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Government of the People's Republic of Bangladesh
Local Government Engineering Department

Environmental and Social Management Framework

(Draft)

for

Resilient Infrastructure for Adaptation and Vulnerability Reduction (RIVER) Project

Part- I: Main Report

January 2022

List of Acronyms

ARAP	Abbreviated Resettlement Action Plan
ARIPA	Acquisition and Requisition of Immovable Property Act
BBS	Bangladesh Bureau of Statistics
BDT	Bangladeshi Taka
BOD	Biological Oxygen Demand
BWDB	Bangladesh Water Development Board
CBO	Community Based Organization
CC	Climate Change
COD	Chemical Oxygen Demand
DoE	Department of Environment
DoF	Department of Fisheries
ESA	Environmental and Social Assessment
ECA	Ecological Critical Area
ECA	Environmental Conservation Act
ECC	Environmental Clearance Certificate
ESCoPs	Environmental and Social Codes of Practices
ECR	Environment Conservation Rules
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EMU	Environmental Management Unit
ESA	Environmental and Social Assessment
ESCP	Environmental Social Commitment Plan
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESR	Environmental Screening Report
ESS	Environmental and Social Standards
FAO	Food and Agriculture Organization
FGD	Focus Group Discussion
FPIC	Free, Prior and Informed Consent
GAP	Gender Action Plan
GBV	Gender Based Violence
GDP	Gross Domestic Product
GoB	Government of Bangladesh
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
ha	Hectare
HH	House Hold
IEE	Initial Environmental Examination
IFC	International Finance Corporation
IP	Indigenous Peoples
IPDP	Indigenous Peoples Development Plan
LGED	Local Government and Engineering Division
LMP	Labour Management Procedures
M&E	Monitoring and Evaluation
MLGRD&C	Ministry of Local Government, Rural Development and Co-operatives

MoEFCC	Ministry of Environment, Forest and Climate Change
MoF	Ministry of Finance
NGOs	Non-Government Organizations
NOC	No Objection Certificate
O&M	Operation and maintenance
PA	Protected Area
PAD	Project Appraisal Document
PAP	Project Affected Persons
PIU	Project Implementation Unit
PPE	Personnel Protective Equipment
PSC	Project Steering committee
RAP	Resettlement Action Plan
ROW	Right of Way
RPF	Resettlement Policy Framework
SECDP	Small Ethnic Community Development Plan
SEP	Stakeholders Engagement Plan
TBD	To Be Determined
ToC	Table of Contents
ToR	Terms of Reference
USD	United States Dollar
WB	World Bank

EXECUTIVE SUMMARY

Introduction

Bangladesh has made rapid social and economic progress in recent decades and reached lower middle-income status in 2015, though the country has suffered from a huge economic blow caused by the recent outbreak of COVID -19. While realizing the actual benefit from progressing economic activities and active population dividends, the effects of climate change has always been a strong impediment, and recurrence of floods in every alternative year is one of those negative striking forces. Floods like other disasters disproportionately affect the poor, who have less disposable income, assets and more limited access to public services. The impacts of floods on vulnerable communities extend beyond short-term asset losses to long-term human capital impacts. In light of recent study conducted by a third-party firm, community needs in flood-prone districts revolve around flood shelters, early warning systems, community preparedness, and response capacity.

The Government of Bangladesh has made significant progress in reducing casualties from extreme events or disasters in last couple of decades, with support from development partners. Policy improvement and investments in multi-purpose disaster shelters, Early Warning Systems (EWSs), and government capacity to mitigate the risks and impacts of extreme natural events have been proved to be effective in reducing losses to lives and assets. There is a need to further develop and extend these investments in infrastructure and capacity enhancement to encompass a wider range of geographies and hazards, particularly riverine and flash floods in non-coastal areas in Bangladesh as climate change increases the risks and impacts. Hence, the GoB, thorough its implementing agency- Local Government Engineering Department (LGED) with financial assistance from the World Bank is preparing a project under the title 'Resilient Infrastructure for Adaptation and Vulnerability Reduction (RIVER)' with an aim to reduce the vulnerability of people in targeted communities to riverine and flash floods, improve the country's capacity in disaster preparedness and response, and respond promptly in the event of any crisis or emergency.

Project Description

The project area covers the most severely affected flood-prone districts in the Teesta-Brahmaputra-Jamuna (Nilpamari, Lalmonirhat, Kurigram, Rangpur, Gaibandha, Bogura, Pabna, Sirajganj), Padma (Rajbari, Faridpur, Gopalganj, Madaripur), and Surma-Meghna river systems in the North East (Sunamganj, Habiganj), and these districts and concerned upazilas have been selected through Multi-criteria Analysis (MCA) by feasibility study. However, each of these areas, although similar, have important geographical and demographic differences.

There are four distinct components under the project: (i) Resilient flood shelters and community infrastructure: This component will finance land raising and construction of climate-resilient flood shelters in targeted flood-prone villages in non-coastal districts, installation of lightning protection systems, construction repair and/or rehabilitation of associated climate resilient shelter connecting and community roads, and resilient infrastructure as identified by the community including small scale climate resilient culverts and bridges, repair, rehabilitation of rural markets, repair and rehabilitation of landing stages (river jetties), and installation of solar powered street lights; (ii) Strengthening capacity for disaster preparedness and response and technical assistance: Finance will be provided for good and services to increase the capacity of LGED and communities to plan, manage, and recovery from floods, and strategic studies to increase long-term disaster and climate resilience; (iii) Project Management, Design and Supervision, Monitoring and Evaluation: This component will support the government in implementing the project, and in coordinating all project related activities, monitoring, technical assistance, and training; (iv) Contingency Emergency Response: This component will furnish unforeseen emergency needs, for which funds will be channelized to this component through re-allocation upon the Government's request to support response and reconstruction.

Preparation of Environmental and Social Management Framework

Detail information regarding project location/design is not available at this stage of project appraisal and hence a framework approach has been adopted for identification and management of Environmental and Social risks associated at various stages of project preparation, implementation and operation & maintenance. The implementing agency (LGED) has therefore prepared this Environmental and Social Management Framework (ESMF) for assessment, identification and attending E&S risks and impacts during various phases of the Project. The particular objectives are to ensure that all project interventions are environmentally sustainable and socially feasible; all relevant environmental and social issues are taken into account during the design and implementation of the sub-projects; possible environmental and social risks, benefits, and consequences are analyzed and measures adopted to avoid, reduce, and manage risks and impacts while maximizing benefits. This would also ensure that national rules and regulations, as well as World Bank obligations are followed and complied with and guide Environmental and Social (ES) screening and conducting environmental and social assessment and preparing various ES management plan for the sub-projects once design and locations are finalized. This framework has been prepared primarily on the reliable secondary data. However, several effective and successful consultation events with various relevant stakeholders were also conducted in this respect.

Policy, Legal and Regulatory Framework

The project will follow all the relevant policies, plans and regulatory framework of Bangladesh Government, and Environmental and Social Framework (ESF) of the World Bank. The key GOB legislations relevant for environmental assessment for the project components are the Environmental Conservation Act 1995 (ECA'95) and the Environmental Conservation Rules 1997 (ECR'97). Environment Conservation Act '1995, clearly states the requirement of obtaining environmental clearance certificate in a prescribed manner from the Director General of DoE before commencing operation and one of the key procedures to obtain the Environmental Clearance Certificate is to undertake an environmental assessment. As part of a government entity, LGED is obliged to abide by all these acts and rules, in addition of other GOB acts, rules or guidelines. World Bank's ESF contains ten Environmental and Social Standards (ESSs) which are applicable in all the stages of a development project. But, the ESS 9: Financial Intermediaries will not be applicable in this RIVER Project. However, there are few gaps between the GOB and world bank's regulatory requirements for which measures have been suggested to bridge these gaps. One of the key differences is that none of the GOB regulatory instruments/guidelines suggests covering all Environmental and Social Standards (ESSs) while doing an E&S Screening or scoping study; therefore, it is suggested to follow relevant sections of Environmental Management Procedures under the ESS1, which covers these gaps. Again in Bangladesh, projects do not require to formulate their own Labor Management Procedures/Plans and labor related laws do not require assessment of labor influx, OHS or management issues, which has been addressed through preparation of a detail labor management procedure (LMP).Moreover, issues related to stakeholder engagement/ public consultation, OSH, CSH, hazard and risk analysis, mitigation hierarchy, etc. are absent in GOB legislative/regulatory documents, which will be complemented by adopting WB ESSs. Few more gaps between the GOB and WB regulations have been identified for which most stringent actions have been suggested in the relevant chapter.

Environmental and Social Baseline Condition

The baseline environmental and social condition in the locality of the project site serves as the basis for the identification, prediction, and evaluation of impacts. These baseline conditions have been generated mostly based on secondary information. The project sites are spread across 108 upazilas of 14 non-coastal districts and fall under five climatic sub-regions, within the Teesta-Brahmaputra-

Jamuna, Padma and Surma-Meghna river systems. The proposed districts are also varied in stratigraphic and seismic features, even the recurring flood patterns that differ from river to flash flooding of different scales. All the project districts are diverse in terms of environmental settings and socioeconomic baseline. The air quality of the project districts is within the tolerable/ country standard in all parameters, while the surface water in major rivers of the districts shows varied results with river Jamuna having the highest pollutants loads and Madhumati in Gopalganj having the lowest pollution load. Among the districts, north-east and north-central region has some bigger water bodies, which are rich in biodiversity, but not likely to be affected by the project activities. It is anticipated that project locations are not likely to affect any protected area or ecologically critical areas. The vulnerability profiles among the districts shows higher poverty level in the districts of Rangpur division, and Kurigram, Gopalganj and Habiganj has got the higher percentage of female-headed households. There are some small ethnic community habited areas in project districts, but further site-specific survey and assessment will determine whether the project activities will have any impacts to those groups or their livelihoods.

Potential Environmental and Social Impacts

Direction of change relative to baseline conditions, magnitude and sensitivity of impact, spatial extent and duration were considered while assessing the risks and impacts. Project activities have been classified based on a four-category risk classification system under the World Bank ESF domain such as High, Substantial, Moderate or Low.

Project activities would entail small scale construction works, so the impact would be low to moderate mostly, site-specific and well-mitigable. All the shelters will be constructed within the school boundaries, and land area of school premises will be used. Roads and community infrastructure will be constructed along the existing alignment, rural markets will be repaired/rehabilitated in the same places, and smaller bridge/culverts will be constructed/rehabilitated. No land will be acquired for any of the construction/rehabilitation or repair interventions under this project. Raised land will have the same requirement. Therefore, the impacts will be primarily of construction induced, which may include temporary air pollution, surface water and ground water pollution, drainage congestion and water logging during the construction period, and some operation related impacts such as dust, air and noise pollution etc. may occur. Construction activities and inefficient management practices may also trigger risks on community health and safety, particularly of teachers and students near the shelter construction areas. As the shelters will be steel structures, there might be some associated occupational health and safety risk of workers during construction phase.

However, small scale civil and construction works under this project will not induce significant labor influx, therefore the risk of GBV and SEA/SH can be anticipated to be insignificant. During the construction phase, all potential consequences are amenable to substantial mitigation using both accessible and viable approaches. Many operation-phase consequences can either be avoided or considerably reduced by thoughtful design considerations. Another potential but indirect impact may arise from the use of solar system in sub-project facilities; many of the companies who sell solar panel reportedly use child labors in their production facilities, which should be very carefully taken care of while purchasing equipment or panels from any of those companies.

After taking into consideration all the Project's risks and impacts associated with the proposed activities, the Environmental and Social risks to the project has been rated as 'Moderate' under the World Bank ESF and 'Orange-B' as per the GoB risk classification system.

