistent with ILO's core conventions ratified by Bangladesh, as listed in Section 4.4. The only core convention not ratified by Bangladesh is ILO 138 (Minimum Age Convention). However, consistently with ILO 138, the Bangladesh Labor Act provides that the minimum age to work is 14 (although a special clause states that children between the ages of 12 and 14 may be employed to do "light work" that does not endanger their health, development, and education).<sup>1</sup>

This Act pertains to the occupational rights and safety of factory workers and the provision of a comfortable work environment and reasonable working conditions. In chapter VI of this law safety precaution regarding explosive or inflammable dust/ gas, protection of eyes, protection against fire, works with cranes and other lifting machinery, lifting of excessive weights are described. And in the Chapter VIII provision safety measure like as appliances of first –aid, maintenance of safety record book, rooms for children, housing facilities, medical care, group insurance, etc. are illustrated.

#### **4.2.8 Bangladesh Factories Act, 1965**

This Act pertains to the occupational rights and safety of factory workers and the provision of a comfortable work environment and reasonable working conditions. The Act provides for inspection of factories and regulates matters related to hygiene, ventilation, overcrowding, night work, safety, dangerous machinery, leave, overtime, canteens, and child care facilities.

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<sup>1</sup>One of the most effective methods of ensuring that children do not start working too young is to set the age at which children can legally be employed or otherwise work. The main principles of the ILO's Convention concerning the minimum age of admission to employment and work can be found here:<http://www.ilo.org/ipec/facts/ILOconventionsonchildlabour/lang--en/index.htm>

The Act prohibits employment of children under the age of 14 years in factories. Children over the age of 14 shall be registered and subject to provisions regarding hours of work. Factories Act 1965 (originally East Pakistan Factories Act 1965) was adopted by Government of with the objective of regulating the appointment of workers, their wages and the working conditions in factories, including health and hygiene, safety, welfare, working hours, leave and holidays, and punishments and penalties for both the owners and workers for non-compliance of the requirements. The Act has 11 chapters and 116 main sections.

The Act defines and clarifies various terms included such as adolescent, adult, child, day, explosive substance, factory, machinery, manufacturing process, occupier, prime mover, a shift in a factory, transmission machinery, working hour, and wages. It incorporates the provisions for obtaining approval of factory plans, including the construction or extension, class or description of factories from the chief inspector. According to the Act, every factory is to be maintained clean and free from effluents arising from any drain, privy or other nuisance. Effective arrangements are to be made in every factory for the disposal of wastes and effluents, prevention of accumulation of dust and fume, and proper ventilation and maintenance of room temperature.

The Act requires that factory must ensure adequate fire safety measures, appropriate means of escaping in case of fire, and protection against dangerous and accident-prone parts of machinery, electric and mechanical devices, self-acting machines, etc. Workers are to be given proper training before they are employed on dangerous machines. Controlling appliances of cranes and other lifting machines, hoists and lifts must be of good construction, sound material, and adequate strength. Other sources of dangers, such as pits, sumps, openings in floors etc., should be securely covered or fenced and effective screens or suitable goggles should be provided to workers to protect their eyes. Every factory is to have adequate and suitable facilities for washing and bathing and provide first-aid medicines and appliances.

#### **4.2.9 Building Construction Act 1952**

The Act provided regulations regarding setbacks, building heights etc. in urban areas. The act also provided for prevention of haphazard construction of buildings and excavation of tanks which are

likely to interfere with the planning of certain areas in Bangladesh and enables government through Section 16 to make any substantial rules for carrying out the purposes of this Act.

***A. Building Construction Rules, 2008:***

These rules superseded the previous Building Construction (BC) rules of 1984. These rules seek to control development plot-by-plot and case-by-case. It controls development by imposing conditions on setbacks, site coverage, construction of garages, access to the plot, provision of lift, land use of that particular plot and height of the building. Restricting the height of a building in BC Rules 1996 helps to control the density of an area and manage the growth of the city in some way. The Dhaka Metropolitan Building Construction Rules 2008 superseded the earlier set of rules issued in 1996 for the Dhaka Metropolitan Area and provided more authority to RAJUK in the following way;

- Clear-cut responsibility to monitor the development of the city,
- Spread out the responsibilities to various actors,
- Spelled out responsibilities of building designers, structural engineers, site supervisors and their penalties etc.

***B. Bangladesh National Building Code (BNBC) 2014:***

Bangladesh National Building Code widely known as BNBC Code is the ultimate code that is followed in Bangladesh to build safe houses and buildings. Earthquakes and wind effect of different building systems are incorporated in this code. Moreover, this code is almost similar to ACI code which is recognized as one of the most practiced building code of the world. However, there are some differences in that, it incorporates modifications by keeping in view the biological, environmental and geological factors in Bangladesh. Moreover, socio-economic factors have also been taken into consideration while preparing this code. This code is very helpful to the related professionals like architects and town planners as it takes into account the conditions specific to Bangladesh.

**4.2.10 The Acquisition and Requisition of Immovable Property Act, 2017**

Under the ARIPA 2017, The Deputy Commissioner (DC) determines the value of the acquired assets as at the date of issuing the notice of acquisition under section 4(1) of the Act. The DCs thereafter enhance the assessed value by 200% and another 100% premium for loss of standing crops, structures and income due to compulsory nature of the acquisition. The compensation such

determined is called the Cash Compensation under Law (CCL). If the land acquired has standing crops cultivated by a tenant (Bargadar) under a legally constituted written agreement, the law requires that compensation money be paid in cash to the tenants as per the agreement. The previous ARIPO of 1982 did not prescribe the acquisition of officially registered places of worship, graveyards and cremation grounds for any purpose. However, the new Act of 2017 under section 4 (13) permits the acquisition of those properties if it is for a public purpose provided the project for which the land is acquired provides for similar types of assets in some other appropriate place. Households and assets moved from land already acquired in the past for project purposes and/or government khas land are not included in the acquisition proposal and therefore excluded for considerations for compensation under the law. Lands acquired for a particular public purpose cannot be used for any other purpose. The new Act under section 4 (2) also facilitates the private organizations to request from the government to acquire the land for their development activities. Furthermore, the new Act under its section 15 provides for the acquisition of entire houses/buildings if their owners request to acquire the entire house or building against partial acquisition. The new Act of 2017 has incorporated certain provisions to address the above gaps and therefore it would reduce the gaps between the national legislative framework of the government and WB policies

#### **4.2.11 Social Regulatory Framework in Bangladesh**

Social regulatory frameworks in Bangladesh related to social safeguards are lined with several legislative enactments established in last several decades and some enactments are already amended according to the national interests.

Land Acquisition: Whenever it appears to the Government that any property in any locality is needed or is likely to be needed for any public purpose or in the public interest, the property is acquired using eminent domain. Land acquisition by eminent domain for infrastructure projects is governed by the Acquisition and Requisition of Immovable Property Act, 2017<sup>2</sup>. In addition to the Ordinance, acquisition of any land or forest area, in Chittagong Hill-Tracts (CHT) districts require consent under the Chittagong Hill-Tracts (Land Acquisition) Regulation (1958), the CHT Regional Council Act 1998 and the Forest Act (1927).

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<sup>2</sup> This Act was enacted on 21 September 2017 replacing the earlier law on land acquisition “The Acquisition and Requisition of Immovable Property Ordinance 1982.

Forest reserves, natural water-bodies, archeological sites and historical places are not acquired for development projects. Under the Ordinance the Deputy Commissioner (DC) is entrusted to acquire land for any public infrastructure project. The requiring body, after getting the approval of the administrative ministry, requests DC to undertake the acquisition of the required land as per its proposal.

The fundamental rights under the Constitution indicate the general guidelines for a policy on resettlement/rehabilitation of citizens adversely affected (whatever be the mechanism) due to any activity of the State. Article 40 of the constitution states categorically that every citizen has the right to practice any lawful occupation which implies that anything that impedes such right (a) should not be done or (b) there should be supplementary measures to make good the losses incurred by the citizen. Resettlement and rehabilitation of adversely affected people due to infrastructure projects very clearly falls within this requirement for supplementary measures. However, as per Article 42, sub-clause 2, no law with the provision of compensation for acquisition of land can be challenged in a court on the ground that such compensation has been inadequate.

Laws and Policies on Small Ethnic Communities: In the context of the People's Republic of Bangladesh, the Constitution of Bangladesh does not mention the existence of the cultural and ethnic minorities in Bangladesh. The only protective provision for the ethnic minorities that the policy makers often refer to in the context is Article 28 (4) which states that: Nothing shall prevent the state from making special provision in favor of women and children or for the advancement of any backward section of the citizens. The above provision is an ambiguous one and it does not define who or what constitutes "backward".

However, the Government recognizes the existence of "tribal peoples" and the need for special attention and in general tribal people are essentially viewed as backward, poor and socio-economically & culturally inferior. Towards this end a special program was initiated in 1996- 97 by the Prime Minister's Secretariat aimed at improving the socio-economic situation of the indigenous people of Bangladesh, resident outside the Chittagong Hill Tracts.

The Chittagong Hill Tracts Regulation, 1900 (Regulation I of 1900) is the regulatory Framework for State sovereignty over the traditional rights of the adibasis living in the CHTs

region. They are governed by Revenue Circle Chiefs<sup>3</sup> who are local revenue collectors vide an amalnama (authorization by the Government). The Deputy Commissioner and the Commissioner of the Central Government reserve the authority to settle land to the hill-men or non-hill residents or lease out land (non-transferable) for rubber plantation or establishing industries in the CHTs. The Forest Act, 1927 (Act XVI of 1927) revised as of 2000 deals with Reserved Forest, Village Forest, Protected Forest, control over forests on lands not being the property of Govt.

The National Parliament of Bangladesh on 24 May 1998 passed the Peace Accord 1997 as the “Chittagong Hill Tracts Regional Council Act, 1998 (Act 12 of 1998). In addition to re-establishing peace, the Accord recognized the ethnic people’s right to land, culture, language, and religion. The Accord set out detailed provisions for strengthening the system of self-governance in the CHT, and redressing the most urgent land-related problems. A ministry on CHT Affairs was established by appointing a Minister from among the adibasis of hill districts. An Advisory Council from the CHT region assists this ministry. However, there is a demand for extending the scope of the CHT Affairs Ministry to include the adibasis in other areas of the country.

Ethnic Minority Rights in Poverty Reduction Strategic Paper (PRSP) 2005 includes strategic suggestions to preserve the cultural, social and economic identity and interests of the small ethnic populations in and outside CHT.

#### **4.1 The World Bank’s Safeguards (Relevant Policies)**

##### **4.1.1 World Bank OP/BP 4.01 Environmental Assessment**

###### *Objective*

World Bank’s Safeguard Policies, OP 4.01 Environmental Assessment (EA) is considered the umbrella Safeguard Policy. The objective of OP/BP 4.01 Environmental Assessment policy is to ensure that World Bank-financed projects are environmentally and socially sound and sustainable, and that decision-making is improved.

###### *Definition*

EA is a tool to evaluate a project’s potential environmental risks and impacts in its area of influence; examine project alternatives; identify ways of improving project selection, siting

planning, design, and implementation by preventing, minimizing, mitigating, or compensating for adverse environmental impacts and enhancing positive impacts; and includes the process mitigating and managing adverse environmental impacts throughout project implementation.

### ***Scope***

The scope of EA covers the natural environment (air, water [surface & ground water], and land); human health and safety; social aspects (involuntary resettlement, indigenous peoples, and physical cultural resource); and trans-boundary and global environmental aspects. EA also shall include the findings of country environmental studies; national environmental action plans; the country's overall policies framework, national legislation, and institutional capabilities related to the environment and social aspects; and obligations of the country, pertaining to project activities, under relevant international environmental treaties and agreements.

### ***EA Instruments***

Depending on the project, different instruments can be used to fulfil the World Bank's EA requirement: EIA, regional or sectoral EA, strategic environmental and social assessment (SESA), environmental audit, hazard or risk assessment, environmental management plan (EMP) and environmental and social management framework (ESMF).

### ***Environmental Screening***

Environmental screening is used by the World Bank to determine the extent and type of EA. Depending on the type, location, sensitivity, and scale of the project and the nature and magnitude of its potential environmental impacts, the Bank's project screening criteria group's projects into four categories:

- I. *Category A*: Full Environmental Assessment – A proposed project is classified as category A if it is likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented.
- II. *Category B*: Partial Environmental Assessment – if proposed project has potential adverse environmental impacts on human populations or environmentally important areas including wetlands, forests, grasslands, and other habitats-that are less adverse than those of Category A projects. These impacts are site-specific; few if any of them are irreversible; and in most cases, mitigation can be designed more readily than for Category A projects.

- III. *Category C*: Minimal or no adverse impacts. A proposed project is classified as Category C if it is likely to have minimal or no adverse environmental impacts. Beyond screening, no further EA action is required for a Category C project.
- IV. *Category F1*: A proposed project is classified as category F1 if it involves an investment of Bank funds through a financial intermediary, in subprojects that may result in adverse environmental aspects.

Following application of OP 4.01, as indicated above, any potential impact on the Bank's other safeguard policies, would be carefully reviewed. Where a sub-project is likely to have impacts, the relevant policy provisions will apply.

#### **4.1.2 World Bank OP/BP 4.04 – Natural Habitats**

The conservation of natural habitats, like other measures that protect and enhance the environment, is essential for long-term sustainable development. The Bank supports the protection, maintenance, and rehabilitation of natural habitats and their functions. The Bank also supports and expects borrowers to apply, a precautionary approach to natural resource management to ensure opportunities for environmentally sustainable development.

The policy includes safeguard of natural habitats and their biodiversity; avoid significant conversion or degradation of critical natural habitats and ensure sustainability of services and products which natural habitats provide to human society.

The policy strictly limits the circumstances under which any Bank-supported project can damage natural habitats (land and water areas where most of the native plant and animal species are still present). Specifically, the policy prohibits Bank support for projects which would lead to the significant loss or degradation of any Critical Natural Habitats, whose definition includes those natural habitats which are either:

- legally protected,
- officially proposed for protection, or
- unprotected but of known high conservation value.

In other (non-critical) natural habitats, Bank supported projects can cause significant loss or degradation only when:

- i. there are no feasible alternatives to achieve the project's substantial overall net benefits; and

ii. acceptable mitigation measures, such as compensatory protected areas, are included within the project.

#### **4.1.3 World Bank OP/BP 4.10 – Indigenous Peoples**

In this policy, Indigenous People (IP) is used in a generic sense to refer exclusively to a distinct social and cultural group possessing the following characteristics in varying degrees:

- Self-identification as members of a distinct indigenous social and cultural group and recognition of this identity by others
- Collective attachment to geographically distinct habitats, ancestral territories, or areas of seasonal use or occupation, as well as to the natural resources in these areas
- Customary cultural, economic, social or political institutions that are distinct or separate from those of the mainstream society or culture; and
- A distinct language or dialect, often different from the official language or language of the country or region in which they reside.

The aims of the policy are to foster full respect for human rights, economies, and cultures of IP and to avoid adverse effects on IP during the project development. The policy emphasizes the need for Borrowers and Bank staff to identify indigenous peoples, consult with them, ensure that they participate in, and benefit from Bank-funded operations in a culturally appropriate way - and that adverse impacts on them are avoided, or where not feasible, minimized or mitigated. A separate TPF is already been prepared under the components of SREDA.

#### **4.1.4 World Bank OP/BP 4.12 – Involuntary Resettlement**

This policy aims to minimize displacement of people and treats resettlement as a development program. The policy requires the provision of affected people with opportunities for participation and assistance to displaced persons in their efforts to improve their incomes and standards of living, or at least to restore them regardless of the legality of tenure.

The policy prescribes compensation and other resettlement measures to achieve its objectives and requires that borrowers prepare adequate resettlement planning instruments prior to Bank appraisal of proposed projects. A separate RPF has already been prepared under the component of SREDA. The mentioned RPF will be applicable for this project.

#### **4.1.5 The World Bank Group’s Environmental, Health, and Safety Guidelines**

Besides DoE requirements, the World Bank Group’s Environmental, Health, and Safety Guidelines (also known as “EHS Guidelines”)<sup>3</sup> are applicable. The EHS Guidelines are technical reference documents with general and industry-specific examples of Good International Industry Practice (GIIP). This GIIP are considered to be achievable in new facilities at reasonable costs by existing technology. For existing facilities, achieving these may involve the establishment of site-specific targets with an appropriate timetable to achieve these.

When host country regulations differ from the levels and measures presented in the EHS Guidelines, projects will be required to achieve whichever is more stringent. If less stringent levels or measures than those provided in the EHS Guidelines are appropriate in view of specific project circumstances, a full and detailed justification must be provided for any proposed alternatives through the environmental and social risks and impacts identification and assessment process. This justification must demonstrate that the choice for any alternate performance levels is consistent with the objectives of the relevant Performance Standards (and more specifically, Performance Standard 3).

The EHS Guidelines consist of guidelines for various industrial sectors, as well as General Environmental, Health & Safety Guidelines which covers a wide range of issues and is applicable to all industrial in addition to the sector-specific guidelines. The General EHS Guidelines contain information on cross-cutting environmental, health, and safety issues potentially applicable to all industry sectors. They are designed to be used together with the relevant industry sector guideline(s). It should be noted that these Industry Sector EHS Guidelines and the General EHS Guideline are intended to identify recognized good practice, particularly in the absence of comparable national or local legislation.

- Environmental (air emissions and ambient air quality, energy conservation, wastewater and ambient water quality, water conservation, hazardous materials management, waste management, noise, contaminated land).

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<sup>3</sup>[http://www.ifc.org/wps/wcm/connect/topics\\_ext\\_content/ifc\\_external\\_corporate\\_site/ifc+sustainability/our+approach/risk+management/ehsguidelines](http://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/ifc+sustainability/our+approach/risk+management/ehsguidelines). In 2013, IFC launched a consultative process to revise the EHS Guidelines. This process is still ongoing as of the date of this document.

- Occupational Health and Safety (general facility design & operation, communications & training, physical hazards, chemical hazards, biological hazards, radiological hazards, personal protective equipment, special hazard environments, monitoring, etc.).
- Community Health and Safety (water quality and availability, structural safety of project infrastructure, life and fire safety, traffic safety, transport of hazardous materials, disease prevention, emergency preparedness & response, etc.).
- Construction and Decommissioning (environment, occupational health & safety, community health & safety).

#### **4.1.6 Alignment of the WB and GoB policies relevant to this ESMF**

The GoB and World Bank have their own policies and guidelines to address the environment and social issues associated with projects. The requirement of the GoB and the World Bank policies with regards to these issues is presented in Table 4-1.

**Table 4-1: GoB and The World Bank Safeguards Requirements for Environmental Safeguards Issues Relevant to this project**

| Sl. No. | Criteria                                  | Requirements as Per GoB Law   | World Bank Requirements  | Gaps  | Measures to address the gaps  |
|---------|---|---|--|---|---|
| 1       | Type of environmental and social analysis | Project specific  | Project specific, regional, sectoral, strategic including impact from associated facilities and assessment of cumulative impacts. The scope of identification of risks and impacts will be consistent with good international industry practice.<br>Apart from general requirement, for every Orange-B and Red category proposed industrial unit or project; the application must be accompanied by feasibility report on Initial Environmental Examination (IEE), Environmental Impact Assessment (EIA) including Social Impact Assessment (SIA) based on approved TOR by DOE, Environmental Management Plan (EMP) along with layout plan (showing location of any ETP), time schedule of ETP, etc. | Associated facilities not specifically considered under GoB law   | The ESIA will consider associated facilities, such as slaughter house construction and operation. |
| 2       | Basis for Categorization                  | Categorizations of industrial projects are done according to the list in Schedule-1 of the ECR, 1997. As per rule-7(2) of ECR, these categorizations are based on consideration of their site and impact on the environment. Non-industrial projects are reviewed on a case by case basis by the DoE for clearance. | Categorization depends on the project/business activity being financed, the magnitude of risks and impacts, context and also the type of investment, as follows: <ul style="list-style-type: none"> <li>• Significant adverse environmental or social risks and/or impacts that are diverse, irreversible, or unprecedented.</li> <li>• Limited adverse environmental or social risks and/or impacts that are few in number, generally site-specific, largely reversible, and readily addressed through mitigation measures.</li> <li>• Minimal or no adverse environmental or social risks and/or impacts.</li> </ul>   | No major gap. Both the GoB and WB apply similar categorization and is based on the type of project and magnitude of the risks/ and or impacts | No additional measures required.  |
| 3       | EA /ESIA Scope and Outputs                | Since detailed rules and regulations for ESIA have not been prescribed, ESIA outputs are not specified.   | Establish and maintain a process for identifying the environmental and social risks and impacts of the project, covering the 8 environmental and social policies as relevant and applicable and depending on the type, scale,  | The scope and outputs of ESIA's can vary.   | A TOR approved by the WB will be used for the   |

| Sl. No. | Criteria             | Requirements as Per GoB Law   | World Bank Requirements   | Gaps   | Measures to address the gaps                                |
|---------|----------------------|---|---|--|---|
|         |                      | <p>However, the industrial sector guidelines, the water sector guidelines, and the road sector guidelines have specific ESIA output requirements, such as:</p> <ul style="list-style-type: none"> <li>• Baseline survey</li> <li>• IEE/ESIA Report</li> <li>• Site clearance</li> <li>• Risk analysis and management</li> <li>• Analysis of alternatives</li> </ul> | <p>and location of the project. The tools used should be commensurate with the level of potential impact and risks. Environmental and Social Impact Assessment (ESIA) process may comprise of following:</p> <ul style="list-style-type: none"> <li>• A full-scale ESIA, a limited or focused ESIA, or straightforward application of environmental siting, pollution standards, design criteria, or construction standards.</li> <li>• Environmental and/or social audits or risk/hazard assessment when the project involves existing assets.</li> <li>• Environmental and social due diligence if assets to be developed, acquired or financed have yet to be defined.</li> <li>• Comprehensive ESIA, including an examination of alternatives for green-field developments or large expansions with specifically identified physical elements, aspects, and facilities that are likely to generate potential significant environmental or social impacts. Environmental and social risks and impacts to be identified in the context of the project's area of influence.</li> </ul> |  | ESIA development.   |
| 4       | Mitigation hierarchy | Not comprehensively addressed   | Mitigation hierarchy is one of the core underlying principles of the WB approach to identification, assessment, and management of E&S risks and impacts. It is required to adopt a mitigation hierarchy to anticipate and avoid, or where avoidance is not possible, minimize, <sup>4</sup> and, where residual impacts remain, compensate/offset for risks and impacts to workers, Affected Communities, and the environment.  | No comprehensive mitigation hierarchy under GoB law. | WB mitigation hierarchy will be followed in the ESIA/ ESMP. |

<sup>4</sup>Acceptable options to minimize will vary and include: abate, rectify, repair, and/or restore impacts, as appropriate.

| Sl. No. | Criteria            | Requirements as Per GoB Law   | World Bank Requirements  | Gaps  | Measures to address the gaps   |
|---------|---------------------|---|--|---|--|
| 5       | Public Consultation | No special mention is made for public consultation in ECA 95. Sectoral guidelines mentioned above have prescribed consultation. | <p>Extent and degree of engagement required by the consultation process to be commensurate with the project's risks and impacts to the affected communities. Consultation process: (i) to begin early in the process of identification of environmental and social risks and impacts and continue on an ongoing basis as risks and impacts arise; (ii) be based on the prior disclosure and dissemination of relevant, transparent, objective, meaningful and easily accessible information in a language(s) and format understandable to Affected Communities; (iii) focus inclusive engagement on those directly affected as opposed to those not directly affected.</p> <ul style="list-style-type: none"> <li>• For projects with potentially significant adverse impacts on affected communities, it is required to conduct a process of informed consultation and participation by actively engaging with stakeholders throughout the lifecycle of the project</li> <li>• For projects with adverse impacts on Indigenous People the project sponsor is required to engage them in the ICP process and in certain circumstances required to obtain their Free, Prior, and Informed Consent (FPIC) - requirements related to Indigenous Peoples and the definition of the special circumstances requiring FPIC included in OP4.10.</li> </ul> | No specific consultations required under law. | The public consultation will be conducted at the scoping stage of the environmental and social assessment process to identify the impacts as well as after preparation of the draft ESIA before receipt of site clearance certificate from DOE. Consultation will also be carried out throughout the project life cycle. ESMF also specifies Stakeholder Engagement issues (see Chapter 6 below) |

| Sl. No. | Criteria                  | Requirements as Per GoB Law   | World Bank Requirements  | Gaps   | Measures to address the gaps   |
|---------|---------------------------|---|--|--|--|
| 6       | Disclosure of Information | ECA 95 makes no reference to disclosure. The Sectoral guidelines prescribe some provisions for disclosure | Affected communities to be provided with access to relevant information on: (i) the purpose, nature, and scale of the project; (ii) the duration of proposed project activities; (iii) any risks to and potential impacts on such communities and relevant mitigation measures; (iv) the envisaged stakeholder engagement process; and (v) the grievance mechanism. Project to provide periodic and ongoing updates on the status of implementation of the various plans developed as part of the ESIA process. Disclosure of relevant information to affected communities to continue during the planning, implementation, monitoring, and evaluation of compensation payments, livelihood restoration activities and resettlement. | No specific disclosure requirements under law. | The project will apply the disclosure provisions as per the requirements of the WB disclosure policy.<br><br>ESMF also specifies Stakeholder Engagement issues (see Chapter 6 below) |
|         |                           |   |  |  |  |

**Table 4-2: GoB and The World Bank Safeguards Requirements for Social Safeguards issues relevant to this project**

| No | WB Policy Principles  | Legal Framework of Bangladesh (ARIPA 2017)  | Degree of compliance or gaps and proposed action to address gaps   |
|----|---|---|--|
| 1. | Screen the project early on to identify past, present, and future involuntary resettlement impacts and risks. | Deputy Commissioner conducts a joint verification with SREDA and categorizes land by types and any assets thereon and identifies owners of physical assets prior to issue of section 4(1) notice. | <i>Partially complied.</i> SREDA & consultants will conduct an independent assessment & prepare an Inventory of Losses and identify resettlement issues. |
| 2. | Carry out meaningful consultations with affected persons, host  | Affected persons are allowed to raise objections under and section 4(7) of ARIPA if   | <i>Partially complied.</i> SREDA will initiate a comprehensive process of consultation with  |

| No | WB Policy Principles  | Legal Framework of Bangladesh (ARIPA 2017)   | Degree of compliance or gaps and proposed action to address gaps  |
|----|---|--|---|
|    | communities, and concerned nongovernment organizations.   | they disagree with joint verification assessment and under section 5(1) of ARIPA against land acquisition. Deputy Commissioner hears the complaints and grievances under section 4(9) of ARIPA.  | affected persons and others during resettlement action plan preparation and implementation.   |
| 3. | Establish a grievance redress mechanism to receive and facilitate resolution of the affected persons' concerns. | Affected persons are allowed to raise objections under section 4(7) if they disagree with joint verification assessment and under section 5(1) against land acquisition. Deputy Commissioner hears the complaints and grievances under section 4(9). | <i>Partially complied.</i> SREDA will establish a project based GRM through resettlement plan to address grievances.  |
| 4. | Provide cash compensation at replacement value.   | DC enhances the compensation by 200% premium on top of current mouza rate (market value) of the land and another 100% premium to address other resettlement impacts (ARIPA).   | <i>Partially complied.</i> SREDA will appoint a Property Assessment and Valuation Committee (PAVC) to recommend replacement value and pay additional compensation directly to the affected persons, if they are entitled through the entitlement matrix and if the CCL paid by Deputy Commissioner is lower than the replacement value.                                       |
| 5. | Improve or at least restore, the livelihoods of all displaced persons.  | Deputy Commissioner will consider the impact of land acquisition on livelihoods and incomes of affected persons during the valuation under sections 8(1) & 9(1).   | <i>Partially complied.</i> SREDA through the Entitlement Matrix of the resettlement plan will provide additional compensation for loss of trees and crops, transitional allowances, shifting costs, reconstruction assistance, livelihood training, access to credit & grants, special assistance to women headed households and vulnerable groups and other R & R assistance |

| No | WB Policy Principles   | Legal Framework of Bangladesh (ARIPA 2017)   | Degree of compliance or gaps and proposed action to address gaps  |
|----|--|--|---|
| 6. | Pay compensation and provide other resettlement entitlements before physical or economic displacement.   | Deputy Commissioner awards the compensation to entitled parties within 60 days of receiving the deposit from the requiring agency under section 11(1). However, this applies only for the titleholders. Deputy Commissioner can get the nontitle holders evicted at any time as they are not entitled to compensation. | <i>Partially complied.</i> SREDA will provide compensation to the nontitle holders following the entitlement matrix and ensure that they are paid compensation prior to displacement. SREDA and the External Monitor will monitor the compensation payment procedure. |
| 7. | Ensure that displaced persons without titles to land or any recognizable legal rights to land are eligible for resettlement assistance and compensation for loss of non-land assets. | When the property acquired contains standing crops cultivated by bargadar (shareholders), such portion of the compensation will be determined by the Deputy Commissioner and will be paid to the bargadar in cash under section 12. No provision of compensation for Bargdar who cultivate on government land.         | <i>Partially complied.</i> SREDA will include provisions in the Entitlement Matrix of the resettlement plan to pay compensation to the non-titleholders (informal and non-registered) and to provide other R & R benefits.  |