Methodological Framework for Environmental and Social Management

As stated above, the Project will take a framework approach to environmental and social management, allowing the project life cycle to follow the World Bank ESF including the applicable

Environmental and Social Standards, and the applicable government rules and regulations as well as the mitigation hierarchy of avoidance, minimization, mitigation, and compensation/offset for negative impacts and enhancement of positive impacts where practical.

Sub-project/component specific environmental and social screening is required to analyze the project's environmental and social risks and impacts. Based on the outcome of the screening exercise, the subsequent site-specific ES assessment and/or ESMPs will be prepared following the procedures set out in the ESMF. The ES assessment/ESMPs should clearly describe: (a) ES risks and impacts of subprojects, (b) the measures to be taken during both construction and operation phases of a sub-project to eliminate or offset adverse ES impacts, or reduce them to acceptable levels; (c) the actions needed to implement these measures; and (c) a monitoring plan to assess the effectiveness of the mitigation measures employed.

Considering potential environmental and social risks and impacts and their significance, ES risk of most of the sub-projects appear to be moderate to low during an initial assessment. The ESMF describes detail procedure to be followed for such categories of sub-projects.

Stakeholder Engagement and Disclosure

A separate Stakeholders Engagement Plan (SEP) has been prepared for RIVER Project which will be the main guiding document for the project. The coordination and monitoring mechanisms established in the SEP would be overseen by LGED and D&SC (Design and Supervision Consultants), and other relevant agencies at the district and Upazila level. Consultations with different stakeholders were carried out to obtain their views on project interventions and 18 such meetings were carried out on different days in four selected project districts, and the participants were come from different stakeholders groups. Those consultation meetings have come up with some suggestive measures to undertake, such as, (i) 40-50 years' flood nature, extent and duration to be considered before site selection and design, (ii) shelter to be constructed above the highest flood level, (iii) shelters to have facilities for health care, water supply, separate toilets for male & female, separate places for cattle, ramp for disabled and elderlies, provision of wheel chairs, etc. (iv) shelter connecting roads to be elevated, (v) coordination committee to form and alternative schooling for students to be arranged during the construction period, etc. Their views or comments were recorded and has been considered in project activities as well.

The proposed RIVER Project will also establish a grievance redress mechanism (GRM) for addressing grievances and complaints received from the project affected/interested persons due to project activities. A four tier GRCs (Grievance Redress Committees) have been proposed, keeping representations from all respective group of stakeholders. The PIU would ensure that grievance redress procedures are in place and would monitor those procedures to ensure that grievances are handled properly.

The mechanism of information dissemination should be simple and be accessible to all. The draft ESMF, RPF, SEP, LMP, and ESCP of RIVER Project will be disclosed to the local and national level stakeholders, preferably in electronic format.

Institutional Framework and Capacity Building

The Local Government Engineering Department (LGED) will be responsible for implementing the project. LGED will implement the project through a dedicated Dhaka-based PIU, headed by a Project Director (PD). The PD will be supported by a dedicated Deputy Project Director (DPD), Senior Assistant Engineer, Assistant Engineer as well as the associated technical and safeguard support staff. A majority of the implementation will be based on the district and upazila levels, where the associated LGED field officials (i.e., Executive Engineer, Sr. Assistant Engineer, Assistant Engineer, Sub assistant Engineer etc.) will act as the focal person(s) responsible for supervision and monitoring of work

implementation in their respective districts and upazilas. The PIU would provide support to implement the ES instruments during implementation of the project. The staffing requirements and capacity building program are included in the project design. The PIU will have a Senior Environmental Specialist and a Senior Social Development Specialist. These ES specialists will be stationed for full time at PIU to ensure that World Bank's ESSs and Government requirements are realized throughout the project life cycle. The PIU will also be supported by a Design & Supervision Consulting (D&SC) firm having specialists with expertise in environment, social, communication, gender and disability. The Terms of Reference (ToRs) and duration of engagement of these specialists and firms will be agreed with the Bank.

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Chapter 1: Introduction

1.1 Background

Bangladesh is one of the most vulnerable countries to natural disasters where almost every year, mainly during monsoon season, either by upstream river floods and or by coastal cyclones from the Bay of Bengal disaster happens to varied extent. There are 57 trans-boundary rivers passing through Bangladesh to the sea. Typically, high rainfalls during monsoon season, full-flowing floods of upstream rivers (which the country has no control to regulate beyond its boundary) results in extensive inundation on the floodplains mainly alongside the rivers and its tributaries. Flooding is a recurring phenomenon in Bangladesh, and in each year on an average about 22 percent of the country is inundated. Floods pose a serious threat as two thirds of the country is less than 5 meters above sea level. A rise in sea level will make an additional 14% of the land extremely vulnerable to floods by 2030. Among 61 % of land area that is characteristically vulnerable to flood, 23 % is generally affected by flash flood in a normal flooding year. Floods and riverbank erosions affect some one million people annually. The north-eastern part of Bangladesh, particularly Sunamganj, Sylhet and Netrokona districts are especially vulnerable to floods, with flash floods being common (Page at 623, 7th Five Year Plan). In recent years propensity of flood has further increased such as floods in 2004 and 2007 with affected area 42% and 25% causing heavy damage to lives and property of the people. Even in 2017 about 68 lac people were affected and more than 121 people died[1]. Impact of last year's flood (in 2021) was even worse due to its co-appearance with the devastation caused by the COVID-19. It was the most prolonged flood in Bangladesh after the 1988 flood inundating around 25% of the country. More than 5 million people are affected and around 1 million houses are inundated. Around 56,000 people are already displaced in around 1000 flood shelters in the affected areas[2]. During floods, people, their essential belongings and livestock in the affected areas need to take shelters for few days to as long as 8 weeks. But there is great insufficiency of flood resilient shelter including killas, raised public infrastructure for them to take shelter. People often took shelters in high embankment, schools & colleges in high land affecting their normal operation and spreading diseases among them and others. Sometimes floods take considerable time to recede even 70 days as in 1998. If flood resilient shelters are constructed with living facilities this huge loss of lives and properties will not occur and contagious disease will be lessened to a great extent. It will also facilitate effective relief operation. Besides the impact on agricultural production due to floods, short-term measures are also needed to help the victims of those disasters immediately. It is necessary to invest and build more centers where the potential victims can take shelters. This will in turn help any relief activity that would be taken after the disaster (Page at 98, 7th Five Year Plan).

In recent years, lightning hazard is becoming more deadly than ever before. According to the Ministry of Disaster Management and Relief (MoDMR), over 2,000 people died in lightning strikes in the country from 2011 to 2020[3]. At least 177 people, including 122 farmers, were killed and 47 others injured by lightning strikes across the country between March 31 and June 7 in 2021.[4] By observing the scenarios of fatalities due to lightning hazard, MoDMR declared this hazard as a natural disaster on May 17, 2016.

[1] https:// reliefweb.int/ report/ bangladesh/ bangladesh-flood-situation-august-22-2017; Nirapad Report
[2] https://reliefweb.int/disaster/fl-2020-000161-bgd
[3] Bangladesh: National Plan for Disaster Management: 2021-2015
[4] Lightning Bangladesh's deadliest natural disaster (June 18, 2021), Dhaka Tribune (https://www.dhakatribune.com/bangladesh/2021/06/18/experts-lightning-bangladesh-s-deadliest-natural-disaster)

In the backdrop of people's plight or sufferings caused by recurring flood events and lightning, Government of Bangladesh has planned to construct and rehabilitate several hundred of resilient flood shelters and community structures, install lightning protection systems, and strengthen the capacity for disaster related adaptation, preparedness and response, among other interventions, through undertaking a new project titled 'Resilient Infrastructure for Adaptation and Vulnerability Reduction (RIVER) Project, which will be implemented by Local Government Engineering Department under Ministry of Local Government, Rural Development and Cooperatives, Bangladesh and funded by World Bank.

The Environmental and Social Management Framework defines the steps, processes and procedures to be followed by LGED as Borrowers, and for the environmental and social assessment, monitoring and management of the environmental and social issues associated with the implementation of proposed activities. In addition, the ESMF gives an overview of the relevant environmental national legislation and legal regime of the GOB and the World Bank Environmental and Social Standards (ESS); presents the assessment of the institutional capacity required to ensure proper environmental and social management; and describes mandatory principles, objectives and approach to be followed while designing environmental mitigation measures for planned project activities. The ESMF should be used as a practical tool during design, implementation, and monitoring of sub-projects under the proposed Project.

The Environmental and Social Management Framework (ESMF) document is prepared based on the World Bank's newly developed 'Environmental and Social Framework (ESF)' to determine the optimum approach to be adopted for RIVER Project to deliver the right Environmental and Social Management result. The location of the site, criteria for selection, and key performance indicators will depend on the feasibility study. As location, design and scale of operation of these sub-projects are not yet known; this ESMF has been prepared to set out detail procedures to be followed once detail information would be available.

1.2 Resilient Infrastructure for Adaptation and Vulnerability Reduction (RIVER) Project

The proposed project would be implemented by the Local Government Engineering Department (LGED), with the objective to enhance the resilience of target vulnerable villages to floods, and improve the disaster preparedness and response capacity of government agencies. More specifically, the project aims to (a) increase the number of people with reduced flood vulnerability due to resilient protective infrastructure; and (b) improve disaster preparedness capacity of the GoB and communities. The proposed project will finance infrastructure and systems to increase the flood resilience of vulnerable rural populations in selected areas through: (i) raising of community land, construction of shelters and community facilities, connecting roads, and flood resilience infrastructure in flood-prone villages; and (ii) improving community disaster preparedness including early warning system, evacuation, awareness, response capacity, sheltering, and recovery. The project also aims at contributing to the COVID-19 recovery process by facilitating investments in public works that provide local employment opportunities. Overall scope of the Project would be around US$400 million depending upon the availability of financing the project. Table 1.1 below shows the component wise cost of the project.

Table 1.1 Project Component wise cost allocation

Project Component	**Cost (US$ million)**
1. Resilient Flood Shelters and Community Infrastructure	350.00
1.A: Resilient Flood Shelters	*300.00*
1.B: Resilient Community Infrastructure	*50.00*
2. Strengthening Capacity for Disaster Preparedness and Response and Technical Assistance	30.00

2.A: Strengthening LGED's Capacity for Disaster Preparedness and Response	*20.00*
2.B: Technical Assistance for Long-Term Community Flood Resilience	*10.00*
3. Project Management, Design and Supervision, Monitoring and Evaluation	20.00
4. Contingent Emergency Response Component (CERC)	0
Total	***400.00***

1.3 Purpose of the ESMF

The ESMF is intended to be used as a practical tool for identification of Environmental and Social risks and preparation of management plan during project formulation, design and implementation. For ensuring effective environmental and social management in the proposed RIVER Project , the ESMF will provide guidance on pre-investment works/studies (such as environmental and social screening, environmental and social assessment, environmental and social management plans, etc.), provide set of steps, process, procedure, and mechanism for ensuring adequate level of environmental and social consideration and integration in each investment in the project-cycle and describes the principles, objectives and approach to be followed to avoid, minimize or mitigate impacts. While this ESMF document has been prepared to identify the potential impacts of the RIVER Project, the specific objectives are to:

- integrate the environmental and social concerns into the identification, design and implementation of all project interventions in order to ensure that those are environmentally sustainable and socially feasible;
- ensure all relevant environmental and social issues are mainstreamed into the design and implementation of the projects/sub-projects and also in the subsequent phases of the RIVER Project ;
- consider in an integrated manner the potential environmental and social risk, benefits and impacts of the project and identify measures to avoid, minimize and manage risks and impacts while enhancing benefits;
- ensure compliance with national laws and regulations, and World Bank requirements. The ESMF presents potential impacts of the RIVER Project, mitigation, enhancement, contingency and offsetting measures, environmental and social management and monitoring plan, and institutional framework for implementing ESMP. The ESMF will facilitate compliance with the Government of Bangladesh's policies, acts and rules as well as with the World Bank's environmental and social standards (ESSs) of the newly adopted Environmental and Social Framework (ESF), and
- guide preparing and conducting the site specific ESA/IEE/ESMPs during implementation of various sub-project under the project.