## **5 POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS**

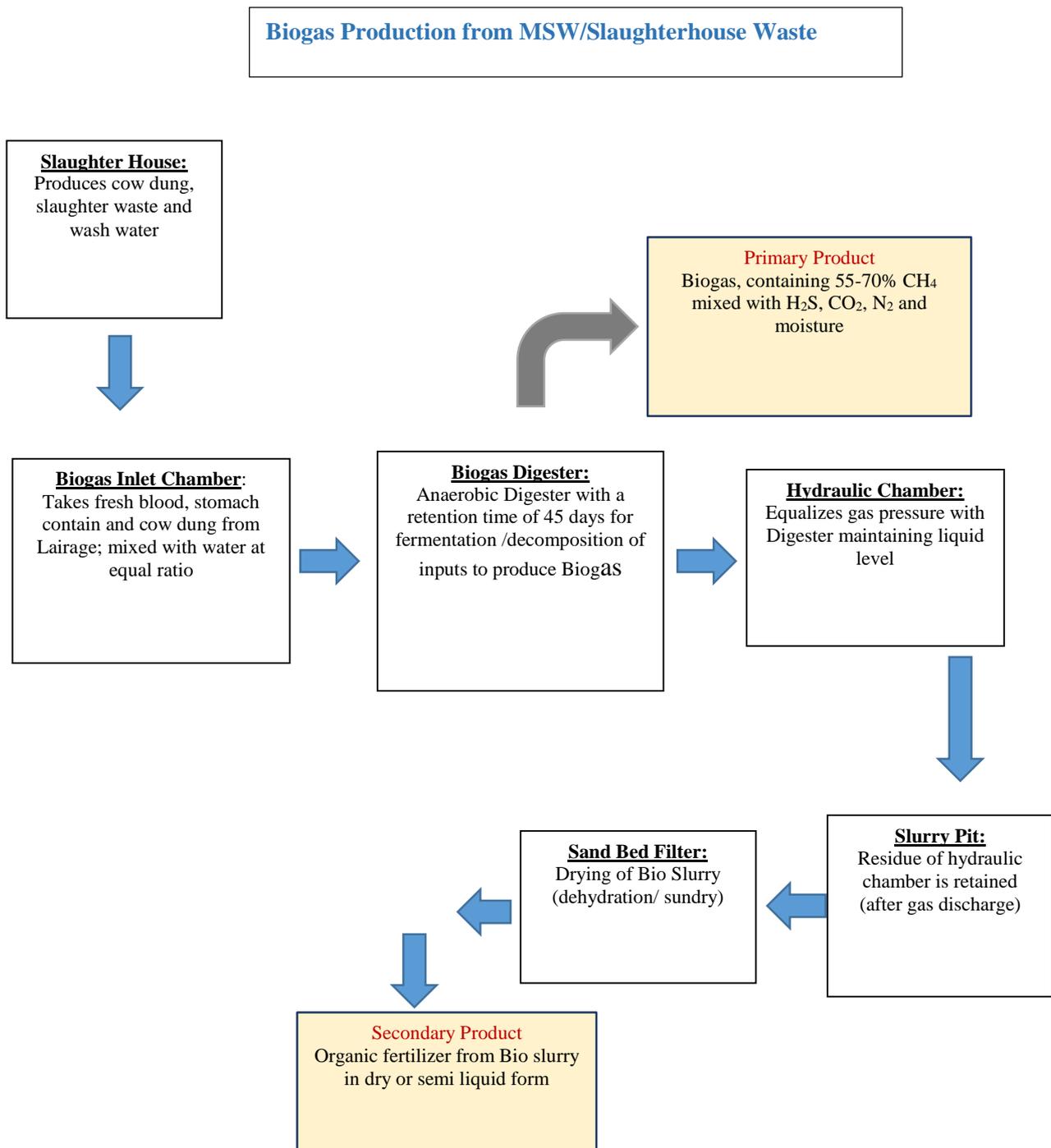
### **5.1 Biogas Process from MSW/Slaughterhouse Waste**

Waste from slaughterhouse (including dung from lairage section, stomach parts/contains of slaughtered cattle, blood and wash/waste water) is accumulated to feed in to the Inlet Chamber of Biogas Plant on daily basis. Freshly accumulated waste is mixed with water in equal ratio at the Biogas Inlet Chamber to flow to the Digester. Mixed waste is exposed to Anaerobic Digestion [decomposition of carbon source by anaerobic bacteria in absence of air/oxygen] inside Digester to produce Biogas. Retention time required for complete digestion and liberation of free gas is 40-45 days.

Produced biogas mostly contains Methane (CH<sub>4</sub>) - 55 to 70%, with Carbon Di Oxide (CO<sub>2</sub>) - 25 to 40%, Nitrogen (N<sub>2</sub>) up to 4%, Oxygen (O<sub>2</sub>) up to 1%, Hydrogen Sulfide (H<sub>2</sub>S) up to 2000 ppm and trace amount of Hydrogen and moisture. Biogas accumulates at the upper part of the Digester (defined as gas holder). Produced gas is extracted through a pipeline connected to the top of the Digester. This gas can be supplied and used for household cooking directly. However, further purification is required for electricity generation from Biogas to remove H<sub>2</sub>S and other impurities.

Semi liquid residue (defined as Slurry) from Hydraulic Chamber is transferred to Slurry Pit for further processing where it is dehydrated on the sand bed and dried at sunlight to be used as Organic Fertilizer. Dehydration and drying time varies from 7 to 10 days depending on the quantity of slurry being handled and ambient condition.

**Figure 5-1: Schematic flow diagram of Biogas Production from MSW/Slaughterhouse waste**



**Note:**

- Retention time of slaughterhouse waste inside digester is approximately 45 days for complete decomposition and gas release
- Slurry drying time varies from 7 to 10 days depending on availability of sunlight

## **5.2 Impact Screening and Scoping Process**

The waste to energy Project shall be appraised based on the step-by step process (refer to Figure 5-1) beginning with the primary environmental and social screening stage, which assesses the impacts requiring appropriate mitigation measures from those which are insignificant.

The project components and their environmental & social information (Surrounding area) will initially be reviewed during screening. A checklist has been prepared and attached in Annex 2, which will help to identify the screening components that need to be investigated in detail during the preliminary stages of the assessment or to conclude that insignificant adverse impacts are anticipated. It will also help to identify opportunities for avoidance or minimization early in the project cycle so that the design process can be informed appropriately.

The checklist will help to identify the scope of the ESIA study and timeframe required for obtaining the regulatory clearances (if any). The environmental and social safeguard screening will occur during the project preparation stage as a soon as the fairly accurate site location is known for the sub-project. A specific ToR shall be done based on the screening outputs highlighting environmental and social components that require detailed assessment during the ESIA stage.

## **5.3 Potential Environmental Impacts**

### **5.3.1 Impacts on Biological Environment**

The ESIA study shall establish the species paths/ habitat if any applicable in and around the proposed site. The ESIA study shall establish the status of flora and fauna in the vicinity (approximately; 1km buffer zone) of the proposed site and adequate mitigation measures to minimize any potential impacts during the various stage of project development. The proposed Project would also be completely fenced entities with controlled access to protect the facility. Some of the potential impacts on the biological environment during the construction stage of the waste-to-energy plant include:

- Noise disturbances to fauna
- Dust impact on fauna and flora
- Habitat loss – temporary or permanent loss of habitat due to land conversion and/or tree felling
- Vibration impacts – during piling and heavy vehicle movement can disturb fauna

- Unintentional runoff from site causing pollution to water bodies and harming aquatic flora and fauna

During the operation phase, the potential impacts include:

- Noise disturbances to fauna
- Unintended gaseous emissions from the plant affecting surrounding fauna
- Pollution caused by handling of slaughter house wastes impacting surrounding flora and fauna
- Untreated wastewater discharge/ runoff to adjacent waterbodies
- Odours from plant and slurry drying pits can affect surrounding fauna and community
- Insects and pest infestations
- Residue after digestion improperly managed and disposed

### **5.3.2 Impacts on Physical Environment**

Proposed projects will identify the overall impacts on the physical condition of the project area. An environmental impact is defined as any change to an existing condition of the environment. Identification of potential impacts should be done on the basis of baseline data collected from primary and secondary sources.

Potential impacts on physical environment during construction stage of the waste-to-energy plant include:

- Impacts on Air: Air quality may be affected for short duration in and around the construction site due to various construction activities and heavy vehicular movement. A certain amount of dust and gaseous emissions will be generated from vehicle movements.
- The impact of Noise: During construction of the Project, noise might be generated from construction work. Movement of construction materials, handling of equipment can cause significant noise which has an impact on the physical environment.
- Runoff from the site: Heavy rainfall can cause runoff from the site, which can cause pollution to surrounding land and waterbodies.
- Untreated wastewater discharge can pollute adjacent waterbodies in the areas

During the operation phase, the potential impacts include:

- Plant operations can increase ambient noise levels
- Unintended gaseous emissions from the plant can affect surrounding air quality

- Pollution caused by handling of slaughter house wastes impacting surrounding land and water quality
- Odours from the plant/ slurry drying pits can affect surrounding air quality

## **5.4 Potential Social Impacts**

### **5.4.1 Impacts on Workers' Health and Safety**

Potential impacts on workers' health and safety during the construction stage of the waste-to-energy plant include:

- Accidents: Injury or death can occur due to accidents around the construction site due to various construction activities and heavy vehicular movement.
- Noise: Large sound levels can cause hearing injury to site workers.
- Unsafe working conditions: Can cause health risks to site workers.
- Contaminated drinking water and unhygienic sanitation can cause diseases and other health risks to site workers.

Potential impacts on workers' health and safety during operation stage of the waste-to-energy plant include:

- Biogas plants process large quantities of combustible and toxic gases which pose an increased fire, explosion or suffocation hazards in case of faults in design, materials or control. In the event of an incident at the plant, people may be injured, property damaged and the environment (air and water) polluted. Operators violating these duties risk that the operation of their plants is no longer in compliance with the law, which may result in a shutdown of the plant and in restriction or even loss of insurance coverage.
- Health and safety risks due to unsafe working conditions.

### **5.4.2 Impacts on Community Health and Safety**

Potential impacts on community health and safety during the construction stage of the waste-to-energy plant include:

- Accidents: Injury or death can occur due to heavy vehicular movements to/from the site. Also, without proper signage and fencing, the public may enter construction site risking injury or death.
- Noise: Excessive sounds can disturb community within project influence area.

- Labor influx: social tensions may arise between local community and construction workers.

Potential impacts on community health and safety during operation stage of the waste-to-energy plant include:

- Combustible or toxic gases may escape from the plant causing a fire, explosion, injury/death to surrounding community and/or property damage.
- Pollution of air/land/water can harm local community.

### **5.4.3 Impacts on Cultural Heritage**

It will be important to ensure that the proposed project does not have an effect on a place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical or social significance or other special value for present and future generations. However, there remains a possibility for (as yet undiscovered) sites of local cultural significance (i.e., sacred sites, cemeteries) and archaeological sites to exist with sub-project areas. In such cases, chance find procedures should be followed (see section 5.5.5 for more details).

### **5.4.4 Social, Resettlement/Small Ethnic Community Issues**

Project will try to use government owned/city corporation owned land for implementation of the project. If government land is not found, in that case, project will use non-agricultural land. Although the project will intend to avoid and minimize land acquisition impacts, the final land acquisition requirements will be determined based on site selection. Nevertheless, a Resettlement Policy Framework (RPF) and a Tribal People Framework (TPF) is needed to guide the application of World Bank social safeguards policies for all projects and activities that may trigger OP 4.12. Both RPF and TPF is been prepared under SREDA's components "Renewable Energy Resource Assessment, Piloting and Technical Assistance" where Waste to Energy is one component. A screening of each sub-project will be conducted by SREDA throughout project implementation by way of Social Impact Assessments. In case of land acquisition, livelihood restoration, impacts on squatters etc, both RPF and TPF will be followed..

## **5.5 Application of Safeguards Plans and Measures**

### **5.5.1 Environmental and Social Management Plan**

An ESMP is the key document focused on implementation after the potential impacts have been identified by the ESIA (see example in Annex 3). It ensures that the project impacts are reduced to an acceptable level during the implementation stage. Thus, ESMP becomes the document for ensuring that all the preceding analysis is used to preserve or improve overall environmental quality within the influence area of the proposed project.

The ESMP should be specific, clearly and concisely describing adverse impacts, selected management measures to bring it to an acceptable level and timelines for implementing these measures. The ESMP aims to ensure the compliance of all activities undertaken during the implementation and the operation of the proposed project with the environmental safeguard requirements of the Funding Partners and GoB. The structures of an ESMP are based on:

1. Potential adverse impacts identified and mitigation measures to be adopted, together with conditions within which one or other measure would apply and their integration with phases – Pre-construction, Construction/ Implementation, Operation and decommissioning
2. Enhancement plans for positive impacts
3. Monitoring Plan with indicators, mechanisms, frequency, locations
4. Budgetary allocations for all the above activities.
5. Institutional arrangements for each activity and mitigation measures.
6. Implementation schedules for each activity and its integration with the subproject implementation timelines.
7. Reporting procedures, including for redressing grievances related to environmental and social issues.

A summary of the likely issues and potential impacts & mitigation measures is presented in Table 5-1; to guide the preparation of more specific assessment and management plan as more projects to get identified. The generic ESMP is only a guideline document and would require to addressing the mitigation measure which will be considered as successful when it complies with the EQS, policies, legal requirements set by Funding Partners and DoE environmental guidelines & other relevant GoB legal requirements. In absence of DoE's own EQS, other relevant international or other recognized organization's quality standard will be applied.

For minimize or mitigate the social impacts, RPF and TPF will be followed which was prepared under “Renewable Energy Resource Assessment, Piloting and Technical Assistance” component of SREDA where Waste to Energy is one sub-component.

**Table 5-1: Framework Environmental & Social Management Plan**

| <b>Activity</b>               | <b>Potential Environmental &amp; Social Impacts</b> | <b>Proposed Mitigation Measures</b>   | <b>Institutional Responsibilities</b> |
|-------------------------------|---|---|---------------------------------------|
| <b>Pre-Construction Stage</b> | Loss of land / and other physical assets            | <ul style="list-style-type: none"> <li>• Carrying out analysis of alternatives to avoid/minimize involuntary taking of land and other physical assets.</li> <li>• Compensation at replacement value</li> </ul>  | Client                                |
|                               | Loss of livelihood                                  | <ul style="list-style-type: none"> <li>• Preferable employment with developer</li> <li>• Alternative livelihood options and training for skill enhancement</li> <li>• Corporate Social Responsibility (CSR) activities to be undertaken by the developer will ensure alternative livelihood opportunities</li> </ul>  | Client / Developer                    |
|                               | Loss of Access rights                               | <ul style="list-style-type: none"> <li>• Project to ensure thorough analysis of alternatives that access enjoyed by the community remains intact.</li> <li>• In case of unavoidable circumstances, alternative access will be provided.</li> </ul>  | Client                                |
| <b>Site Preparation</b>       | Soil Erosion;<br>Alteration of natural drainage;    | <ul style="list-style-type: none"> <li>• Construction facilities to be placed 500 meters from water bodies, natural flow paths;</li> <li>• Minimize cut &amp; fill operations, the site clearing and grubbing operations should be limited to specific locations only.</li> <li>• Any disruption of socially sensitive areas with regard to human habitation and areas of cultural significance will be avoided.</li> <li>• The existing slope and natural drainage pattern on the site should not be altered.</li> <li>• Trees on private lands are felled or damaged during construction operations, compensation shall be paid to the owner as determined by the forest/horticulture departments.</li> <li>• The contractor shall ensure that site preparation activities do not lead to disruption of activities of the local residents.</li> </ul> | Client /Developer                     |
| <b>Construction Activity</b>  | Noise from construction works                       | <ul style="list-style-type: none"> <li>• Construction activity shall be restricted to daytime as far as possible to avoid disturbance to surrounding areas.</li> <li>• Wherever required, personal protective equipment (PPE) such as ear plugs, earmuffs, helmets etc. should be provided to the persons working in high-</li> </ul>   | Client /Developer                     |

| Activity                                       | Potential Environmental & Social Impacts                            | Proposed Mitigation Measures   | Institutional Responsibilities |
|--|---|--|--------------------------------|
|  |   | risk areas.  |                                |
| <b>Construction Activity</b>                   | Dust  | <ul style="list-style-type: none"> <li>• Construction machinery shall be properly maintained to minimize exhaust emissions of CO, SPM, PM<sub>2.5, 10</sub> and Hydrocarbons.</li> <li>• Dust generated as a result of clearing, leveling and site grading operations shall be suppressed using water sprinklers.</li> <li>• Dust generation due to vehicle movement on haul roads/access roads shall be controlled through regular water sprinkling.</li> </ul> | Client /Developer              |
| <b>Construction Activity</b>                   | Safety Issues   | <ul style="list-style-type: none"> <li>• Prevent entry of unauthorized personnel and proper storage and control of hazardous materials on site.</li> <li>• The site shall be secured by fencing and manned at entry points</li> </ul>  | Developer                      |
|  | Traffic Management  | <ul style="list-style-type: none"> <li>• Contractors to provide traffic management plans to be approved by relevant authorities</li> <li>• Adequate alternative arrangements to be made to minimize impact on motorist and pedestrians.</li> <li>• Adequate road signs to be planted on access roads to limit vehicular speeds</li> <li>• Construct properly designed speed ramps on access roads</li> </ul>   |                                |
| <b>Water for Construction</b>                  | Conflicts with existing users due to the scarcity of resource base. | <ul style="list-style-type: none"> <li>• A detailed assessment of the available resources and consent of the local representative for withdrawal of water from existing surface water sources shall be taken.</li> <li>• If ground water is withdrawn, adequate approvals from the appropriate department need to be undertaken before setting up bore wells.</li> </ul>   | Client / Developer             |
| <b>Road safety and traffic management plan</b> | Increase in road accidents  | <ul style="list-style-type: none"> <li>• The movement of heavy machinery and equipment's shall be restricted to defined routes.</li> <li>• Proper signage's to be displayed at major junctions.</li> <li>• Road diversions and closures to be informed well in advance to the local residents.</li> <li>• The vehicular movement to be controlled near sensitive locations viz. schools, colleges, hospitals identified along designated vehicular</li> </ul>    | Client / Developer             |

| Activity  | Potential Environmental & Social Impacts   | Proposed Mitigation Measures  | Institutional Responsibilities |
|---|--|---|--------------------------------|
| <b>Base Camp Construction Activity – Labour Camp Management</b> | Conflicts with the local residents   | <p>transportation routes.</p> <ul style="list-style-type: none"> <li>• An alternate arrangement for fuel wood, heating and cooking should be made to meet fuel wood requirement of the labor</li> <li>• Work force should be prohibited from disturbing the flora, fauna including hunting of animals, Wildlife hunting, poaching and tree felling.</li> <li>• Adequate facilities ensuring sanitation for labour camps.</li> <li>• Treated Water will be made available at Site for Labour drinking purpose.</li> <li>• Adequate accommodation arrangements for labour</li> </ul>  | Client / Developer             |
| <b>Waste Management</b>   | Improper management and handling of hazardous and non-hazardous waste during construction.   | <p>Preparation of a waste management plan covering the following aspects</p> <ul style="list-style-type: none"> <li>• Residual waste from the plantWaste from the temporary accommodation facilities for labor</li> <li>• Waste from equipment maintenance/vehicles on-site.</li> <li>• The scrap material generated from the erection of structures and related construction activities will be collected and stored separately in a stack yard and sold to local recyclers.</li> <li>• Hazardous waste viz. waste oil etc will be collected and stored in the paved and bounded area and subsequently sold to authorized recyclers.</li> <li>• Applicability of the Hazardous Waste Management Rules</li> </ul>   | Client / Developer             |
| <b>Health and Safety risks</b>                                  | <ul style="list-style-type: none"> <li>▪ The potential for exposure to safety events such as tripping, working at height activities, fire from hot works, smoking, failure in electrical installation, mobile plant and vehicles, and electrical shocks.</li> <li>▪ Exposure to health events during construction</li> </ul> | <ul style="list-style-type: none"> <li>▪ All construction equipment used for the execution of the project works shall be fit for purpose and carry valid inspection certificates and insurance requirements.</li> <li>• The risk assessment shall be prepared and communicated prior to the commencement of work for all types of work activities on site.</li> <li>• Provide walkways that are clearly designated as a walkway; all walkways shall be provided with good conditions underfoot; signposted and with adequate lighting.</li> <li>• Signpost any slippery areas, ensure proper footwear with a good grip is worn for personnel working within slippery areas.</li> <li>• Carry out fire risk assessment for the construction areas, identify sources</li> </ul> | Client / Developer             |

| Activity | Potential Environmental & Social Impacts   | Proposed Mitigation Measures  | Institutional Responsibilities |
|----------|--|---|--------------------------------|
|          | <p>activities such as manual handling and musculoskeletal disorders, hand-arm vibration, temporary or permanent hearing loss, heat stress, and dermatitis.</p> | <p>of fuel and ignition and establish general fire precautions including, means of escape, warning, and fighting fire.</p> <ul style="list-style-type: none"> <li>• Set up a system to alert workers on site. This may be temporary or permanent mains operated fire alarm.</li> <li>• Fire extinguishers should be located at identified fire points around the site. The extinguishers shall be appropriate to the nature of the potential fire.</li> <li>• Establish and communicate emergency response plan (ERP) with all parties, the ERP to consider such things as specific foreseeable emergency situations, organizational roles and authorities, responsibilities and expertise, emergency response and evacuation procedure, in addition to training for personnel and drills to test the plan</li> <li>• Electrical equipment must be safe and properly maintained; works shall not be carried out on live systems.</li> <li>• Only competent authorized persons shall carry out maintenance on electrical equipment, adequate Personal Protective Equipment (PPE) for electrical works must be provided to all personnel involved in the tasks.</li> <li>• An adequate number of staff and first aiders shall be on site in accordance with Bangladesh Labor Law requirements.</li> <li>• First aid kit with adhesive bandages, antibiotic ointment, antiseptic wipes, aspirin, non-latex gloves, scissors, thermometer, etc. shall be made available by the contractor on site.</li> <li>• Emergency evacuation response shall be prepared by the contractor and relevant staff shall be trained through mock-up drills.</li> <li>• Ensure all equipment is suitable for jobs (safety, size, power, efficiency, ergonomics, cost, user acceptability etc.), provide the lowest vibration tools that are suitable and can do the works.</li> <li>• Ensure all tools and other work equipment are serviced and maintained in accordance with maintenance schedules and manufacturer's instructions.</li> </ul> |                                |

| Activity              | Potential Environmental & Social Impacts  | Proposed Mitigation Measures   | Institutional Responsibilities |
|-----------------------|---|--|--------------------------------|
|                       |   | <ul style="list-style-type: none"> <li>• Regular noise exposure assessments and noise level surveys of noisy areas, processes and equipment shall be carried out in order to form the basis for remedial actions when necessary</li> <li>• Awareness training sessions should be established and provided to all personnel involved during the construction phase in order to highlight the heat related illnesses of working in hot conditions such as heat cramps, heat exhaustion, heat stroke, dehydration.</li> <li>• Ensure adequate quantities of drinking water are available at different locations within the site,</li> <li>• Eliminate the risk of exposure whenever possible, provide proper PPE wherever necessary and to ensure that there are satisfactory washing and changing facilities.</li> <li>• Ensure that all workers exposed to a risk are aware of the possible dangers. They should be given thorough training in how to protect themselves and there should be effective supervision to ensure that the correct methods are being used</li> </ul> |                                |
| Decommissioning Phase | <ul style="list-style-type: none"> <li>▪ Post-design life is expected to involve rehabilitation, upgrading, and modernization of the facility, with a possible expansion (retrofitting and the addition of new technology). As a result, impacts from decommissioning are not expected to arise in the near future unless retrofitting and upgrade of the facility was not feasible. However, the ESIA Study should consider potential decommissioning impacts in case there was a need for the facility to be dismantled and end operations.</li> <li>▪ The main mitigation and monitoring measures to minimize or reduce the environmental and social impacts during decommissioning are anticipated to be similar to those identified for the construction phase.</li> </ul> |  | Client / Developer             |

### **5.5.2 Environmental Code of Practice**

The purpose of the Environmental Code of Practice (ECoP) is to define the environmental criteria to be applied during the feasibility, design, construction, and operation of infrastructure. The objectives of the ECoP are to (i) establish specific environmental and social criteria for physical works; (ii) provide technical assistance; (iii) ensure general understanding of environmental and social impacts and define environmental and social criteria to minimize such impacts; (iv) ensure that road engineers and technicians can find solutions for any problems arising from construction or maintenance activities; and, (v) facilitate the preparation of environmental and social assessment for development sub-projects.

ECoP users will comprise project planners, designers, managers, engineers and technicians from implementing agencies, Environmental Assessment (EA) Consultants, private consulting firms and contractors, academic and research institutions, government ministries and institutions, and stakeholders.

### **5.5.3 Chance Find Procedures**

The proposed sub-projects is not expected to yield archaeological, paleontological or cultural findings of any significance. However, there remains a possibility for (as yet undiscovered) sites of local cultural significance (i.e., sacred sites, cemeteries) and archaeological sites to exist with sub-project areas.

Chance find procedures will be used as follows: (i) stop construction activities in the area of the chance find; (ii) delineate the discovered site or area; (iii) secure the site to prevent any damage or loss of removable objects; (iv) notify the supervisory Engineer who, in turn, will notify the responsible local authorities; (v) responsible local authorities would conduct a preliminary evaluation of the findings to be performed by archaeologists who will assess the significance and importance of the findings according to various criteria, including aesthetic, historic, scientific or research, social and economic values; (vi) decisions on how to handle the finding shall be taken by the responsible authorities which could result in changes in layout, conservation, preservation, restoration, and salvage; (vii) implementation for the management of the finding communicated in writing; and (viii) construction work could resume only after permission is given from the responsible local authority concerning safeguard of the heritage. The aforementioned procedures need to be referred to as standard provisions in construction

contracts, when applicable. During project supervision, the Site Engineer will monitor the above procedures relating to the treatment of any chance find encountered

## **6 STAKEHOLDER ENGAGEMENT, GRIEVANCE MECHANISM AND SOCIAL SAFEGUARD MANAGEMENT PROCEDURE**

### **6.1 Basic Planning Principles**

Considering the potentials of impacts associated with this project, project will select the sites, and design and implement all off-site infrastructures required to support the economic activities within the project area, adhering to the following principles:

- Prior to selection of specific sites, the project will undertake community and stakeholder consultations about the objectives and the planned economic activities in the selected sectors, as well as the social impacts, especially those that would result from private land acquisition and displacement from khas and other public lands. Consultations will include, inter alia,
  - All formal/informal local entities, such as Union Parishads/Upazila Parishads and other local bodies with direct and indirect stakes in the project and are deemed key actors to influence availability of lands for the specific sector and design and implementation of the component.
  - Individuals, such as private landowners and those, especially the vulnerable who use public lands to live in and/or earn a living with or without authorization, as well as others who would be directly affected by the project.
  - Individuals, who would be affected indirectly in terms of loss of livelihood and/or access to common property resources which may have been a substantial support to their livelihood.
- Unless absolutely required, project will do its best to avoid land acquisition from private ownerships and will always try to find khas and other public lands whenever it considers alternative sites in a given district, upazila, union or municipality.