1.4 Rationale of the ESMF

The exact locations, size and extent of the sub-projects are unknown and the details of the sub-projects to be implemented under RIVER Project will be finalized during project implementation phase and therefore, a framework approach has been adopted for Environment and Social risk assessment and management. The objective of an ESMF is to ensure that all subprojects are adequately screened/ assessed for the environmental and social issues, and site specific Environmental and Social Management Plan (ESMP) are prepared accordingly. The ESMF will provide necessary background for environmental and social considerations, a checklist of potential issues of the project activities to be considered and built into the design of the project, environmental and social screening of subprojects and guidance on the preparation of specific assessments and plans.

This ESMF will also serve as the guideline for the staff designated by the implementing agencies to oversee and monitor the safeguards compliance of the project components under their

implementation responsibility. The ESMF will be a living document and will be reviewed and updated periodically as needed.

1.5 Approach and Methodology of the ESMF

The ESMF has been prepared following the standard methodology consisting of the steps listed below:

- Review Project documents and meeting/discussions with various stakeholders including concerned government departments, local media and NGOs.
- Review of the policy and regulatory requirements of the country as well as the financing agency
- Conduct extensive literature review since COVID-19 situation restricted the movement for field visit and initial scoping and screening to determine the key environmental and social parameters and issues those are likely to be impacted by the project activities
- Collection and analysis of baseline environmental and social data with the help of secondary literature review
- Consultations with the stakeholders including beneficiary/affected communities, consultants from world bank, LGED officials, and developing the consultation process
- Assess the potential and likely impacts of the project activities
- Prepare an outline of environmental and social management issues according to the requirements of the newly adopted 10 ESSs of the ESF
- Compile of the individual thematic reports into ESMF

1.6 Content of the ESMF Report

The ESMF has been structured as follows:

- Executive Summary giving an overview of the ESMF
- Chapter 1 Introduction provides a brief overview of the project background, purpose & Rationale of the ESMF, Approach & methodology of the project ESMF.
- Chapter 2 provides a description & objective of the project, its various components, and project Location.
- Chapter 3 outlines the relevant policies, legislative and regulatory framework for this project
- Chapter 4 gives information about the baseline conditions in the project influence areas or project districts.
- Chapter 5 describes potential/expected environmental and social risks and impacts of the project
- Chapter 6 describes the Methodological framework to be followed for environmental and social management of the project.
- Chapter 7 includes stakeholder consultation and disclosure objective, methodology & tools for the stakeholder consultation. This chapter also summarizes the stakeholder consultations undertaken to date and also proposed for the project. Grievance redress mechanism outline is also provided within this section.
- Chapter 8 outlines Institutional framework for the project.

CHAPTER 2 : PROJECT DESCRIPTION

2.1 Description of RIVER Project

The proposed project will finance infrastructure and systems to increase the resilience of vulnerable populations in non-coastal areas of Bangladesh against riverine and flash floods through: (i) construction and rehabilitation of resilient flood shelters and community infrastructures; and (ii) strengthening capacity for disaster preparedness and response of government agencies and communities. The project also aims to contribute to the COVID-19 recovery process by facilitating investments in public works, improving the communication, accessibility, and facilitating economic activities that provide local employment opportunities. The project area is proposed to cover a number of the highest flood prone districts in the Teesta-Brahmaputra-Jamuna (Nilphamari, Lalmonirhat, Kurigram, Rangpur, Gaibandha, Bogura, Pabna, Sirajganj), Padma (Rajbari, Faridpur, Gopalganj, Madaripur, and Surma-Meghna river system in the North East (Sunamganj, Habiganj). Each of these areas, although similar, have important geographical and demographic differences and targeting them will allow the development of a diverse set of appropriate solutions that can be scaled-up. The criteria for selecting districts and upazilas are based on the associated flood risk in the area and has taken into consideration some other relevant factors, such as poverty, human capital index, and availability of suitable land; and the final selection of location (districts and upazilas) was conducted through MCA (Multi-Criteria Analysis) method by the consultants employed for the study of project feasibility.

2.2 Project Development Objectives (PDO)

The project development objective is to reduce the vulnerability of people in targeted communities to riverine and flash floods, improve the country's capacity in disaster preparedness and response, and respond promptly in the event of an eligible crisis or emergency.

Achievement of this objective will be measured through the following key indicators:

a. Increased number of people with reduced flood vulnerability due to resilient infrastructure constructed under the project.
b. Enhanced damage and needs reporting methodology for LGED.
c. Number of communities with improved basic disaster preparedness and response capacities.

2.3 Project Components

The project objectives form the basis of four distinct components as described below:

Component1: Resilient Flood Shelters and Community Infrastructure
This component will finance land raising and construction of climate-resilient multi-purpose flood shelters (functioning primarily as primary schools) in targeted flood-prone areas in non-coastal districts, installation of lightning protection systems, construction and/or rehabilitation of associated climate resilient shelter connecting and community roads, and resilient infrastructure as identified by the community including climate resilient culverts and bridges, repair, rehabilitation of rural markets, repair and rehabilitation of landing stages (river jetties), and installation of solar powered street lights. The construction, repair and rehabilitation of infrastructure conducted under this component will implement energy efficient practices and equipment to reduce GHG emissions associated with the project activities. Selected shelters will include distributed renewable energy systems using solar photovoltaic nano-grid schemes to increase access to clean and sustainable electricity. Additionally, where possible, the activities will use locally sourced material to reduce GHG emissions associated with transportation for procurement. This component will also cover the social and environment management in the proposed project intervention areas.

Component 2: Strengthening Capacity for Disaster Preparedness and Response and Technical Assistance

This component will finance goods and services to increase the capacity of LGED and communities to plan, manage, and recovery from floods, and strategic studies to increase long-term disaster and climate resilience. To enhance the capacity of LGED, these include setting up contingency planning for emergency preparedness and evacuations, updating the shelter database, improving the disaster loss and damage assessments and reporting system, and establishing one Emergency Operation Center (EOC) in a district as a pilot. To enhance the capacity of communities, activities include CBDRM (Community-Based Disaster Risk Management) activities with local organizations such as the Union Disaster Management Committees (UDMCs) on basic competencies to improve health and safety including for GBV during floods, community risk mapping, training of School Management Committees (SMCs) on shelter management, and updating and training on community operation and maintenance guidelines of shelters.

Component 3: Project Management, Design and Supervision, Monitoring and Evaluation

This component will support the Government in implementing the project, and in coordinating all project related activities, monitoring, technical assistance, and training. It will include: (i) establishment of a Project Implementation Unit (PIU) within the Local Government Engineering Department, and consultancy and technical assistance for construction detailed design, procurement support, and construction supervision, preparation and implementation of safeguard instruments; (ii) capacity development of the PIU and communities in participatory planning and investment; (iii) monitoring and evaluation; and (iv) technical assistance and training in such areas as disaster management and preparedness, climate change adaptation and mitigation, construction, contract management, financial management, preparation of environmental and social assessments, and preparation of safeguard instruments. It will also provide resources for strengthening the flood preparedness and management program. The management, design and M&E activities under this component will integrate climate adaptation and mitigation measures and parameters. Under this component, an ICT Monitoring System will be developed to track the progress of the project in near real-time basis, and detailed assessment of existing ICT and GIS infrastructure with forecasting the demand of the ICT/GIS system up until 2030, along with necessary support systems/options will be adopted to enhance the remote supervision capacity of LGED and data security in the event of any disasters, including necessary software, hardware and associated integration activities.

Component 4: Contingency Emergency Response

The objective of this subcomponent is to cater to unforeseen emergency needs. In case of a major natural disaster, the Government may request the Bank to re-allocate project funds to this component (which presently carries a zero allocation) to support response and reconstruction.

2.4 Project Location

Physical interventions under RIVER Project will be taken place across fourteen districts of Bangladesh (Table 2.1), which are recurrently affected by different types of floods, from severe river flooding to flash flooding, and washed away by the swelling water of rivers the districts are located by, passed through, or simply caused by the flashing water from sudden excessive rainfall.

Table 2.1: Project Districts under RIVER Project

Division	Districts	Major Rivers in the areas	Flood Hazard Pattern
Rangpur	Nilphamari,	Brahmaputra, Dharla, Ghaghat, Karatowa, Tista	Low flood to Severe River Flooding
	Lalmonirhat		
	Kurigram		
	Rangpur		

	Gaibandha		
Rajshahi	Bogura	Jamuna, Bangali, Karatowa, Nagar, Hurasagar, Ganges (Pabna)	Moderate River Flooding
	Sirajganj		
	Pabna		
Dhaka	Madaripur	Madhumati, Chandana, Arial Khan, Padma	Moderate to Severe Flooding
	Faridpur		
	Rajbari		
	Gopalganj		
Sylhet	Sunamganj	Zadukata, Khoyal, Longla, Kushiyara	Severe Flash Flood to Moderate River Flooding
	Habiganj		

However, all these districts are characteristically varying in having different climatic conditions, soil and physiographic features, flooding patterns, and some other environmental and social features including very different demographic profiles (Fig 2.1).

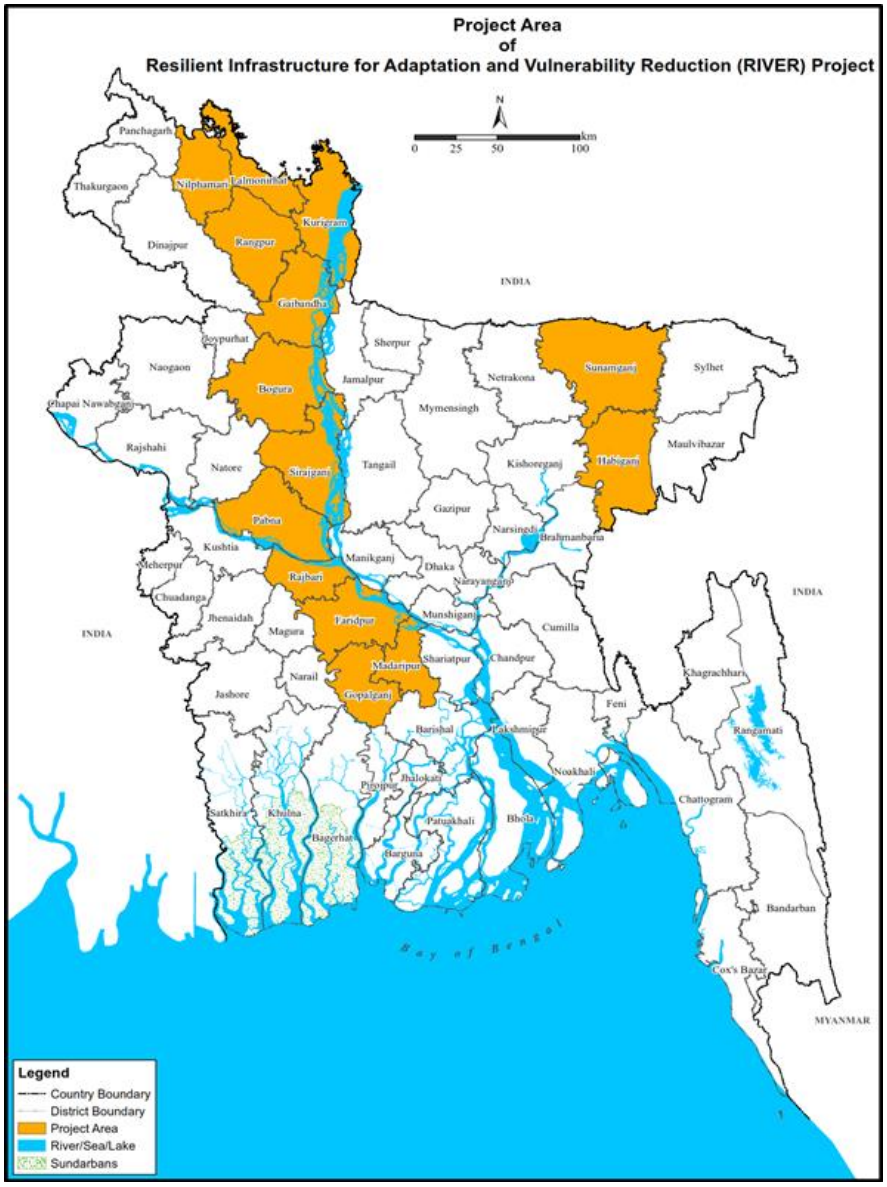


Figure 2.1: Project Coverage Area (in districts) under the RIVER project

CHAPTER 3: POLICY, LEGAL AND REGULATORY FRAMEWORK

3.1 Introduction

Regulatory requirements towards protection and conservation of environment and various environmental resources and also towards protection of social environment from adverse impact of projects and activities associated with them have been enunciated by the requirements of GoB as well of the World Bank ESF. A review of the pertinent requirements of GOB and WB and a gap analysis have been summarized in this chapter.

3.2 Review of National Environmental Policy, Legal and Regulatory Framework

3.2.1 Environment Related Policies in Bangladesh

Governance and management of the environmental sector is molded to a large extent by some key specific policies. The polices which are relevant to RIVER Project have been briefly mentioned in Table 3.1.

Table 3.1: Summary of Relevant Environmental Policies of GoB

Policy	Key Features	Applicability
National Environmental Management Action Plan (NEMAP), 1995	The NEMAP built on the NEP to address specific issues and management requirements during the period 1995-2005, and remains a backbone of efforts to articulate national sustainability strategies. The plan includes a framework within which the recommendations of a National Conservation Strategy (NCS) are to be implemented. The NEMAP was developed with the following objectives: (i) Identify key environmental issues affecting Bangladesh (ii) Identify actions to halt or reduce the rate of environmental degradation (iii) Improve management of the natural environment (iv) Conserve and protect habitats and biodiversity (v) Promote sustainable development (vi) Improve the quality of life To this end, the NEMAP grouped all the relevant necessary actions under four heads: institutional, sectoral, location-specific and long-term issues. The institutional aspects reflect the need for inter-sectoral cooperation to tackle environmental problems requiring new institutional mechanisms at national and local levels. The sectoral aspects reflect the way the ministries and agencies are organized and make it easier to identify the agency to carry out the recommended actions. The location-	NEMAP covers a number of sectoral issues and actions; some of the specific actions proposed in relation to reducing the vulnerability to natural disasters like flood, cyclone, etc. are integrated into RIVER Project activities. This plan also puts emphasis on sustainable use of water resources, preventing degradation of water bodies, tree plantation, protection of biodiversity, ensuring health and sanitation, taking flood proof measures, compensation for project-affected people, among others.

	specific aspect focuses on particularly acute environmental problems at local levels. And the long-term issues include environmental degradation trends that threaten to emerge as serious threats to the country's environmental quality and well-being if not proactively addressed.	
Bangladesh Climate Change Strategy and Action Plan (BCCSAP) 2009	The GoB prepared the Bangladesh Climate Change Strategy and Action Plan (BCCSAP) in 2008 and revised in 2009. This is a comprehensive strategy to address climate change challenges in Bangladesh. Bangladesh Climate Change Strategy and Action Plan built on and expanded the NAPA. It is built around the following six themes: ▪ **Food security, social protection and health** to ensure that the poorest and most vulnerable in society, including women and children, are protected from climate change and that all programs focus on the needs of this group for food security, safe housing, employment and access to basic services, including health. ▪ **Comprehensive disaster management** to further strengthen the country's already proven disaster management systems to deal with increasingly frequent and severe natural calamities. ▪ **Infrastructure** to ensure that existing assets (e.g., coastal and river embankments) are well maintained and fit for purpose and that urgently needed infrastructure (cyclone shelters and urban drainage) is put in place to deal with the likely impacts of climate change. ▪ **Research and Knowledge management** to predict that the likely scale and timing of climate change impacts on different sectors of economy and socioeconomic groups; to underpin future investment strategies; and to ensure that Bangladesh is networked into the latest global thinking on climate change. ▪ **Mitigation and low carbon development** to evolve low carbon development options and implement these as the country's economy grows over the coming decades. ▪ **Capacity building and Institutional strengthening** to enhance the capacity government ministries, civil society and	Relevant as the country is vulnerable to climate change effect and vulnerability to different disasters is increasing across the country, and the project is targeting those vulnerable groups as the key beneficiaries of the project.

	private sector to meet the challenge of climate change. There are 44 specific programs proposed in the BCCSAP under the above six themes.	
National Environmental Policy, 1992 (amended in 2018)	Bangladesh adopted the National Environmental Policy (NEP) in 1992 to chart a path towards the country's sustainable development. The NEP 2018 is a revision of the NEP 1992 in the context of the new reality of climate change. The NEP 2018 also outlines a more up to date understanding of the extent and magnitude of environmental degradation that has become a fact of life in the world in general, and in Bangladesh in particular. The NEP 2018 outlines the problems of population growth, poverty, illiteracy, lack of awareness and healthcare services, limitation of arable land, unplanned development and urbanization, and industrialization as the major impediments to the conservation of the environment. The NEP sets out the basic framework for environmental action together with a set of broad sectoral guidelines for action. Major elements of the policy are: (i) maintaining the ecological balance for ensuring sustainable development; (ii) protection against natural disasters; (iii) identifying and controlling activities which are polluting and/or destroying the environment; (iv) ensuring environment-friendly development in all sectors; (v) promoting sustainable and sound management of natural resources; and (vi) active collaboration with international initiatives related to the environment. The NEP, amongst other aims, seeks to ensure that transport systems, including roads and inland water transport, do not pollute the environment or degrade resources. The policy states that environmental impact assessment should be conducted before projects are undertaken. The NEP 2018 includes additional elements addressing climate change mitigation and adaptation as key environmental issues facing the country, and integrating a comprehensive 3R approach to the massive	With regards to the components under RIVER Project, the NEP directly relates to some of the sectoral areas, such as land and water resources management, air pollution control, biodiversity, ecosystem conservation and biosafety, energy and mineral resources, Climate change preparedness & adaptation, disaster management, *inter alia*, which are applicable within the scope of the project.

	and growing problem of industrial and household waste that has swelled along with the country's urbanization.	
National Plan for Disaster Management (2021-2025), 2020	This strategic plan to guide the implementation of disaster management in the light of the government's vision, mission and national and international approaches plans and programs on disaster risk management. The plan includes areas of investment for disaster risk management through a Risk Informed Development Plan and emphasized its implementation with participation of all concerned.	This project interventions have the clear objective to enhance the resilience of target vulnerable villages to floods, and improve the disaster preparedness and response capacity of government agencies.

3.2.2 Other Environment-Related Plan and Policies

In addition to the environmental policy instruments mentioned in table 3.1, a number of other national policy efforts have significant environmental content. Additional Bangladesh policies, their key features, and applicability to the subject Project are detailed in Table

Table 3.2: Summary of Relevant Environmental Plan & Policies of GoB

Policy	Key Features	Applicability
National Water Policy, 1999	The policy aims to provide guidance to the major players in water sector for ensuring optimal development and management of water. The policy emphasizes efficient and equitable management of water resources, proper harnessing and development of surface and groundwater, availability of water to all concerned and institutional capacity building for water resource management. It also addresses issues like river basin management, water rights and allocation, public and private investment, water supply and sanitation and water need for agriculture, industry, fisheries, wildlife, navigation, recreation, environment, preservation of wetlands, etc. The policy has several clauses related to the project for ensuring environmental protection.	Applicable for the preservation of water quality.
National Land Use Policy, 2001	The National Land Use Policy was adopted by Bangladesh government in 2001, setting out guidelines for improved land-use and zoning regulations. The main objectives of this policy are to ensure criteria-based uses of land and to provide guidelines for usage of land for the purpose of agriculture, housing, afforestation, commercial and industrial establishments, rail and highway and for tea and rubber gardens. Overall, this policy promotes a sustainable and planned utilization of land. The main contents of this policy are: ▪ Stopping the high conversion rate of	Applicable as the project will by and large focus on conserving nature at its original state, and not cause any transformation of land use.

	agricultural land to nonagricultural purposes; ▪ Utilizing agro-ecological zones to determine maximum land use efficiency; ▪ Adopting measures to discourage the conversion of agricultural land for urban or development purposes; ▪ Improving the environmental sustainability of land-use practices.	
Bangladesh Delta Plan 2100	Bangladesh Delta Plan 2100 is the most comprehensive and holistic plan ever formulated and undertaken by the Government of Bangladesh. Considering the exceptionally strong development record throughout the last decade, aspirations to reach the Upper Middle Income (UMIC) country status level by 2030 and so many development challenges still persisting including huge population pressure and climate change vulnerability, the government has formulated this plan in order to reap the synergistic benefit from all actions, activities, plans, strategies and programs of all different ministries and wings of the government. This Delta Plan has divided Bangladesh into 8 hydrological regions and corresponding six Hotspots based on the similar vulnerabilities they are exposed to. With the grim effects of climate change and other delta related challenges, the country is facing more other challenges from growing urbanization, declining land availability, infrastructure shortages, energy supply constraints and labor skills, and all these challenges also need an overarching solution or efforts far more than sectoral plans or programs. Delta plan comes up with all these effective efforts with numbers of long- and short-term course of actions and plans. Among many others, following specific issues are considered more holistically in Delta Plan 2100: ▪ Climate Change, Environment and Ecological Issues, ▪ National and Trans-boundary water management ▪ Sustainable land use and Spatial Planning across dynamic delta ▪ Sustainable agriculture, food security, nutrition and livelihoods ▪ Dynamizing Inland Water Transport system ▪ Urban Water Management ▪ Governance and Institutions ▪ Delta Knowledge hub and data management, etc.	Among the five specific goals of Delta Plan 2100, the project will focus directly on ensuring safety from floods and climate change related disasters and at the same time, will put emphasis on conserving and preserving wetlands and ecosystems and promoting their wise use across all stages of the project period.
Eighth Five Year Plan July	Eighth Five Year Plan (FYP) is envisaged as the	The project will

2020 to June 2025 (8FYP)	first phase of the four phased Perspective Plan 2041 (PP2041) that actually aims to the start of the implementation of PP2041 in a way that it brings Bangladesh closer to the goals of attaining UMIC status, attaining major SDG targets, and eliminating extreme poverty by FY2031. This FYP has six core themes, including establishing a sustainable development pathway that is resilient to disaster and climate change and entailing sustainable use of natural resources.	contribute directly to the Government's strategies by taking a community participatory approach to build and maintain flood resilient infrastructure and social structures that aim to reduce flood risks of affected communities.