Project will screen each site and its surroundings, and all physical works that might be undertaken to provide infrastructure support (e.g., access roads, electricity, water supply, etc.) to identify the associated safeguards issues and impacts, in order to determine applicability of the OP 4.12 and the required impact mitigation plans (a Screening Form is provided in Annex 1). Where land acquisition from private ownerships and displacement from public lands could not be avoided entirely, project will establish and build any required land-based infrastructure.

## **6.2 Stakeholder Engagement Community Participation & Consultations**

Community/stakeholder consultations will be conducted throughout the project cycle, with varying focus on issues relating to the subproject activities and the people who may have stakes therein. More formal consultations, focus group discussions and interviews of knowledgeable local persons will start with feasibility study, social (and environmental) screening, PAP census and impact assessment, and preparation and implementation of the impact mitigation plans. Focus of consultations will generally shift from wider audience to specific groups who have direct stakes in the project.

The PIU will employ numerous consultation and communication methodologies during the preparation and implementation of the project. Participatory workshops, household surveys, focus groups, etc. will be used to inform communities about possible project impacts, proposed mitigation measures, and to receive their feedback on their priorities and concerns, which in turn, will be used as key inputs for the preparation of the RAPs. Focus groups will discuss gender issues, children and schooling, health, land and security, access to places of employment, livelihood generation issues, among others.

The PIU will carry out consultations at various stages of the preparation of the RAPs and the key stakeholders will be invited to participate in the deliberations for the formulation of the Resettlement and Rehabilitation (R&R) plans. The consultations will start with the reconnaissance level surveys followed by scoping workshops, focus group meetings, and follow up consultations. The opinions of stakeholders will be documented and incorporated in the R&R planning as well as in designing socially acceptable mitigation measures.

The public consultation exercises undertaken during the preparation of RAPs involve information dissemination – i.e., informing the target audience about the details of the project intervention in question and inviting their comments before finalizing the R&R design. The consultations will be carried out with individuals during the screening survey stage and with both individuals and groups during the detailed social impact surveys. Based on preliminary social assessments, scoping and initial field appraisals, participatory strategies will be devised to ensure the participation of the affected populations in the RAP preparation. This approach will help identifying social sensitivities and concerns so as to suitably modify the design and planning of the project intervention; review measures to avoid, reduce or mitigate adverse

impacts and minimize displacement; explain principles and procedures and significance of land acquisition, resettlement and rehabilitation compensations and assistance to PAPs. Public participation is performed and information will be made available during preparation and implementation of the resettlement plan and will include, at a minimum, community meetings and focus-group discussions.

Public consultation is an important requirement during Environmental Assessment as per GoB environmental regulations and funded partners. For a new project, public consultation shall be conducted at the scoping stage of the environmental assessment process to identify environmental impacts of the project as well as after preparation of the draft ESIA before receipt of Site Clearance Certificate from DOE.

**Table 6-1: Consultation and Disclosure Roles and Responsibilities**

| <b>Project Phase</b>     | <b>Activities</b>  | <b>Details</b>   | <b>Responsible Agency</b> |
|--------------------------|--|--|---------------------------|
| Project Initiation Stage | <ul style="list-style-type: none"> <li>-Subproject information dissemination on various components.</li> <li>-Disclosure of preliminary plans for proposed land acquisition.</li> <li>-Preliminary Information sharing about the tentative alignment/sites with the DPs in case of temporary impact on business, income and livelihood.</li> </ul> | <ul style="list-style-type: none"> <li>-Leaflets posted or distributed containing information on the project.</li> <li>-Public notice issued in public places including newspapers and direct consultation with DPs /DPs.</li> </ul>                         | SREDA                     |
| RAP Preparation Phase    | Stakeholder consultations.   | <ul style="list-style-type: none"> <li>-Further consultations with DPs and households, titled and non-titled.</li> <li>-Summary RPF made available to all DPs at the convenient place which is easily accessible and should be in local language.</li> </ul> | SREDA                     |
|                          | Disclosure of final entitlements and rehabilitation packages and disclosure of draft RAP.  | RAPs disclosed to all DPs in local language  | SREDA                     |
|                          | Finalization of RAP.   | -Review and approval of RAP by EA.   | EA/IA                     |

| <b>Project Phase</b>     | <b>Activities</b>  | <b>Details</b>   | <b>Responsible Agency</b> |
|--------------------------|--|--|---------------------------|
|                          |  | -Review and clearance of RAP by World Bank (prior to award of contract).<br>Web disclosure of the RAP.<br>Disclosure of the Final RP to DPs  |                           |
| RAP Implementation Stage | Ongoing consultation with DPs during RAP implementation. | -Continued discussions and information disclosure to DPs;<br>-Payment of entitlements (all compensation must be paid before displacement occurs.<br>-Grievance Redress Mechanism activated.<br>-Written notification from EA/IA to WB that all compensation paid before displacement occurs.<br>Construction can begin on sections where compensation is paid and community notified of start date of civil works.<br>- DPs with unresolved grievances or disputes over land ownership, compensation amounts, etc. are notified of any compensation payments set aside by EA/IA in separate escrow accounts to be paid when disputes are resolved. | SREDA/Implementing NGO    |

Community consultations will always include the following as they relate to project preparation and implementation:

- The objectives, scope and implications with respect to the project, socioeconomic impacts, as well as the adverse impacts that are likely to be caused on users of khas and other public lands and private landowners;

- Gather community inputs/feedbacks as to how adverse impacts could be minimized; and the rights and responsibilities on the parts of the communities themselves and the agencies involved in preparation and implementation, such as GOB, World Bank, the consultant, etc.
- Potential impacts and their sources relating to the location and scope of the civil works required to build infrastructures in order to support the various economic activities
- Inform the community about Grievance Redress Mechanism and the Grievance Redress Committee that would be constituted at the local level and project level, its membership composition, and explain its functions and limitations and how an aggrieved person could lodge complaints and grievances
- Project will hold separate consultations with women. The main objective is to explore the possibilities of introducing economic activity that would benefit the local women. (Recording and analysis of inputs/feedbacks and other information will always be gender disaggregated.)

### **6.3 Grievance Redress Mechanism**

Grievance mechanisms are an integral part of stakeholder engagement process. The Projects will have a multi-level process for addressing grievances from project-affected communities. OP 4.01 requires project sponsors to establish a grievance mechanism to receive and facilitate resolution of Affected Communities' concerns and grievances about the project sponsor's environmental and social performance. The grievance mechanism is an important part of stakeholder engagement process and should be scaled to risks and adverse impacts of the project, address concerns promptly, use an understandable and transparent process that is culturally appropriate and readily accessible to all segments of the affected communities, and do so at no cost to communities and without retribution. The mechanism should not hamper access to judicial and administrative remedies. The project sponsor will inform the affected communities about the mechanism in the course of its community engagement process.

Grievance mechanisms will respond to project needs better if they are established early as a measure to pre-empt rather than react to the escalation of tensions with surrounding communities. As with other pillars of stakeholder engagement, an adequate social and environmental impact assessment process for the project is essential to the success of a

grievance mechanism, because it helps determine how project scale and impact, stakeholder composition, and other project factors will influence the design of the grievance mechanism and resources allocated for implementation.

The project proponent shall constitute a three-member Grievance Redress Committee (GRC) comprising of an officer representing the project proponent, not below the rank of the implementing officer, the elected member (local body) of the project area/location and one member of the public who is known to be a person of integrity, good judgment and commands respect among the community. The existence of the GRC will be disseminated to the affected persons through printed handouts providing details of the structure and process of redressing grievances.

The project proponent will document all complaints received, the action was taken on each of them and send a report of the same every quarter. The GRC will address local public grievances regarding environmental impacts of the project during construction and operation. The project proponent will address issues through GRC to receive and facilitate the resolution of affected persons' concerns and grievances about physical and economic displacement and other project impacts, paying particular attention to the impacts on vulnerable groups. The GRC should be scaled to the risks and adverse impacts of the project.

To ensure impartiality and transparency, hearings on complaints at the GRC level will remain open to the public. The GRC will record the details of the complaints and their resolution in a register, including intake details, resolution process, and the closing procedures. PMU consultant will maintain the following three GRM Books:

**Opening Book:** (1) Case no., (2) Date and channel of receipt, (3) Name of complainant, (4) Gender, (5) Father or husband, (6) Complete address, (7) Main objection (loss of land/property or entitlements), (8) Complainants' story and expectation with evidence, and (8) Previous records of similar grievances.

**Resolution Book:** (1) Serial no., (2) Case no.,(3) Name of complainant, (4) Complainant's story and expectation, (5) Date of hearing, (6) Date of field investigation (if any), (7) Results of hearing and field investigation, (8) Decision of GRC, (9) Progress (pending, solved), and (10) Agreements or commitments.

**Closing Book:** (1) Serial no. (2) Case no., (3) Name of complainant, (4) Decisions and response to complainants, (5) Mode and medium of communication, (6) Date of closing, (7) Confirmation of complainants' satisfaction, and (8) Management actions to avoid recurrence. The GRC will also prepare periodic reports on the grievance resolution process and publish these on their websites. PMU will consolidate reports from the GRCs on GRM and post in their website. A grievance Redress flowchart is given below.

#### **6.4 Institutional Capacity Building**

The project has strong social development focus and the implementation of the project interventions with social compliance requires institutional capacity building in this area. It is therefore proposed to include Social Development Specialist in Project Implementation Unit under the project which should later be institutionalized in the organizational setup.

Institutional capacity building will also include various short and long training and awareness raising program. All such training and awareness raising program must include social development aspects such as resettlement, special assistance to small ethnic and vulnerable communities and disadvantaged groups, inclusiveness, participation besides technical and environmental aspects and overall enhancement of disaster management capacity of the concerned organizations and the project in general.

#### **6.5 Citizen Engagement**

SREDA will conduct consultation meeting with local community before selecting RoW. Community people will be engaged with different committee of the projects like GRC, Property Assessment and Valuation Committee (PAVC) of the project. The project will seek to get feedback from the affected HHs and incorporate in the project document. If any mitigation measures are suggested by the stakeholders those will be incorporated in the ESIA. SREDA will be responsible for collecting the stakeholder feedback as part of transmitting the generated renewable electricity to the beneficiary group. The related beneficiary feedback indicator included in the results framework is the share of end-users expressing satisfaction with project intervention and cost of electricity service. The data for the indicator will be collected as part of the end user satisfaction surveys.

## **6.6 Gender**

Mainstreaming gender equity and empowerment is a focus area in the project. In the activities related to livelihood, restoration will address women's needs. Once the project site will be selected, gender analysis will be part of the social assessment and the analysis will be based on findings from gender specific queries during the primary and secondary data collection process. The quantitative and qualitative analysis will bring out sex disaggregated data and issues related to gender disparity, needs, constraints, and priorities; as well as understanding whether there is a potential for gender based inequitable risks, benefits and opportunities. Based on the analysis, the specific interventions will be designed and if required gender action plan will be prepared. The overall monitoring framework of the project will include sex disaggregated indicator and gender relevant indicator.

The participation of beneficiaries and focus on poverty reduction are two other key determinants of the effectiveness and sustainability of any project. Any project must address the constraints on women's participation in project design, construction, and monitoring and evaluation (M & E). Three major tools will be used to identify and deal with gender issues in the project cycle: gender analysis, project design, and policy dialogue.

Gender analysis will be an integral part of the initial social assessment at the screening stage itself. The issues identified can be scaled up during the feasibility and detailed analysis can be carried out during the project preparation stage. The findings and recommendations from the gender analysis during project planning and feedback from beneficiaries during implementation must be discussed thoroughly to determine the need for further action.

The capacity building component will also create a scope for women empowerment. At least 20% of the training facility will be provided to women who are involved in RE business. Women employees from government/non-government/NGO/private sectors will get equal chance to have international standard training on renewable energy.

## **6.7 Abbreviated Resettlement Action Plan and Detailed RAP:**

It is expected that there will be no land acquisition or resettlement. If ARAP or RAP has to be prepared, TPF and/or RPF under the component 3 of SREP will be followed. In cases where the impacts of the project are marginal such that less than 200 persons (about 40-50 families) are affected without any large-scale displacement, or where the impacts are minor, although more than 200 persons may be affected, a simple abbreviated RAP should be prepared. It should provide general information on the project, social impacts and the number of people

affected, entitlements for compensation and other assistance for each category of PAPs, estimated cost, and implementation schedule.

In cases where the project affects and/or displaces more than 200 people (40-50 families), a time-bound Resettlement Action Plan (RAP) for the project will be prepared in accordance with the provisions of this Framework. The threshold of 200 PAPs should apply to all sub-projects put together for which one single standalone RAP would be required. Resettlement plans should be built around development strategy, and compensation, resettlement, and rehabilitation packages should be designed to improve or at least restore the social and economic base of those severely affected. Preference should be given to resettling vulnerable people dislocated from their existing settings by providing opportunities for sustainable income generation in similar settings. Where a project is likely to adversely affect poor households the resettlement plans should specify measures additional to the compensation entitlements, aimed to improve status of the poor to bring them up to an acceptable level above the poverty line.

### **6.8 Small Ethnic Community Development Plan**

If small ethnic communities (SEC) with indigenous peoples characteristics are affected, SECDP has to be prepared following the Tribal Peoples Framework (TPDF) adopted under the component 3 of SREP.. The purpose of the SECDP is to ensure culturally appropriate consultation with small ethnic communities and their participation in sub-project development. If based on free, prior and informed consultations (FPIC) where affected SECs conclude that the proposed sub-project will be beneficial to them then, measures and assistance will be developed in consultation with SEC elders, community based organizations (CBO) and independent civil society organizations/non-government organizations (CSO/NGO). The FPIC and planned activities will be documented in the SECDP. Assistance should include institutional strengthening and capacity building of tribal elders and CBOs working on specific activities (e.g., resettlement, if any) within the sub-project.

If small ethnic communities with characteristics of indigenous people are adversely affected by a sub-project, either by land acquisition or by other induced negative impacts, the SECDP would have to address the impacts with various measures, activities, and actions to mitigate adverse impacts. Acquisition of land and other assets would be governed by the RPF. Implementation of the SECDP would be carried out by the community, assisted by appropriate staff from SREDA.

## 6.9 Social and Gender Issues

This guidance note on gender integration is intended to make project authorities aware of the World Bank's concerns for gender-based inequalities and indignities prevalent in workplaces where men and women work together. It is observed that development effectiveness of projects can be enhanced by addressing such gender issues that are considered serious obstacles to inclusive and sustainable development. In this regard, the Bank considers it most important that development programs and projects should always explore feasible alternatives to enable the disadvantaged, especially women, to share in the benefits generated by the projects it supports.

The following are widely known issues that are to be addressed for fair treatment of workers in general and the female workers in particular.

- **Women workers** – especially unskilled and lowly skilled -- are particularly vulnerable to discrimination and abuse. In a situation where the wages are already very low and considered far less than living wage, female workers are known to be paid at considerably lower rates than the males for similar jobs.
- **Sexual harassment and indignities**, which range from verbal abuse to “touching” are rarely talked about -- but goes on quietly. Physical assault of workers is not too rare.
- **Freedom of association and collective bargaining** are still not allowed in all factories. (After years of rallies and agitations, which often turned violent, workers' unions are allowed in some of the privately-run factories. It is still not allowed in some enterprises where investments are mostly foreign.
- Lack of safety in the factories, which has been widely known and caused hundreds of deaths over the years, due to fire and structurally unsafe buildings that housed many of the factories.

Benefiting the local communities and workers at this level will require careful analyses of the current situation which may vary from one industry to another. Gender analysis at this level would help project to adopt appropriate guidelines to ensure gender integration into the economic activities selected to locate in industries that are aimed at improving the local economies. This will require analyzing the existing economic and socio-demographic conditions that will indicate economic characteristics and vulnerability of the different

community groups, including women; social acceptance of women working outside the households; education that may make an important difference when it comes to suitability for particular jobs, including ease in training to perform particular tasks that the enterprises may require; and other factors that would enable project and the investors to make decisions about the kinds of industrial activities they want to undertake in a particular component. Analysis may include, but not limited to, the following information.

- Project location, describing physical characteristics (topography and other physical features) of the individual industries; proximity to existing urban centers; accessibility to the project site; existing/potential transport networks; power and water supply; and others that are usually considered important for setting up manufacturing enterprises.
- Community consultations, including women, about objectives of the project and the kinds of enterprises, with job prospects for men and women, which would be set up in the individual industry. Project will consider all inputs and feedbacks received from the communities, and record and analyze all information in terms of gender -- men and women (Depending on local custom, consultations with women may have to be conducted separately).
- Community profile, indicating population size; ethnicity; education and related facilities; prevalence/practice of gender differentiation; major economic activities; availability and use of common property resources; occupational groups; formal/informal institutions and rules and behavior that may influence gender integration into the industrial activities; and any other information relevant to particular activities identified for the individual industries’.
- Social acceptability, existing and potential issues and concerns related to the roles women play in the household and the prospects that they could work outside the households, without causing social conflicts.

#### **6.10 Public Disclosure**

Once the screening and documentation requirements are agreed by the project sponsor, the project proponent will develop detailed documents/ plans and impact mitigation measures and obtain the environmental clearance for the waste-to-energy plant before starting the construction. Sound environmental and social practices have to be incorporated into the subproject design and implementation and potential negative impacts will have to be mitigated to acceptable levels/standards of DoE and the World Bank Group EHS Guidelines.

SREDA will submit the ESIA and RAP (if required) document to the World Bank for disclosure on their website

- I. A draft ESIA including ESMP & RAP at least 120 days with additional time required for incorporating comments on the draft ESIA/ESMP prior to funded partners;
- II. Updated ESIA and Corrective Action Plan (CAP) prepared during project implementation if any; and
- III. The environmental monitoring reports generated periodically (annually) during monitoring of project in implementation and operation phase of the project.

All relevant documents will be disclosed at a public place accessible to affected groups and other stakeholders prior to consultation to establish the basis for meaningful consultation and participation. Disclosure should be done in a culturally appropriate form and language. At a minimum, the ESIA document and RAP (if required) should be accessible in the SREDA's website. Disclosure and consultation mechanisms will be planned and detailed in the relevant documents.

## 7 INSTITUTIONAL ARRANGEMENTS FOR ESMF IMPLEMENTATION

### 7.1 Institutional Arrangements

The Project proponent (SREDA) will have overall responsibility for the implementation of this ESMF as well as all subsequent safeguards instruments, such as ESIA, ESMP, RAP, etc.

The overall project will have a steering committee consisting of members from different ministries (Table 7-1). This committee shall provide overall guidance and facilitate coordinated implementation of the project. The Steering Committee will be the highest decision making and supervisory body of the project. The committee will hold meetings at least once in six months for smooth implementation of the project.

**Table 7-1: Project Steering Committee**

| SN | Person  | Designation      |
|----|---|------------------|
| 1. | Secretary, Ministry of Power, Energy & Mineral Resources      | Chairperson      |
| 2. | Chairman, SREDA   | Member           |
| 3. | Additional Secretary/ Joint Secretary (Dev.), Power Division. | Member           |
| 4. | Member, SREDA   | Member           |
| 5. | One representative from Planning Commission                   | Member           |
| 6. | One representative from IMED                                  | Member           |
| 7. | Joint Chief/ Deputy Chief, Power Division                     | Member           |
| 8. | One representative from Finance Division                      | Member           |
| 9. | PD of the project   | Member Secretary |

The overall project will also have a Technical Advisory Committee (TAC), the composition of which is shown in

Table 7-2. The TAC shall advise the Executing Agencies, when requested, to identify proper consultants, to evaluate the impact of pilot projects in renewable energy development and to advise the Executing Agencies concerning any technical issues. Meetings will be convened when there is a need for technical advice/support. The Chairperson will instruct the secretariat to arrange and call for the meetings.

**Table 7-2: Technical Advisory Committee**

| SN | Person  | Designation |
|----|---|-------------|
| 1. | Chairman, SREDA                                       | Chairperson |
| 2. | One representative from executing agency              | Member      |
| 3. | An academic expert from higher education organization | Member      |
| 4. | An expert consultant from the renewable energy field  | Member      |

|    |                   |                  |
|----|-------------------|------------------|
| 5. | PD of the project | Member Secretary |
|----|-------------------|------------------|

SREDA will establish a Project Implementation Committee (PIC) as shown below. The PIC will look after implementation of the waste to energy pilot project and resolve any issues that may arise. The Committee will hold meetings at least once every three months to discuss implementation progress and monitoring.

**Table 7-3: SREDA Project Implementation Committee**

| SN | Person   | Designation      |
|----|--|------------------|
| 1. | Chairman, SREDA  | Chairperson      |
| 2. | One representative from Planning Commission  | Member           |
| 3. | Member, SREDA  | Member           |
| 4. | One representative from IMED   | Member           |
| 5. | Senior Assistant Chief, Power Division   | Member           |
| 6. | A representative from Rajshahi City Corporation (or alternative City Corporation/Municipality) Engineering Section | Member           |
| 7. | PD of the project  | Member Secretary |

SREDA will also setup a Project Management Unit (PMU), the structure of which is shown in Figure 7-1. The PMU will hire two consultants: Environmental Specialist and Social Development Specialist. The PMU shall coordinate the activities of these consultants as well as the contractors, local administration, local community, etc.



### **Figure 7-1: Structure of Project Management Unit**

The Rajshahi City Corporation (RCC) (or alternative City Corporation/Municipality) engineer should be minimum Executive Engineer grade. The Environmental Specialist needs to be a graduate preferably in civil/environmental engineering or related field with at least 5 years' experience. The Social Development Specialist needs to be a graduate preferably in social science or related field with at least 5 years' experience.

#### **7.1.1 Implementation Responsibility**

The Project proponent (SREDA) will have overall responsibility for the implementation of this ESMF as well as all subsequent safeguards instruments, such as ESIA, ESMP, RAP, etc. Training will need to be arranged involving PMU, consultants, and contractors to awareness and knowledge on issues related to environmental and social protection.

The Environment and Social Specialists need to be on Board as soon the PMU is set up. They will be responsible for ensuring the adequacy of ESIA (incl. ESMP), an environmental component in the Bidding Documents (such as BOQ) and ensure the quality of Environmental Action Plan (EAP) submitted by the contractor. The specialists will also be responsible for monitoring at the field level on a regular basis during the construction phase.

#### **7.1.2 Construction Phase**

**Environment Specialist in PMU.** The PMU will have a dedicated Environmental Specialist to ensure implementation of ESMP and other environmental management responsibilities. S/He will maintain liaison with WB safeguards team, regulatory agencies, and other stakeholders during the Project implementation. The Specialist will also monitor construction activities to ensure that environmental mitigation measures are properly implemented.

**Social Development Specialist in PMU.** The PMU will have a dedicated Social Development Specialist to ensure implementation of ESMP and other social management responsibilities. S/He will maintain liaison with WB safeguards team, regulatory agencies, and other stakeholders during the Project implementation. The Specialist will also monitor construction activities to ensure that social mitigation measures are properly implemented.

**Contractor's Environment Supervisor.** The construction contractors will have a dedicated, properly qualified and experienced, site-based Environment Supervisor (ES) at the construction site. The ES will be responsible to implement various aspects of the ESMP particularly the mitigation measures to ensure that the environmental and social impacts as well as the health

and safety issues of the construction works remain within acceptable limits. The ES will also be responsible to conduct environmental training for the construction crew. The ES needs to be a graduate preferably in environmental science/engineering with at least 3 years' experience.

**Rajshahi City Corporation (or alternative City Corporation/Municipality) Engineer.** The PMU member will be actively involved in the design and construction phase of the waste to energy facility. This is critical as RCC will be responsible for the operation and maintenance of the new facility.

**Department of Environment (DoE):** The DoE is responsible for issuing Site Clearance and Environmental Clearance Certificates (ECC).

### **7.1.3 Operation Phase**

The Engineering Section of Rajshahi City Corporation (or alternative City Corporation/Municipality) will be a key element of the operation and maintenance arrangements of the waste to energy facility. Dedicated Engineer (at Executive Engineer grade) will be part of the O&M staff and will be responsible to prepare and then implement the relevant environmental and social mitigation measures including ensuring health and safety during project operation and maintenance phase.

The DoE is also responsible for monitoring and enforcement of conditions specified in the ECC on an annual basis.

## **7.2 Capacity Building**

Environmental and social safeguards training will help ensure that the requirements of the ESMA and subsequent ESIA and ESMP are clearly understood and followed by all project personnel throughout the project period. The PIC and PMU will ensure, in collaboration with the PSC, that these training are provided to all Project personnel. The environmental and social training program will be finalized before the commencement of the project. The training will be provided to the SREDA staff, the RCC staff, the construction contractors, and other staff engaged in the Project. Training will cover all staff levels, ranging from the management and supervisory to the skilled and unskilled categories. The scope of the training will cover general environmental and social awareness and the requirements of the ESIA, the ESMP and the RAP with special emphasis on sensitizing the project staff to the environmental and social aspects of the area. Table 7-4 provides a summary of various aspects of the environmental and social

safeguards training to be conducted under this Pilot project. PIC may revise the plan during the Project implementation as required.

During the O&M phase of the Project, these training will continue to be conducted by HSE staff for all relevant O&M personnel at each facility.

**Table 7-4: Environmental and Social Safeguards Training**

| <b>Contents</b>  | <b>Participants</b>                               | <b>Responsibility</b> | <b>Schedule</b>  |
|--|---|-----------------------|--|
| General environmental and socioeconomic awareness;<br>The environmental and social sensitivity of the project area;<br>Key findings of the ESIA;<br>Mitigation measures;<br>ESMP;<br>Social and cultural values of the area.           | Selected SREDA staff;<br>PIC; PMU,<br>Contractors | PIC                   | Prior to the start of the Project activities.<br>(To be repeated as needed.)             |
| General environmental and socioeconomic awareness;<br>The environmental and social sensitivity of the project area;<br>Mitigation measures;<br>Community issues;<br>Awareness of transmittable diseases<br>Social and cultural values. | PIC; PMU;<br>Selected contractors' crew           | PIC                   | Prior to the start of the field activities.<br>(To be repeated as needed.)               |
| ESMP;<br>Waste disposal;<br>HSE  | Contractors,<br>Construction crew                 | PMU                   | Prior to the start of the construction activities.<br>(To be repeated as needed.)        |
| Road safety;<br>Defensive driving;<br>Waste disposal;<br>Cultural values and social sensitivity.   | Drivers   | Contractors           | Before and during the construction activities.<br>(To be repeated as needed.)            |
| Restoration requirements;<br>Waste disposal.   | Restoration teams                                 | Contractors           | Before the start of the restoration activities.  |
| HSE during Operation Phase   | Selected SREDA staff; RCC staff                   | PSC                   | Prior to the Start of the Project Operation and when required during the operation phase |

### 7.3 Budget for ESMF Implementation

The proposed budget for implementation of the ESMF is given in the table below.