3.2.3 Environment Related Legislations in Bangladesh

The GOB Acts and Regulations, which are guiding environmental protection and conservation in Bangladesh and are relevant to the RIVER Project have been outlined in the Table 3.3 below.

Table 3.3: Summary of Applicable Environmental Laws and Regulations of GoB

Act/Rules	Key Provisions and Purpose	Applicability to RIVER Project
Environment Conservation Act, 1995	The Environment Conservation Act authorizes the DoE to undertake any activity to conserve and enhance the quality of the environment and to control, prevent and mitigate pollution. The DoE is designated as the regulatory body and enforcement agency for all environment-related activities. The Act enables the following critical components of DoE's remit: i. declaration of Ecologically Critical Areas; ii. administration of the procedure for obtaining Environmental Clearance Certificates for new industrial projects; iii. regulation with respect to vehicles emitting smoke harmful to the environment; iv. environmental regulations for development activities; v. standards for quality of air, water, noise, and soils (including river bed materials) for different areas and for different purposes; vi. acceptable limits for discharging and emitting waste; and vii. formulation of environmental guidelines to control and mitigate environmental pollution, conservation and improvement of the environment. Amendments to the ECA in 2000, 2002 and 2010 added significant substantive and procedural scope, defining the following new areas of authority: i. ascertaining responsibility for compensation in cases of damage to ecosystems; ii. increased provision of preventive measures, including fines and imprisonment, and the authority to take cognizance of offences;	According to this law no industrial unit or project shall be established or undertaken without obtaining, in the manner prescribed by rules, an Environmental Clearance Certificate from the Director General of DoE.

	iii. restrictions on polluting automobiles; iv. restrictions on the production and sale of environmentally harmful items like polythene bags; v. obtaining assistance from law enforcement agencies for environmental actions; vi. definition and enforcement of punitive measures; vii. authority to try environmental cases; viii. prohibition on hill cutting except where established to be in the national interest; ix. authority to regulate management of hazardous waste produced by ship breaking yards; x. prohibition of filling or alteration of waterways except when judged to be in the national interest; and xi. additional powers to compel compliance with emissions standards.	
Environment Conservation Rules, 1997 and amendments	These are a set of rules, promulgated under the ECA, 1995 and its amendments. The Environment Conservation Rules provide categorization of industries and projects and identify types of environmental assessment required against respective categories of industries or projects. The Rules set: ▪ The National Environmental Quality Standards (NEQS) for ambient air, various types of water, industrial effluent, emission, noise, vehicular exhaust etc.; ▪ The requirement for and procedures to obtain environmental clearance; and ▪ The requirement for IEE and EIA according to categories of industrial and other development interventions. The Environment Conservation Rules, 1997 were issued by the GOB in 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 (ECC); and ▪ Determination of environmental standards. Rule 3 defines the factors to be considered in declaring an 'Ecologically Critical Area' as per Section 5 of the ECA (1995). It empowers the Government to declare the area as the Ecologically Critical Areas (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	In accordance with the Environment Conservation Rules (ECR) of 1997, the Project is classified as Orange-B Category, requiring an Initial Environmental Examination (IEE) to obtain clearance for construction.

	environmental degradation. The Government is also empowered to specify which of operations or processes may be carried out or may not be initiated in the ecologically critical area. Under this mandate, the Ministry of Environment, Forest and Climate Change (MoEFCC) has declared Sundarbans, Cox's Bazar-Teknaf 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. Rule 7 of the 1997 ECR provides a classification of industrial units and projects into four categories, depending on environmental impact and location. These categories are: ▪ Green; ▪ Orange A; ▪ Orange B; and ▪ Red. The categorization of a project determines the procedure for issuance of an Environmental Clearance Certificate (ECC). All proposed industrial units and projects that are considered to be low polluting are categorized under "Green" and shall be granted Environmental Clearance. These are Orange B for work that requires Initial Environmental Examination (IEE) and Red for work that requires full environmental assessment. A detailed description of those four categories of industries has been given in Schedule-1 of ECR'97.	
Environment Court Act, 2010	The Environment Court Act, 2000 has been enacted to establish one or more Environment Court/s in each district with a Joint District Judge and the said judge shall in addition to his ordinary function dispose of the cases that fall within the jurisdiction of an Environment Court. This Act sets out an effective adjudication system for protecting, conserving and preserving the environment and promoting the environmental justice. The act has mandated the Department of Environment (DoE) to file a case and investigation thereof. It also has set to resolve the disputes and establish justice over environmental and social damage raised due to any development activities. This act allows government to take necessary legal action against any parties who creates environmental hazards/ damage to environmentally sensitive areas as well as human society.	According to this act, the Department of Environment (DoE) can take legal actions if any environmental degradation occurs due to project interventions.
The Forest Act (1927) and amendments	The Forest Act (1927) was enacted to control trespass, illegal resources extraction from forests and to provide a framework for the forestry revenue collection system. It is the main legislative	The act is relevant to the project as some of the project intervention may require cutting of trees.

	context for forestry protection and management in Bangladesh. The Act allows for the notification of forest reserves in which the government, through the Forest Department, regulates the felling, extraction and transport of forestry produce in Bangladesh. The Act grants the government several basic powers, largely for conservation and protection of government forests, and limited powers for private forests.	
The Ground Water Management Ordinance (1985)	Describes the management of ground water resources and licensing of tube wells	Yes, construction sites of the sub-projects may require deep tube wells for meeting up water use.
The Water Supply and Sanitation Act (1996)	Regulates the management and control of water supply and sanitation in urban areas.	Yes, sub-projects will include construction of water supply and sanitation facilities.
Bangladesh National Building Code (BNBC), 2020	The Bangladesh National Building Code (BNBC) clearly sets out the constructional responsibilities according to which the relevant authority of a particular construction site shall adopt some precautionary measures to ensure the safety of the workmen. The BNBC also stipulates the general duties of the employer to the public as well as workers.	Follow the guidelines to ensure structural integrity of buildings
Biodiversity Act, 2017	It provides for the creation of the National Committee and the Biodiversity Management and Surveillance Committees at local levels (i.e., Districts, Upazilas, Municipalities, and Unions). In general, all these committees are mandated to: assist the Government in implementing the National Biodiversity Strategy and Action Plan (NBSAP) and to visit the biodiversity enriched areas in their respective territories; and, monitor the progress of implementation of the NBSAP.	Project needs to include these local committees, so that they can monitor project impact on the local biodiversity.
Public Procurement Rule, 2008	Applies to the procurement of goods, works or services by any government, semi-government or any statutory body established under any law; includes measures regarding the safety, security and protection of the environment in construction works; requires contractors to take all reasonable steps to safeguard the health and safety of all workers on site, protect the environment on and off the site, and avoid damage or nuisance to persons or to property of the public or others.	The PPR (2008) will be followed during procurement process of the subprojects

3.3 Review of National Social Policy, Legal and Regulatory Framework

The resettlement principles adopted for the project recognizes the Acquisition and Requisition of Immovable Property Act 2017, the requirements of the World Bank ESS5 on land acquisition, restriction on land use and involuntary resettlement and corresponds to the relevant local laws,

policies and guidelines related to this project interventions. This project will also put due emphasis on labor rights and benefits under the existing labor laws and Rules of Bangladesh along with World Bank's ESS2. Besides, having access to all relevant information regarding project management and implementation by the stakeholders is a prerequisite under an existing act of the GOB and ESS 10 administered by the bank.

Table 3.4: Summary of Applicable Social and Resettlement Laws and Regulations of GoB

Act/Rules	Key Provisions and Purpose	Applicability to RIVER Project
Bangladesh Labor Law, 2006 (amendment 2018)	It is a comprehensive law covering labour issues such as conditions of services and employment, youth employment, benefits including maternal benefits, compensation for injuries, trade unions and industrial relations, disputes, participation of workers in company's profits, regulation of safety of workers, penalty procedures, administration and inspection. This Act pertains to the occupational rights and safety of factory workers and the provision of a comfortable environment for working. It also includes rules on registration of laborers, misconduct rules, income and benefits, health and fire safety, factory plan. The amendment of 2018 further ensures the occupational health and safety rights of the worker by replacing some of the clauses of 2006 law, such as paid leave and associated facilities, parental leave etc.	Compliance to provisions on employment standards, occupational health and safety, welfare and social protection, labor relations and social dialogue, and enforcement. Prohibition of engaging children and adolescents in work force.
Bangladesh Labor Rules, 2015	Includes rules on registration of laborers, misconduct rules, income and benefits, health and fire safety, factory plan.	Contractors to implement occupational health and safety measures
The Acquisition and Requisition of Immovable Property Act (ARIPA), 2017	It is the principal legislation governing eminent domain land acquisition in Bangladesh. The Act requires that compensation be paid for: (i) land and assets permanently acquired (including standing crops, trees, houses); and (ii) any other damages caused by such acquisition. The Act also provides for the acquisition of properties belonging to religious organizations like mosques, temples, pagodas and graveyards if they are acquired for the public interest. The Ministry of Land (MoL) is the authorized government agency to undertake the process of land acquisition. The MoL partly delegates its authority in relation to land acquisition to the Commissioner at Divisional level and to the Deputy Commissioner at the District level. The Deputy Commissioners (DC) is empowered by the MoL to process land acquisition under the act and pay compensation to the legal owners of the	ARIPA 2017 defines the land acquisition process and contains pertinent information related to compensation payment to titleholders; though the project will avoid all kinds of acquisition of lands or properties.

	acquired property. Khas (government-owned land) lands should be acquired first when a project requires both Khas and private land. If a project requires only khas land, the land will be transferred through an inter-ministerial meeting following the acquisition proposal submitted to DC or MoL. The Government of Bangladesh does not have a national policy on involuntary resettlement. The new Act of 2017 has incorporated specific provisions to address social and economic impacts that were not previously included in the 1982 land acquisition ordinance and therefore these provisions under the new law would reduce the gaps between the national legislative framework of the government and WB policies.	
Right to Information Act, 2009	The act says in its preamble -the Act makes provisions for ensuring free flow of information and people's right to information. The freedom of thought, conscience and speech is recognized in the Constitution as a fundamental right and the right to information is an alienable part of it. Since all powers of the Republic belong to the people, it is necessary to ensure right to information for their empowerment. The right to information shall ensure that transparency and accountability of all public, autonomous and statutory organizations and of other private organizations constituted or run by government or foreign financing shall increase, corruption shall decrease and good governance of the same shall be established. It is expedient and necessary to make provisions for ensuring transparency and accountability. However, under the clause 4 of this law, every citizen shall have the right to information from the authority, and the authority shall, on demand from a citizen, be bound to provide him with the information. This law also inscribes relevant clauses on preservation, publication, procedure to request and provide information with legitimate exceptions on grounds when publication or providing certain types of information is not mandatory.	World Bank ESF also put emphasis on project information to be publicly disclosed, and extensive stakeholder consultations having to be conducted before, during and after the project implementation, in order to integrate local people with the project objectives and make necessary plausible changes in project design/ decision making according to the requirement expressed by the local stakeholders. In all cases, project documents relevant to implementation shall be disclosed publicly.
EIA Guidelines for Industries, 2021	This guideline sets out detailed and systematic guidance on EIA study for industries. Starting from screening, through scoping, baseline data generation, impact assessment, mitigation of impacts to drawing	This guideline will help minimizing the gaps among the GoB and World Bank regulatory instruments, and making

	up an EMP-all stages are incorporated clearly, with an emphasis on Stakeholder engagement/ public consultation, OSH, CSH, hazard and risk analysis, mitigation hierarchy, etc. which have been absent in most other legislative documents prepared and promulgated by the GoB.	the decisions to adopt the ES standards more effectively and justifiably for this project.