**Table 7-5: Tentative Budget for ESMF Implementation**

| SN | Item  | Amount (BDT) | Amount (USD) <sup>a</sup> | Remarks   |
|----|---|--------------|---------------------------|---|
| 1  | ESIA for waste to energy plant                              | 3,000,000    | 36,144                    | Conducted by local consulting firm after the design is completed (sample TOR provided in Annex 3) |
| 2  | Training on Environmental and Social Issues for PMU         | 300,000      | 3,614                     | 2-day training by hired Social and Environmental Consultants                                      |
| 3  | Training on Environmental and Social Issues for PIC         | 100,000      | 1,205                     | 1-day training at SREDA office by PMU Social and Environmental Consultants                        |
| 4  | Training on Environmental and Social Issues for Contractors | 150,000      | 1,807                     | To be included in Bid Documents   |
| 5  | Hiring of Environmental and Social Safeguards Consultants   | 720,000      | 8,675                     | 12 months input @ BDT 60,000/month. To be included in Bid Documents                               |
| 6  | Implementation of ESMP during the construction phase        | 500,000      | 6,024                     | To be updated during ESIA preparation.  |
| 7  | Implementation of ESMP during the operation phase           | tbd          | tbd                       | To be determined by City Corporation /Municipality  |
| 8  | Total   | 4,770,000    | 57,470                    |   |

Notes:

- Conversion rate used: USD 1 = BDT 83
- Training details provided in Section 7.2.
- ESMP during construction phase should include costs of all mitigation measures and monitoring activities.
- ESMP during operation phase should include costs of all mitigation measures and monitoring activities.

### 7.4 Implementation Supervision and Reporting

#### 7.4.1 General Site Inspections and Monitoring

A Site Inspection Checklist for recording the findings of the general site condition surveys would be developed by the respective contractors, on the basis of the ESMP, during the construction phase. The Site Inspection Checklist would be reviewed by the PMU on a weekly basis.

The PMU's Environment Specialist and Social Development Specialists will supervise the implementation of mitigation measures by Contractors as well as conduct regular monitoring of the site and project influence area during the construction phase.

During operation and maintenance phase of the waste to energy pilot plant, the main supervision responsibility will belong to Engineering Section of Rajshahi City Corporation (or alternative City Corporation/Municipality). The Chief Engineer shall ensure that there are proper staffing and budget to not only run the plant but also ensuring mitigation and monitoring activities are conducted regularly.

#### **7.4.2 Supervision by World Bank**

SREDA with the help of the PMU will prepare a half yearly progress report on the environmental and social management of the plant and will submit to the World Bank for review. The World Bank will review the screening reports, ESIA, ESMP, monitoring reports on a random basis and will carry out field visits to cross-check.

#### **7.4.3 Quantitative Physical Monitoring**

The objective of quantitative physical monitoring is to ensure that the mitigation measures designed to prevent, reduce and where possible offset any significant adverse on environmental and social impacts throughout the Project lifecycle.

A database would be developed by PMU with the assistance of PIC for storing the results of the quantitative monitoring. The facility would be capable of producing tabulated weekly and monthly reports that provide the following information:

- Sampling points;
- Dates and times of sample collection;
- Test results;
- Control limits;
- "Action limits" (circa 80 percent of the control limits) at which steps must be taken to prevent the impending breach of the control limit; and
- Any breaches of the control limits, including explanations if available.

The monitoring data would be continually processed by the PMU as it is received, so as to avoid a build-up of unprocessed data.

#### **7.4.4 Complaints Records**

A tabulated standard form would be prepared for recording any environmental and social complaints that are received from the public or government organizations by whatever medium i.e. visits to the Plant, telephone calls or correspondence. The form would concisely list the following information:

- Date of the complaint;
- Name and contact address of the complainant;
- A brief description of the complaint, with a file reference to any correspondence from the complainant;
- A brief description of the action taken by the PMU to investigate the cause of the complaint and bring about corrective action, if justified; and
- Date of reply to the complainant, with a file reference to any correspondence.

The PIC will review the complaints record during their regular meetings

#### **7.4.5 Information Sources**

A complete and up-to-date file of all relevant sources of information should be maintained by the PMU. This file would be readily accessible and include, as a minimum, copies of the following documents:

- Current environmental permits and consents;
- All relevant national regulations, international guidelines, and codes of practice;
- Manufacturers' MSDSs for all hazardous substances used;
- Manufacturers' operating manuals for all the environmental monitoring equipment;
- Current calibration certificates for all the equipment that requires calibration by an external organization; and
- The latest version of this Environmental and Social Management Plan (ESMP).

#### **7.4.6 Monthly Reports**

The PMU will prepare a monthly report for the issue to the PIC. These reports will summarize the following:

- Progress in implementing this ESMF and subsequent ESIA, ESMP, RAP, etc.;
- Findings of the monitoring programs, with emphasis on any breaches of the control standards, action levels or standards of general site management;
- Any emerging issues where information or data collected is substantially different from the baseline data reported in the Environmental Assessment;

- Summary of any complaints by external bodies and actions taken / to be taken; and
- Relevant changes or possible changes in legislation, regulations and international practices.

## **ANNEXURE**

### **ANNEX 1: DEPARTMENT OF ENVIRONMENT CATEGORIZATION**

Depending on the extent of impact on the environment, industries and projects are classified in four different categories under the ECR 1997. The four categories are:

- (1). Green;
- (2). Orange- A;
- (3). Orange- B;
- (4). Red

While DoE categories, as described below, determine GoB requirements for EIA/ ESIA, it should be noted that where ESIA is not required by the national law but required by the World Bank, the latter requirement will prevail.

#### **Green Category**

Projects, which do not have any negative impact on the environment, belong to Green category.

#### **Orange A Category**

The orange category includes those projects that produce such wastes that can produce moderate or significant impacts on the environment but the impacts could be mitigated easily if proper action is undertaken. Depending on the nature and extent of impacts the projects under Orange category has been sub-divided into two sub-categories-Orange A and Orange B.

The projects/industries categorized under “Orange-A” are likely to produce some wastes but those are not harmful to surround environment and can be managed easily.

#### **Orange B Category**

The “Orange-B” category projects/industries are those likely to produce adverse environmental impacts but not to any significant level and that the impacts can be mitigated with no residual adverse impacts.

Orange B category projects need to conduct IEE which help in understanding the potential extent of environmental impacts. IEE of the project or industry reveals that further investigation is needed, the sponsors will have to carry out a detailed EIA.

#### **Red Category**

This category includes industries, first requiring IEE for the purpose of obtaining site clearance, and then EIA, for obtaining ECC. In this case, also an application has to be made

in a prescribed format along with an IEE report, on the basis of which site clearance may be granted with suitable conditions or the project may be rejected, on grounds of unsuitable location. If the site clearance is granted, the project proponent can go ahead with implementation of the project subject to the conditions as may be stipulated while granting the site clearance.

DoE issues the following clearances to the sponsors depending on the category of the project:

- (a) Issuing SCC for Orange-A, Orange-B, and Red category projects, on basis of Initial IEE.
- (b) Approving TOR for EIA, and completed EIA, for Red category projects, and
- (c) Issuing Environmental Clearance Certificate (ECC) for all category projects.

## ANNEX 2: SCREENING CHECKLIST FOR WASTE TO ENERGY

### Screening Checklist for Waste to Energy project

#### 1. Project Sitting

| A. ENVIRONMENTALLY SENSITIVE AREAS  | REMARKS |
|---|---------|
| ▪ Cultural heritage site  |         |
| ▪ Protected Area  |         |
| ▪ Wetland   |         |
| ▪ Mangrove  |         |
| ▪ A buffer zone of protected area   |         |
| ▪ Special area for protecting biodiversity  |         |
| Land Acquisition for the project  |         |
| Potential Environmental Impacts<br><b>Will the Project cause any environmental issues</b> |         |
| <b>B. ECOSYSTEM</b>   |         |

|  |  |
|--|--|
| <ul style="list-style-type: none"> <li>▪ Impairment of historical/cultural monuments and other areas, and loss/damage to these sites?</li> </ul>   |  |
| <ul style="list-style-type: none"> <li>▪ Encroachment into the precious ecosystem (e.g. sensitive habitats like protected forest areas or terrestrial wildlife habitats)?</li> </ul>   |  |
| <ul style="list-style-type: none"> <li>▪ Dislocation or involuntary resettlement of people?</li> </ul>   |  |
| <ul style="list-style-type: none"> <li>▪ Is there any tree clearing required on the project site?</li> </ul>   |  |
| <ul style="list-style-type: none"> <li>▪ List of Flora</li> </ul>  |  |
| <ul style="list-style-type: none"> <li>▪ List of Fauna</li> </ul>  |  |
| <p><b>C. SOCIAL IMPACTS</b></p>  |  |
| <ul style="list-style-type: none"> <li>▪ Are there any minorities / indigenous communities live in close proximity to the Project site?</li> </ul>   |  |
| <ul style="list-style-type: none"> <li>▪ Any Local conflicts of Interest?</li> </ul>   |  |
| <ul style="list-style-type: none"> <li>▪ Does the water usage in the project might affect the surrounding communities?</li> </ul>  |  |
| <ul style="list-style-type: none"> <li>▪ Disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?</li> </ul>   |  |
| <ul style="list-style-type: none"> <li>▪ Aesthetic degradation and property value loss due to the establishment of plant and ancillary facilities?</li> </ul>  |  |
| <ul style="list-style-type: none"> <li>▪ Risks community safety due to the transport, storage, and use and/or disposal of materials such as raw materials, fuel, and other chemicals during construction and operation?</li> </ul> |  |

|   |  |
|---|--|
| <b>D. ENVIRONMENTAL &amp; SOCIAL BENEFITS FROM THE PROPOSED PROJECT</b> |  |
| ▪ Environmental benefits  |  |
| ▪ Social benefits   |  |

## 2. Monitoring process

|   | <b>REMARKS</b> |
|---|----------------|
| Handling management of raw materials  |                |
| Is there any air/odor pollution during the collection and transportation of the raw materials?                        |                |
| Monitoring the leachate (Waste water quality testing)   |                |
| ▪ Air pollution from gas discharged into the atmosphere?<br>(Carbon monoxide, Nitrogen dioxide, and Sulphur dioxide). |                |
| Public health and safety hazards due to gas generation  |                |
| Noise pollution from the biogas generator (during electricity production)   |                |
| Efficiency rate of the generator (monitor every 3 months)   |                |
| <b>DISTANCE &amp; HANDLING THE FERTILIZER PLANT</b>   |                |
| Description of the storage area   |                |
| Odour control management (During Slurry holding tank and drying tank)   |                |
| Air dust control during the packaging time  |                |
| Environmental and Social benefits getting from the particular project   |                |

### 3. Using of bio slurry:

Spreading technology and costs for spreading on one ha or per ton (please specify) \_\_\_\_\_

The possible input of additional nutrients on the farms own arable land?

yes       no, possible input: \_\_\_\_\_ kg Nitrogen (N)

yes       no, possible input: \_\_\_\_\_ kg Phosphorus (P)

Land in water protection area?       yes, \_\_\_\_ ha       no

Land in landscape and nature protection area?       yes, \_\_\_\_ ha       no

Only solids are requested?       yes, \_\_\_\_ ha       no

Solids for selling or production of fertilizer required?       yes, \_\_\_\_ (t/y)       no

Available size of land area for spreading

Arable land: \_\_\_\_\_ ha

Grass land: \_\_\_\_\_ ha

**4. Energy utilization:**

**4.1. Use of electricity**

Which are the identification data of transformer?

Fuse: \_\_\_\_\_ A      Connection value: \_\_\_\_\_ kW and KVA: .....

Electricity consumption

| Consumer | Capacity [kW] | Operation time [h/a] |
|----------|---------------|----------------------|
|          |               |                      |

### **ANNEX 3: SAMPLE TOR FOR CONDUCTING AN ESIA**

Environment and Social Impact Assessment (ESIA) is a decision support mechanism to ensure that the project design and implementation are environmentally sound and sustainable. During the preparation phase, the objective of the ESIA is to provide inputs to the selection of subprojects, feasibility study; preliminary and detailed design as well as assist development of a holistic development of the project package. During the implementation phase, environmental management plans (developed as a part of the ESIA during the preparation phase) are to be used for executing the environmental mitigation, enhancement, and monitoring measures.

#### **Objectives of ESIA**

In the preparation phase, the ESIA shall achieve the following objectives:

- i. Identify and analyze upstream environmental issues that may affect the project and the sector.
- ii. Establish the environmental and social baseline in the study area, and identify any significant environmental, social, health and safety issues (direct/indirect/induced/cumulative).
- iii. Assess impacts of the project, and provide for measures to address the adverse impacts by the provision of the requisite avoidance, mitigation and compensation measures.
- iv. Integrate the environmental issues in the project planning and design; and
- v. Develop appropriate management plans for implementing, monitoring and reporting of the suggested environmental mitigation and enhancement measures.

#### **Description of the Project**

Include a description of the project; covering geographical location, type of development envisaged, including a description of project activities. Also, include the current status of the project. Provide brief information on any other study already completed/ongoing or proposed) to be added by Client.

#### **Scope of Work**

The ESIA comprises the following 3 components: (i) Environmental screening / Inception Report for the entire project; (ii) Environmental and Social Impact Assessment (ESIA) for the individual project/subprojects, as required; and (c) Environmental and Social Management Plans (ESMPs) for the individual project/sub-projects.

The following section gives the detailed scope of work in each of these stages.

## **Inception**

The Consultants shall use the inception period to familiarize with the project details. The Consultants shall recognize that the remaining aspects of the project, such as engineering and social, would be studied in parallel, and it is important for all these aspects are integrated into the final project design to facilitate their successful project implementation. The Consultants should also recognize that due care and diligence planned during the inception stage helps in improving the timing and quality of the ESIA reports.

During the inception period the Consultants shall: (a) study the project information to appreciate the context within which the ESIA has to be carried out; (b) identify the sources of secondary information on the project, on similar projects and in the project area; (c) carry out a reconnaissance survey and (d) undertake preliminary consultations with selected stakeholders.