3.4 Applicable International Treaties Signed by the GoB

Bangladesh has signed most international treaties, conventions and protocols on environment, pollution control, bio-diversity conservation and climate change, including the RAMSAR Convention, the Bonn Convention on Migratory Birds, the Rio de Janeiro Convention on Biodiversity Conservation, and the Kyoto Protocol on Climate Change. An overview of the relevant international treaties signed by GoB are shown in Table 3.5.

Table 3.5: International Conventions, Treaties and Protocols Signed by Bangladesh

Conventions/ Treaties	Years	Ratified/Accessed (AC)/Accepted (AT)/ Adaptation (AD)	Relevance
Convention on Wetlands of International Importance ("Ramsar Convention":1971)		20.04.1992 (ratified)	Protection of significant wetland and prevention of draining or filling during construction
Convention Concerning the Protection of the World Cultural and natural Heritage (Paris, 1972)		03.08.1983 (AT) 03.11.1983 (ratified)	Prevention of damage or destruction of culturally and/or historically significant sites, monuments, etc.
Convention on Biological Diversity, (Rio de Janeiro, 1992.)	1992	05.06.1992	Protection of biodiversity during construction and operation.
United Nations Framework Convention on Climate Change, (New York, 1992.)	1992	15.04.94	Reduction of emission of greenhouse gases.
Kyoto protocol to the United Nations Framework Convention on Climate Change		21.8.2001 (AC) 11.12.1997 (AD)	Reduction of emission of greenhouse gases.
International Convention for Protection of Birds, Paris	1950	Signed	Protection of the birds in their wild state.
Convention Concerning the Prevention and Control of Occupational Hazards caused by Carcinogenic Substances and Agents, Geneva.	1974	Signed	To protect workers against hazards arising from occupational exposure to carcinogenic substances and agents.
Convention Concerning the Protection of Workers Against Occupational Hazards in the Working Environment due to Air Pollution, Noise and Vibration, Geneva	1977	Signed	Protection of workers' health against occupational hazards in the working environment due to air pollution, noise and vibration.
Convention Concerning Occupational Safety and Health and the Working Environment, Geneva.	1981	Signed	Ensuring occupational health and safety of workers in all branches of economic activity.
Vienna Convention for the Protection of the Ozone Layer, Vienna	1985	02.08.90 (AC) 31.10.90 (entry into force)	Preventing human activities that may have adverse effects on ozone layer.
Convention Concerning	1985		To promote a safe and healthy working

Occupational Health Services, Geneva.			environment. Broadly applicable to the construction and O&M activities under the project. Appropriate mitigation and protective measures will be included in the sub-project ESMP.
Montreal Protocol on Substances that Deplete the Ozone Layer, Montreal.	1987	31.10.90 (entry into force)	Reduction of the abundance of the substances that deplete the ozone layer in the atmosphere, and thereby protect the earth's fragile ozone Layer.
Convention Concerning Safety in the Use of Chemicals at Work, Geneva.	1990	Signed	Regulating the management of chemicals in the workplaces, in order to protect workers from the harmful effects of these substances.
London Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, London.		18.03.94 (AC) 16.06.94 (entry into force)	Apply the protocol on substances that deplete ozone layer.
Convention on Biological Diversity, Rio De Janeiro	05.06. 92	03.05.94	Conservation of biological diversity (or biodiversity) and sustainable use of its components.
Agenda 21, UNCED, Rio de Janeiro	1992	Signed	Conservation of bio-diversity, sustainable use of its components and access to genetic resources.
Copenhagen Amendment to the Montreal protocol on Substances that Deplete the Ozone Layer, Copenhagen, 1992	1992	27.11.2000 (AT) 26.2.2001 (Entry into force)	Apply the protocol on substances that deplete ozone layer.
Montreal Amendment of the Montreal Protocol on Substances that Deplete the Ozone Layer, Montreal		27.7.2001 (Accepted) 26.10.2001 (Entry into force)	Controls in the trade of ozone depleting substances and the use of licensing procedures to control the import and export of new, recycled and reclaimed ozone depleting substances.
Sendai Framework for Disaster Risk Reduction (2015-2030)	2015	Adopted	The project is aligned with three of the four priorities for action to prevent new and reduce existing disaster risks, namely: (i) Understanding disaster risk; (ii) Investing in disaster reduction for resilience and; (iii) Enhancing disaster preparedness for effective response, and to "Build Back Better" in recovery, rehabilitation and reconstruction.

3.5 World Bank's Environmental and Social Framework

Since October 01, 2018, all WB funded Investment Project Financing (IPF) are required to follow the Environmental and Social Framework (ESF) consisting ten (10) Environmental and Social Standards (ESS). The Environmental and Social Standards are designed to manage the risks and impacts of the project through the means that are appropriate to the nature and scale of the project/interventions and proportionate to the level of environmental and social risks and impacts, and improve the environmental and social performance, through a risk and outcomes-based approach. These standards, therefore, set out the requirements for the identification and assessment of environmental and social risks and impacts associated with the project through Investment Project Financing and will (a) support in achieving good international practice relating to environmental and social sustainability; (b) assist in fulfilling the national and international environmental and social obligations; (c) enhance

nondiscrimination, transparency, participation, accountability and governance; and (d) enhance the sustainable development outcomes of project through ongoing stakeholder engagement.

Table 3.6 shown below discusses the relevance of ESF, each of the ten standards (ESS1 to 10) and associated Directive and their requirements. Additionally, it also discusses the relevance and requirements relating to other guidance notes of World Bank. In case requirements of Bangladesh law differed from those of ESF, the more stringent requirements will apply.

Table 3.6: WB ESS Requirements and Relevance to the RIVER Project

World Bank ESS Policy, Standards, Directive	Objectives	Requirements	Relevance to the sub-project/project
ESS-1 Assessment and Management of Environmental and Social Risks and Impacts	Identify, assess, evaluate, and manage environment and social risks and impacts in a manner consistent with the ESF. Adopt differentiated measures so that adverse impacts do not fall disproportionately on the disadvantaged or vulnerable, and they are not disadvantaged in sharing development benefits and opportunities	The types of E&S risk and impacts that should be considered in the environmental and social assessment. The use and strengthening of the Borrower's environmental and social framework for the assessment, development and implementation of World Bank financed projects where appropriate. **Relevant GoB Laws/Regulation** (a) ECA 1995 (b) ECR 1997 (c) EIA guidelines for Industries	Assessing, managing and monitoring of environmental and social risks and impacts are the prerequisites in every stages of the project. Assessment will be proportionate to the risks and impacts, and management of those throughout the project life cycle will commensurate with the nature and scale of the project. As the overall risk rating for this project fall in 'moderate' category, sub-project specific screening exercise and subsequent preparation of IEE are suggested accordingly. Mitigation hierarchy approach will be followed while designing and implementing every single sub-project and reflected in measures to be delineated in Environmental and Social Management Plan (ESMP).
ESS-2 Labor-and-Working-Conditions	Promote safety and health at work. Promote the fair treatment, non-discrimination, and equal opportunity of project workers. Protect project workers, with particular emphasis on vulnerable workers. Prevent the use of all forms of forced labor and child labor. Support the principles of freedom of association and collective bargaining of project workers in a manner consistent with national law. Provide project workers with accessible	Requirements for the Borrower to prepare and adopt labor management procedures. Provisions on the treatment of direct, contracted, community, and primary supply workers, and government civil servants. Requirements on terms and conditions of work, non-discrimination and equal opportunity and workers organizations. Provisions on child labor and forced labor. Requirements on occupational health and safety, in keeping with the World Bank Group's Environmental, Health, and Safety Guidelines (EHSG). **Relevant GoB Laws/Regulation** a) Labor Law 2006 (Amendment 2013)	Engaging labor and workers of different types, capacities, and backgrounds (including level of vulnerabilities) with proper accommodation (if required), health & safety measures at work, fair-nondiscriminatory-equal opportunities and provision for CBA & access to grievance redress services, within World Bank standards/policies and national legal framework is to be ensured.

	means to raise workplace concerns.	b) Occupational Health and Safety Policy 2013 c) Public Procurement Rule 2008	
ESS-3 Resource-Efficiency-and-Pollution-Prevention-and-Management	Promote the sustainable use of resources, including energy, water, and raw materials. Avoid or minimize adverse impacts on human health and the environment caused by pollution from project activities. Avoid or minimize project-related emissions of short and long-lived climate pollutants. Avoid or minimize generation of hazardous and non-hazardous waste. Minimize and manage the risks and impacts associated with pesticide use. Requires technically and financially feasible measures to improve efficient consumption of energy, water, and raw materials, and introduces specific requirements for water efficiency where a project has high water demand.	Requires an estimate of gross greenhouse gas emissions resulting from project (unless minor), where technically and financially feasible. Requirements on management of wastes, chemical and hazardous materials, and contains provisions to address historical pollution. ESS-3 refers to national law and Good International Industry Practice, in the first instance the World Bank Groups' EHSGs.	With respect to Resource Efficiency, the project preparation and the ESA process will identify feasible measures for efficient (a) energy use; (b) water usage and management to minimize water usage during construction, conservation measures to offset total construction water demand and maintain balance for demand of water resources; and (c) raw materials use by exploring use of local materials, recycled aggregates, use of innovative technology so as to minimize project's footprints on finite natural resources. During the sub-project design and implementation pollution to air, water and land mostly by the lacking of best work practices and the improper handling of hazardous and non-hazardous products, chemicals and wastes, unscrupulous consumption of finite resources like water, energy and different raw materials, etc. need to be properly addressed, as these may otherwise threaten people, ecosystem services and the environment at the local and regional level.
ESS-4 Community-Health-and-Safety	Anticipate or avoid adverse impacts on the health and safety of project-affected communities during project life-cycle from routine and non-routine circumstances. Promote quality, safety, and climate change considerations in infrastructure design and construction,	Requirements on infrastructure, considering safety and climate change, and applying the concept of universal access, where technically and financially feasible. Requirements on traffic and road safety, including road safety assessments and monitoring. Addresses risks arising from impacts on provisioning and regulating ecosystem service. Measures to avoid	Impact assessment relating to every sub-projects on the health and safety of the affected communities including of the vulnerable groups (because of their particular circumstances, e.g., child, women, old-aged, people of smaller ethnic groups, etc.) is required to undertake prior to any

	including dams. Avoid or minimize community exposure to project-related traffic and road safety risks, diseases and hazardous materials. Have in place effective measures to address emergency events. Ensure that safeguarding of personnel and property is carried out in a manner that avoids or minimizes risks to the project-affected communities.	or minimize the risk of water-related, communicable, and non-communicable diseases. Requirements to assess risks associated with security personnel, and review and report unlawful and abusive acts to relevant authorities. **Relevant GoB Laws and Regulation** a) ECR 1997 b) BLA 2006 c) Public Procurement Rule,2008 d) Water Act 2013	physical intervention is taken place, and the assessment will also identify the risks for Gender-Based Violence (GBV) or Sexual Exploitation and Abuse (SEA) of children, or communicable diseases which may arise from different circumstances, and the necessary preventative/risk mitigation measures taking into account relevant engineering safety considerations, authorized certification, universal access in project design, awareness trainings, publicized codes of conduct, grievance system, etc. are suggested to be included as part of management plan options. However, establishing a quality management system to avoid occupational health & safety risks for involved workers and risks related to pollution and ecosystem services for the communities may lessen the overall risk to a significant level. Further consideration of climate change effects and emergency preparedness and response will surely be embedded into proposed sets of measures as indicated in this ESS.
ESS-5 Land-Acquisition-Restrictions-on-Land-Use-and-Involuntary-Resettlement	Avoid or minimize involuntary resettlement by exploring project design alternatives. Avoid forced eviction. Mitigate unavoidable adverse impacts from land acquisition or restrictions on land use by providing compensation at replacement cost and assisting displaced persons in their	Applies to permanent or temporary physical and economic displacement resulting from different types of land acquisition and restrictions on access. Does not apply to voluntary market transactions, except where these affects third parties. Provides criteria for "voluntary" land donations, sale of community land, and parties obtaining income from illegal rentals. Prohibits forced eviction (removal against the will of	**A separate RPF has been prepared to address ESS5.** The Project will screen out land acquisition. Also no voluntary land donation will be there. Informal settler and land requisition for labor rest areas and construction material storage are illustrated in RPF

	efforts to improve, or at least restore, livelihoods and living standards to pre-displacement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher. Improve living conditions of poor or vulnerable persons who are physically displaced, through provision of adequate housing, access to services and facilities, and security of tenure. Conceive and execute resettlement activities as sustainable development programs.	affected people, without legal and other protection including all applicable procedures and principles in ESS5). Requires that acquisition of land and assets is initiated only after payment of compensation and resettlement has occurred. Requires community engagement and consultation, disclosure of information and a grievance mechanism. **Relevant GoB Laws and regulation** Acquisition and Requisition of Immovable Property Act, 2017	
ESS-6 Biodiversity-Conservation and Sustainable Management of Living Natural Resources	Protect and conserve biodiversity and habitats. Apply the mitigation hierarchy and the precautionary approach in the design and implementation of projects that could have an impact on biodiversity. To promote the sustainable management of living natural resources.	Requirements for projects affecting areas that are legally protected designated for protection or regionally/internationally recognized to be of high biodiversity value. Requirements on sustainable management of living natural resources, including primary production and harvesting, distinguishing between small-scale and commercial activities. Requirements relating to primary suppliers, where a project is purchasing natural resource commodities, including food, timber and fiber.	At this preliminary stage, all the sub-project sites are not identified yet, therefore, sensitive places around the sites having rich biodiversity or living natural resources are not identified yet. However, all the sites in rural settings and Haor areas in North-East region of the country are more likely to have biodiversity in closer proximity to the sites, which need to be conserved very cautiously. All these biodiversity rich areas including the location of Ecologically Critical Areas will be identified the screening of each sub-project, and necessary assessment and mitigation (preferably conservative) plan will be put in place that will be proportionate to the potential risks and impacts.
ESS-7 Indigenous-Peoples/Sub-Saharan African Historically	Ensure that the development process fosters full respect for affected parties' human rights, dignity, aspirations, identity, culture, and natural resource-	Applies when the Indigenous Peoples are present or have a collective attachment to the land, whether they are affected positively or negatively and regardless of economic, political or social vulnerability. The option	Some parts of Rangpur, Rajbari and Habiganj are inhabited by different indigenous groups of people, and if the project implement any sub-projects in those areas, those groups

Underserved Traditional Local Communities	based livelihoods. Promote sustainable development benefits and opportunities in a manner that is accessible, culturally appropriate and inclusive. Improve project design and promote local support by establishing and maintaining an ongoing relationship based on meaningful consultation with affected parties. Obtain the Free, Prior, and Informed Consent (FPIC) of affected parties in three circumstances. Recognize, respect and preserve the culture, knowledge, and practices of Indigenous Peoples, and to provide them with an opportunity to adapt to changing conditions in a manner and in a timeframe acceptable to them.	to use different terminologies for groups that meet the criteria set out in the Standard. The use of national screening processes, providing these meet World Bank criteria and requirements. Coverage of forest dwellers, hunter gatherers, and pastoralists and other nomadic groups. Requirements for meaningful consultation tailored to affected parties and a grievance mechanism. Requirements for a process of free, prior and informed consent in three circumstances.	will be rigorously and meaningfully consulted from the design stage of each subproject, in order to ensure that their rights, dignity, aspirations, identity, culture, natural resource based livelihoods are not affected at all. Every measures have to be put forth to avoid any adverse impacts on the people and promoting development benefits and opportunities for that group in a manner that is accessible, culturally appropriate, inclusive and sufficiently informed.
ESS-8 Cultural-Heritage	Protect cultural heritage from the adverse impacts of project activities and support its preservation. Address cultural heritage as an integral aspect of sustainable development. Promote meaningful consultation with stakeholders regarding cultural heritage. Promote the equitable sharing of benefits from the use of cultural heritage.	Requires a chance finds procedure to be established. Recognition of the need to ensure peoples' continued access to culturally important sites, as well as the need for confidentiality when revealing information about cultural heritage assets that would compromise or jeopardize their safety or integrity. Requirement for fair and equitable sharing of benefits from commercial use of cultural resources. Provisions of archaeological sites and material, built heritage, natural features with cultural significance, and moveable cultural heritage.	It is very less likely that any cultural heritage will be affected or in threat to be affected by the project intervention, as sites will be selected and finalized from a set of potential sites' listing (based on the findings of a comprehensive survey to be conducted), which are already occupied by primary school facilities or established community infrastructures (incl. public buildings, drainage structures, etc.) or designated sites for jetties, embankments, and so on.
ESS-9 Financial-Intermediaries	Sets out how Financial Intermediaries (FI) will assess and manage environmental and social risks and	Financial Intermediaries (FIs) to have an Environmental and Social Management System (ESMS) - a system for identifying, assessing, managing, and	Not relevant as there is no financial intermediary involved.

	impacts associated with the subprojects it finances. Promote good environmental and social management practices in the subprojects the FI finance. Promote good environmental and sound human resources management within the FI.	monitoring the environmental and social risks and impacts of FI subprojects on an ongoing basis. FI to develop a categorization system for all subprojects; with special provisions for subprojects categorized as high or substantial risk. FI borrowers to conduct stakeholder engagement in a manner proportionate to the risks and impacts of the FI subprojects.	
ESS-10 **Stakeholder-Engagement-and-Information-Disclosure**	Establish a systematic approach to stakeholder engagement that helps Borrowers identify stakeholders and maintain a constructive relationship with them. Assess stakeholder interest and support for the project and enable stakeholders' views to be taken into account in project design. Promote and provide means for effective and inclusive engagement with project-affected parties throughout the project life-cycle. Ensure that appropriate project information is disclosed to stakeholders in a timely, understandable, accessible and appropriate manner.	Requires stakeholder engagement throughout the project life cycle, and preparation and implementation of a Stakeholder Engagement Plan (SEP). Requires early identification of stakeholders, both project-affected parties and other interested parties, and clarification on how effective engagement takes place. Stakeholder engagement to be conducted in a manner proportionate to the nature, scale, risks and impacts of the project, and appropriate to stakeholders' interests. Specifies what is required for information disclosure and to achieve meaningful consultation.	**A separate SEP has been prepared to address ESS10.** An open, transparent, constant and effective engagement between the LGED and relevant stakeholders will ensure the environmental and social sustainability of RIVER project and enhance project acceptance, and will make significant contribution to successful project design and implementation. On this account, an effective engagement with stakeholders has been initiated at the very early stage of the project development process through a series of events following different modalities and those engagement activities are continued as per scoping and requirement. Establishing an effective project GRM is also very vital for an all-inclusive and timely responsive project design and implementation Environmental and social performance of this project significantly rely on the fact that the grievances are redressed in an appropriate manner within a strict timeframe. However, GRM system in no way will make constraint to the access of national judicial system.

Environmental and Social Directive for Investment Project Financing	This Directive applies to the Bank and sets out the mandatory requirements for the implementation of the Environmental and Social Policy for Investment Project Financing (IPF).	It lays down the following responsibilities of the Bank to manage ES risks and impacts as below: a) undertake its own due diligence of the ES risks and impacts related to the Project; b) support the Borrower to engage in meaningful consultation with stakeholders, in particular affected communities, and in providing Project-based grievance mechanisms; c) assist the Borrower Applies to Bank in addressing E&S aspects of this project in identifying appropriate methods	Applies to Bank in addressing E&S aspects of this project
Bank Directive Addressing Risks and Impacts on Disadvantaged or Vulnerable Individuals or Groups	This Directive establishes directions for Bank staff regarding due diligence obligations relating to the identification of, and mitigation of risks and impacts on, individuals or groups who, because of their particular circumstances, may be disadvantaged or vulnerable	It requires the Bank task team to support the borrower in establishing arrangements for the undertaking and preparation of the environmental and social assessment of the project as required by ESS1. It reviews the terms of reference for the environmental and social assessment to verify that (a) identifies (or requires the identification of) groups or individuals affected by the project that may be disadvantaged or vulnerable; and (b) requires an assessment of project risks and impacts, and identification of differentiated mitigation measures, as they pertain to the disadvantaged or vulnerable individuals or groups that are identified.	Applies to Bank in addressing E&S risks and impacts on disadvantaged and vulnerable persons or groups that are identified in this project areas.
General EHS Guidelines, April, 2007, IFC	The General EHS Guidelines contain information on cross-cutting environmental, health, and safety issues potentially applicable to all industry sectors	Requirements on environmental, health, and safety issues during construction of project road.	Applicable to all sub-project construction sites where workers are employed, and H&S risks can be generated for all who uses/works in the site or living in the surroundings.

3.6 Gap Analysis of World Bank Requirements and National Laws

A gap analysis between WB's ESSs and GoB Regulations was conducted and the results of the gap analysis indicated that the Environmental and Social risk assessment and management system for development projects in Bangladesh is open-ended and similar to other country's ESA systems, does not cover all the World Bank ESF's ES Standards. The ECR'97 that categorizes the industries based on potential risks/impacts has not put any guidance on the ways to classify a project, which includes different industries (e.g., construction of bridges, culverts or roads, buildings, etc.) under a single title. The Department of Environment (DoE), which is the legislative body for upholding this instrument, generally gives a clear indication when the project proponent approaches to the authority and there are also several guidelines for industries promulgated from the DoE which in principal cover most of the project activities undertaken in the country. Further, the ECA/ECR does not even define the scope of the EIA study (or the IEE), leaving it to the argument for EIA preparation and the scope is determined through initial assessment/screening. The coverage of the EIA study therefore would depend on the expertise of the EIA team or the DoE reviewers. There is no assurance that each ES Standard (1-8 and 10) are considered in the EIA study and the formulation of the ESMP. Although the EIA is heavy towards the environmental aspects, more and more social issues are incorporated in the assessment. Moreover, the practice under normal circumstances does not include labor management issues. Another critical gap pertains to lack of provisions for requiring the preparation of project-specific ES management plans. The eminent domain land acquisition system for example does not require the preparation of RAP in case of having only the non-titled entities. The projects are also not required to formulate their own Labor Management Procedures/Plans. Given the gaps, this ESMF will follow the most stringent standards and requirement. Table 3.7 below has given an overview of the gaps between GoB laws and WB's ESSs and steps to be adopted to address those gaps for this project.

Table 3.7: Gaps between GoB Laws and World Bank ESSs

WB ESF Standard	Gaps in National Policy/Legal Instruments (in relation to ESSs)	Gap Filling Measures
ESS1: Assessment and Management of Environmental and Social Impacts and Risks	(i) EIA study screening and scoping do not guarantee coverage of all ESSs in the assessment. (ii) EIA study does not advocate to include both the environment and social impacts at same scale but the ESF does. (iii) The stakeholder engagement during the conduct of the EIA is limited and the EIA report is not disclosed.	ESMF has has put forth all relevant measures to follow the ESS1 requirements, given in the relevant sections of Environmental Management Procedures. It's obvious from all the previously promulgated document from the department of environment (DoE) that none of the acts, rules or guidelines put adequate emphasis on addressing social impacts in Environmental Assessment, and stakeholder engagement or disclosure of information was not set obligatory (the requirement was not evident in any legal documents). However, in recently (Feb' 2021) circulated 'EIA Guidelines for Industries' by the DoE has incorporated both of the said requirements, which supplements the requirement set by the relevant ESSs.