Following the site visits and stakeholder consultations, as well as a review of the conditions of the contract with the Client, the consultant shall analyse the adequacy of the allocated manpower, time and budget and shall clearly bring out deviations, if any. The Consultant shall study the various available surveys, techniques, models, and software in order to determine what would be the most appropriate in the context of this project.

The Consultant shall interact with the engineering and social consultants to determine how the ESIA work fits into the overall project preparation cycle; how overlapping areas are to be jointly addressed; and to appropriately plan the timing of the deliverables of the ESIA process. These shall be succinctly documented in the Inception Report.

## **Environmental Screening**

Consultants shall summarize the potential environmental impacts. During such categorization, consideration shall be paid to (i) location of the project with respect to environmentally sensitive areas; and (ii) volume, nature, and technology of construction. The screening parameters should be such that their identification and measurement is easy, and does not involve detailed studies.

## **Environmental Scoping**

Based on the result of the environmental screening exercise, consultants shall suggest the scope of Environmental and Social Impact Assessment to be undertaken. It shall include a listing of other environmental issues that do not deserve a detailed examination in the project ESIA (covering, for example, induced impacts that may be outside the purview of the client) along with a justification. The scoping needs to identify and describe the specific deviations

of the EA ToR provided, if any, along with a justification; modify this ToR for the project ESIA, if required; and recommend studies that need to be conducted in parallel but are outside the ESIA process.

i. **Baseline:** All regionally or nationally recognized environmental resources and features within the project's influence area shall be clearly identified, and studied in relation to activities proposed under the project. These will include all protected areas (such as national parks, wildlife sanctuaries, reserved forests, biosphere reserves, wilderness zones), unprotected and community forests and forest patches, wetlands of local/regional importance not yet notified, rivers, rivulets and other surface water bodies. and sensitive environmental features such as wildlife corridors, biodiversity hotspots, meandering rivers, flood prone areas, areas of severe river erosion, flood embankments (some of which are also used as roads). Consultants shall consolidate all this information in a map of adequate scale.

ii. **Stakeholder Identification and Consultation:** Consultation with the stakeholders shall be used to improve the plan and design of the project rather than merely having project information dissemination sessions. The consultants shall carry out consultations with Experts, NGOs, concerned Government Agencies and other stakeholders to (a) collect baseline information; (b) obtain a better understanding of the potential impacts; (c) appreciate the perspectives/concerns of the stakeholders; and (d) secure their active involvement during subsequent stages of the project.

Consultations shall be preceded by a systematic stakeholder analysis, which would: (a) identify the individual or stakeholder groups relevant to the project and to environmental issues; (b) include expert opinion and inputs; (c) determine the nature and scope of consultation with each type of stakeholders; and (d) determine the tools to be used in contacting and consulting each type of stakeholder group. A systematic consultation plan with attendant schedules will be prepared for subsequent stages of project preparation as well as implementation and operation, as required.

iii. **Identification of Relevant Macro/Regional Level Environmental Issues:** Consultants shall determine the Valued Environment Components (VECs) considering the baseline information (from both secondary and primary sources), the preliminary understanding of the activities proposed in the project and, most importantly, the stakeholder (and expert) consultations, which would need to be carefully documented. Use of iterative Delphi techniques is recommended.

Based on the identification of VECs, consultants shall identify information gaps to be filled, and conduct additional baseline surveys, including primary surveys. The consultants shall conduct a preliminary analysis of the nature, scale, and magnitude of the impacts that the project is likely to cause on the environment, especially on the identified VECs, and classify the same using established methods. For the negative impacts identified, alternative mitigation/management options shall be examined, and the most appropriate strategy/technique should be suggested. The preliminary assessment should clearly identify aspects where the consultants shall also analyse indirect and cumulative impacts of all phases and activities of the project. For the positive measures identified, alternative and preferred enhancement measures shall be proposed.

- iv. ***Environmental Assessment:*** The Consultants shall undertake necessary impact analysis on the basis of primary and secondary information and outputs from the stakeholder consultation process. In the cases of very significant environmental losses or benefits, the consultants shall estimate the economic/financial costs of environmental damage and the economic/financial benefits the project is likely to cause. In the cases, the impacts or benefits are not too significant, qualitative methods could be used. In addition, wherever economic and financial costs of the environmental impacts cannot be satisfactorily estimated, or in the cases of significant irreversible environmental impacts, the consultants shall make recommendations to avoid generating such impacts.
- v. ***Environmental and Social Management Plan:*** The consultants shall prepare an ESMP to address identified planning, design, construction, and operation stage issues. For each issue, the consultants shall prepare a menu of alternative avoidance, mitigation, compensation, enhancement and/or mitigation measures, as required/necessary. Consultants shall provide robust estimates of costs for environmental management measures. These costs shall be verified for common works items in line with the rate analysis for other works. The consultants shall organize consultations with line departments and will the finalize the ESMP.
- vi. ***Environmental Inputs to Feasibility Study and Preliminary Project Design:*** The ESIA consultants shall make design recommendations, related to alignment, cross-sections, construction material use, mitigation and enhancement measures. The ESIA consultants shall interact regularly with the Client and familiarize themselves with the project's

overall feasibility analyses models so that the ESIA inputs are in conformity to the needs of the overall feasibility study.

- vii. **Capacity Building Preparation:** Based on the preliminary findings of the environmental screening, stakeholder consultations, and analysis of the project sponsor's capacity to manage environmental issues, the consultants shall prepare a Capacity Building Plan (including the requirement of additional technical staff and facilities) to ensure effective implementation of the ESMP. Earmarking staff for environmental and social management and improving their skill-sets would be simultaneously pursued during project preparation and implementation.

The consultants shall interact regularly with the project sponsor throughout project preparation to ensure that the knowledge, skills, and perspectives gained during the ESIA assignment are transferred to the sponsor and are utilized effectively during project implementation (if required).

- viii. **Coordination among Engineering, Social, Environment, and Other Studies:** The consultants, with assistance from the project sponsor, shall establish a strong coordination with the other project-preparation studies – engineering, social and/or institutional development. The consultants shall keep in mind the specific requirements of the project in general, and the engineering/design studies in particular, and shall plan their outputs accordingly. It is recommended that some of the consultation sessions may be organized in coordination with the social and engineering consultants, as feasible, and when the stakeholders consulted are the same.

The consultant shall review the contract documents – technical specifications, and rate analysis, to ensure that there are minimal conflicts between the ESMP stipulations and specifications governing the execution of works under the project.

- ix. **Public Disclosure:** The consultants shall prepare a non-technical ESIA summary report for public disclosure and will provide support to the project sponsor in meeting the disclosure requirements.
- x. **Consultant's Inputs:** The Consultants are free to employ resources as they see fit. Additional expertise shall be provided as demanded by the context of the project. The consultants are encouraged to visit the project area and familiarize themselves, at their own cost, before submitting the proposal; and propose an adequate number and skill-set for the senior specialists and technical support staff for the ESIA assignment. Further, the consultant will allocate an adequate number of field surveyors, distinct from the

technical support staff, to complete the study in time. Timing is an important essence for any ESIA study, which shall be closely coordinated with the works of the engineering and social teams, simultaneously involved in the preparation of the project.

The consultants shall provide for all tools, models, software, hardware, and supplies, as required to complete the assignment satisfactorily. These should be widely recognized or accepted. Any new model or tool or software employed should be field-tested before use or the purpose of this ESIA.

- xi. ***Consultant's Outputs:*** The consultant is expected to provide the outputs, as per the schedule is given in the ToR. The Consultants are expected to allocate resources, such as for surveys, keeping this output schedule in mind.

## ANNEX 4: SAMPLE TOR FOR SOCIAL SAFEGUARDS CONSULTANT TO PMU

|                     |                               |
|---------------------|-------------------------------|
| Assignment title    | Social Development Consultant |
| Assignment duration | tbc                           |
| Assignment location | Dhaka, Bangladesh             |
| Contracting entity  | SREDA                         |

### Background

The Scaling Up Renewable Energy Project is aimed at exploring a new approach of a public-private partnership to overcome the current barriers to unlock the potential of utility-scale RE – private sector-driven development on the public sector-owned land. This approach will address the land constraints issue, so far the biggest barrier, by having potential project sites identified and developed by the public sector, which has a comparative advantage in doing so and already owns a large area of land across the country. Private sector expertise in installation, operation, and maintenance of utility-scale RE is planned to be brought to those sites for further development. The Project will provide technical assistance support to complement GoB's ongoing effort to identify suitable sites and conduct preparation activities for developing utility-scale RE.

This project will support feasibility assessment and deployment of small scale pilots of renewable energy technologies. A municipal waste-to-energy sub-project is expected to be the first pilot, to be financed under this component in collaboration with city corporations that manage the municipal waste collection. One of the potential candidates is the Rajshahi City Corporation (or alternative City Corporation/Municipality) for an installation of a biogas plant to utilize slaughterhouse waste. The City Corporation will provide the land required. The pilot is expected to inform the technical and commercial feasibility of waste-to-energy sub-projects and to help establish waste collection practices and government schemes to support waste-to-energy in municipalities.

A Social Safeguards Consultant will be hired under the Project Management Unit (PMU) to support the Project Director (PD) in implementing the Environmental and Social Management Plans (ESMPs) of the Project and preparation of Environmental Assessments (EAs) and RAP (if required) for the Project.

### Key Activities/Responsibilities

The duties and responsibilities include but not limited to the following:

- (i) Be overall responsible for overseeing the preparation, implementation and monitoring of Environmental and Social Impact Assessment (ESIA), Environmental and Social Management Plans (ESMPs) and if applicable Resettlement Action Plans (RAPs)
- (ii) Support Project Director to respond to queries from stakeholders
- (iii) Organize and facilitate consultations and workshops with stakeholders and prepare minutes and proceedings of the consultations.
- (iv) Maintain and upgrade the computerized data base related to the delivery of Resettlement Entitlements (if applicable) and generate of periodical progress reports;
- (v) Organize training and orientation workshops for the project/EGCB staff and other stakeholders as required by the project management

- (vi) Coordinate with state revenue department to implement land acquisition (if required).
- (vii) Undertake field visits and organize focus group discussions with settlements around alignment and others that may be affected by project and ancillary activities.
- (viii) Coordinate the meetings of various committees established for the implementation Resettlement activities (if required);
- (ix) Manage the resettlement impact assessment studies and other studies related to Resettlement (if required).
- (x) Any other jobs/responsibilities assigned by the project management.

### **Skills and qualifications**

1. **Qualification:** A Post Graduate of any recognized university in Social Science preferably in Sociology / Anthropology / Public Administration, or Management.
2. **Experience:** At least 15 years of professional experience in the areas of land acquisition process, involuntary resettlement, consultation and participation, socio-economic surveys, monitoring and evolution, etc. and with communication skills. Good command of both in written and spoken English and Bangla. Previous experience with World Bank or ADB funded project in similar fields will be considered an added advantage.

### **Reporting Requirements**

The consultant will directly report to the Project Director. S/he will submit monthly report on the activities related to social safeguards/development for the project within the first seven days of each calendar month.

## ANNEX-5: SAMPLE TOR ENVIRONMENTAL CONSULTANT TO PMU

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|---------------------|--------------------------|
| Assignment title    | Environmental Consultant |
| Assignment duration | Tbc                      |
| Assignment location | Dhaka, Bangladesh        |
| Contracting entity  | SREDA                    |

### Background

The Scaling Up Renewable Energy Project is aimed at exploring a new approach of a public-private partnership to overcome the current barriers to unlock the potential of utility-scale RE – private sector-driven development on the public sector-owned land. This approach will address the land constraints issue, so far the biggest barrier, by having potential project sites identified and developed by the public sector, which has a comparative advantage in doing so and already owns a large area of land across the country. Private sector expertise in installation, operation, and maintenance of utility-scale RE is planned to be brought to those sites for further development. The Project will provide technical assistance support to complement GoB's ongoing effort to identify suitable sites and conduct preparation activities for developing utility-scale RE.

This project will support feasibility assessment and deployment of small scale pilots of renewable energy technologies. A municipal waste-to-energy sub-project is expected to be the first pilot, to be financed under this component in collaboration with city corporations that manage the municipal waste collection. One of the potential candidates is the Rajshahi City Corporation (or alternative City Corporation/Municipality) for an installation of a biogas plant to utilize slaughterhouse waste. The City Corporation will provide the land required. The pilot is expected to inform the technical and commercial feasibility of waste-to-energy sub-projects and to help establish waste collection practices and government schemes to support waste-to-energy in municipalities.

An environmental consultant will be hired under the Project Management Unit (PMU) to support the Project Director (PD) in implementing the Environmental and Social Management Plans (ESMPs) of the Project and preparation of Environmental Assessments (EAs) of the Project.

### Key Activities/Responsibilities

The key activities/responsibilities to be carried out by the **Environmental Consultant** are:

- Finalizing the terms of references and request for proposals for various environmental consulting firms to be hired for preparation of ESIA and implementation of the ESMP;
- Undertake environmental screening, assessment and management of any activities under with environmental implications;
- Oversee the pre-construction baseline monitoring of air, noise, water, soil and sediment quality to be carried out by the ESIA consultant;
- Ensure integration of the ESIA and resulting ESMP into the project redesign and implementation plans (contract documents);

- Ensure compliance of the mitigation measures by the Contractors including proper operation and maintenance of their equipment;
- Liaison with the DOE on environmental and other regulatory matters; including renewal of environmental clearance documents as and when required;
- Develop training program on environmental aspects for the key stakeholders (EGCB, contractors, public representatives and local government institutions/ NGOs);
- Maintaining project-specific Database for Environmental Management;
- Compiling monthly, quarterly and annual reports to update ongoing environmental processes and address current issues;
- Oversee activities of third-part environmental consulting firm (if applicable);
- Provide recommendations for implementation of corrective actions and suggest program for environmental improvements; and
- Provide any other necessary support to PMU related to environmental issues of the project.

### **Skills and Qualifications**

The Environmental Consultant should a Master's degree in environmental engineering or environmental sciences and should have 10 years of experience in environmental planning, assessments and monitoring for large infrastructure projects (preferably related to transmission line projects). Knowledge in and experience with environmental safeguard policies and standards of the World Bank or other international development partners is preferred.