ESS2: Labor and Working Conditions	(i) The Labor Act does not specifically require that development be assessed and reviewed in terms of labor and working conditions including OHS requirements before approval. (ii) The Labor Act does not require development projects to prepare Labor Management Plans/Procedure or OHS Plan.	A separate LMP has been prepared which will guide requirements for OHS plan. The labor management procedure will be prepared to regulate working condition and management of workers relation including worker specific GRM, terms and conditions of employment, non-discrimination and equal opportunity, GBV, protection of workforce, the prohibition of child/forced labor, safe working conditions, and provision of OHS.
ESS3: Resource Efficiency and Pollution Prevention and Management	Existing energy and water conservation policies, laws and regulations do not require development projects to assess resource efficiency issues and incorporate resource efficiency measures in their ES risk management plans.	ESMP to be developed for each sub-projects to address this issue, and incorporate mitigation measures for efficient use of water resources.
ESS4: Community Health and Safety	Covered under 'EIA Guidelines for Industries' but the systems/laws do not provide clear requirements for the development project and implementation.	DoE Environmental clearance in general always recommends to careful vigilance or oversight on Community health and safety issues, irrespective of project nature and location. Risks related to sub-project specific community health and safety will be screened out, and necessary assessment and mitigations measures will be in place as part of Environmental and Social Management Procedure..
ESS5: Land Acquisition, Land Use Restriction and Involuntary Resettlement	ARIPA 2017: (i) does not require the preparation of RAP in case of non-titled entities; (ii) does not provide compensation or assistance to those who do not have formal legal claim to the land; (iii) does not provide transitional allowances for restoration of livelihoods for informal settlers; (iv) relies on cash compensation, no developmental objectives; (v) no provision to give special attention to the vulnerable groups (vi) valuation of lost asset is not based on "replacement cost' standard	Though a separate RPF has been prepared for the project, any potential sites which are at risk of requiring land acquisition will be dropped out from the proposed through a negative list. If any unavoidable issues/circumstances arise, for example, informal settler on a public land in a school premises need to be resettled and compensated; requirements set in ESS5 will be followed and incorporated in RAP (Resettlement Action Plan).
ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	No equivalent requirements on: (i) the application of hierarchy of measures; (ii) the preparation of Biodiversity Management Plan; (iii) differentiated measures on types of habitats. in any of the national instruments.	The project will apply mitigation hierarchy measures in Environmental and Social Assessment process as directed in ESS1, and differentiated measures will be adopted based on the types of habitats that a sub-project/activity may find within the influence area.

ESS7: Indigenous People	None of the national legal binding /regulatory documents articulates the equivalent requirements on: (i) coverage of IP impacts in the IEE/ESIA; (ii) special treatment or differentiated approach to IPs and vulnerable groups; (iii) conduct of FPIC; (iv) development of IP Plan.	Appropriate assessment on relative vulnerabilities and impacts due to the project activities will be conducted or identified, if any IP community is found at or near any sub-project sites; Indigenous People Development Plan (IPDP) may be necessary to develop by the consultants, in light of ESS7 and ESS1. Differentiated approaches for different groups/clans will be rationalized as well in the plan and monitoring on implementation will be stringent Activities requiring FPIC shall be screened out and no sub-project will be implemented without having full consent from the respective Indigenous Groups (Smaller Ethnic Communities, SEC).
ESS8: Cultural Heritage	No equivalent requirements on: (i) the application of hierarchy of measures; (ii) the development of Cultural Heritage Management Plan; (iii) the development and adoption of project-specific Chance Find Procedures; and (iv) the engagement of cultural heritage experts.	World Bank's Chance Finding procedure will be followed, if cultural heritage or resources are found at any point.
ESS9: Financial Intermediaries	Not applicable to country system. Project proponents regardless of funders are subject to the same country laws.	N/A
ESS10: Stakeholder Engagement and Information Disclosure	The ECA/ECR does not specifically require consultation but the IEE/ESIA guidelines issued by DOE and other agencies recommends public consultations during scoping and the preparation of the IEE/ESIA. There is also no provision for any stakeholder engagements during project implementation	A separate SEP has been prepared. Guideline for stakeholder's engagement provided in the project SEP/ESMF will be followed.

3.7 Application of GoB Policies, Acts and Rules on RIVER Project components and Project Categorization

The legislations relevant to the environmental assessment for the RIVER project components are the Environmental Conservation Act 1995 (ECA'95) and the Environmental Conservation Rules 1997 (ECR'97). Article-12 of Environment Conservation Act '1995, the key Act governing environmental protection in Bangladesh, clearly states the requirement of obtaining environmental clearance certificate in a prescribed manner from the Director General of DoE before commencing operation or establishment, and one of the key procedures to obtain the Environmental Clearance Certificate is to undertake an environmental assessment. This assessment might simply be a screening and categorization or an IEE or a comprehensive EIA. In order to set an illustrative directive for abiding by the act, Bangladesh Government through the Environmental Conservation Rules '1997 and its subsequent amendments, as specified in rule 7(2), present a categorization of all the potential industrial

interventions or projects into four distinct types- Green, Orange A, Orange B and Red, considering the site of the interventions and impact on the environment.

The procedure and required documents for obtaining environmental clearance in favor of each category have also been mentioned in the ECR. As part of a government entity, LGED is obliged to abide by all these acts and rules, in addition to other GOB acts, rules or guidelines.

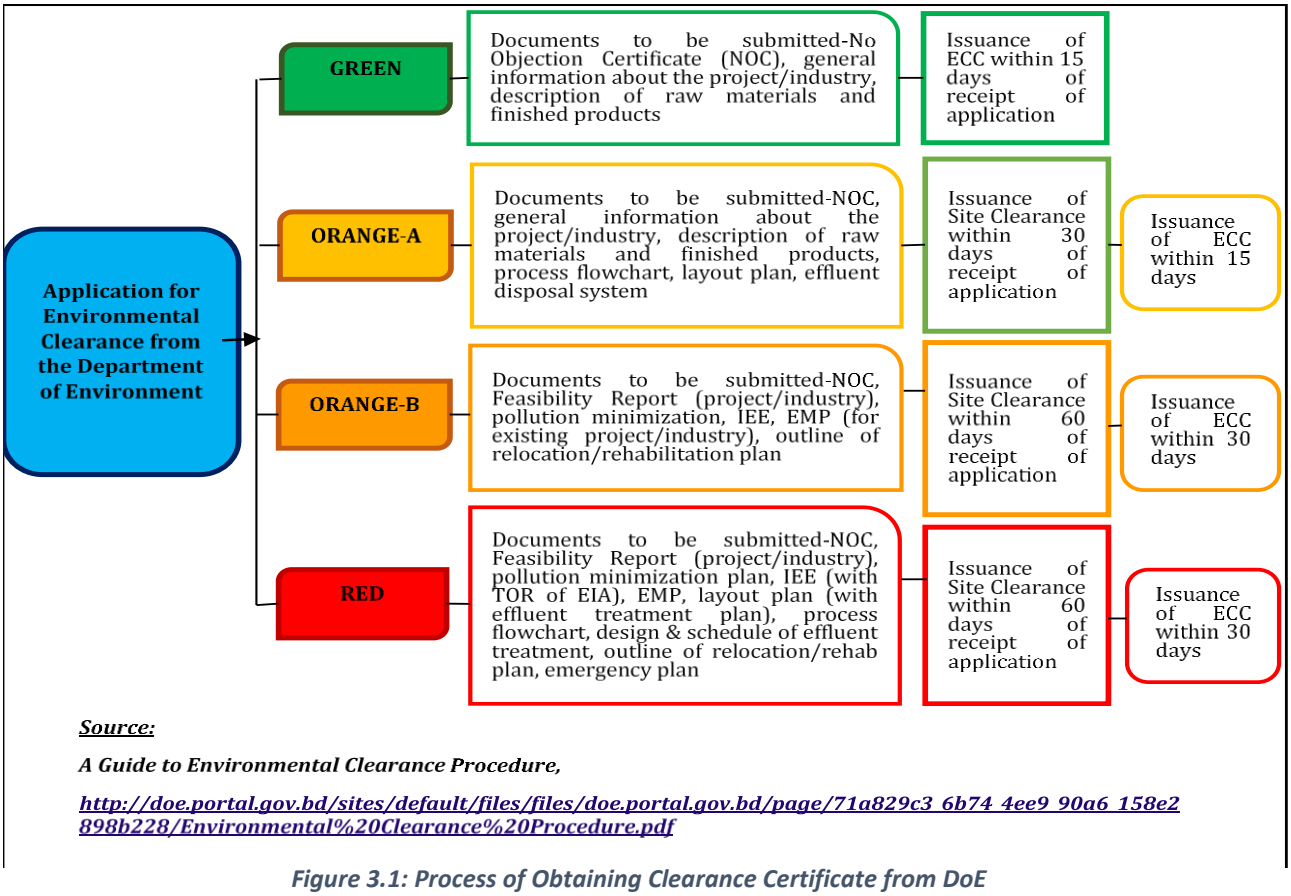
As per ECR'97, most the components/sub-components and associated activities under this project are more likely to fall in 'Orange B' Category. Activities such as ' repair/rehabilitation of Jetties/ Landing Stations' , 'repair/rehabilitation of rural markets, 'Installation of solar PV/Nano-grid/thunder protection system' are not in the listed items under the ECR'1997 and may not fall under any specific category suggested by the DoE. However, activities of these subprojects involve minor civil works and construction impacts will be very less to negligible and confined within a tiny/smaller areas. Considering the nature and size of the project activities it is expected that the impacts associated with those project components would be similar to the other listed components, which are of either 'Orange-A' or 'Orange-B' Category. During the detailed design stage, the study team and LGED should consult with the DoE to take the final decision for the level of assessment and further clearances. Initially, it is suggested that the project should conduct Environmental and Social Assessment and prepare ESMP for those activities prior to the start of actual intervention.

It is the responsibility of the IAs to conduct ESA and prepare ESMP of the project activities, the responsibility to review ESA and ESMP *for* issuing Environmental Clearance Certificate rests on DoE. Though, the project involves a good number of sub-projects/activities under different work packages, a sample ESA (IEEs) along with respective site-specific ESMP will suffice the requirements for obtaining clearance certificate in favor of the project. The Department of Environment (DoE), the technical arm of the Ministry of Environment, Forest and Climate Change (MoEFCC) is the regulatory body and the enforcement agency of all environmental issues. Like all other projects, this project also needs to meet the requirement of the DoE. ***The procedures for "Orange B" Category include submission of:***

- An Initial Environmental Examination (IEE) [sample IEE reports for this project], and
- An Environnemental Management Plan (EMP) [i.e., respective ESMPs]

Environment clearance has to be obtained by the respective implementing agency or project proponent (private sector) from DoE. The environmental clearance procedure, as presented in figure 3.1, for Orange-B Category projects can be summarized as follows:

(1) Application to DoE for Obtaining Site Clearance
(2) Applying for Environmental Clearance with submitting necessary documents (NOC, Feasibility Study Report, sample IEEs, ESMF, etc.) online and presenting the same as hardcopies
(3) Obtaining Environmental *Clearance*
(4) Clearance Subject to Annual Renewal.



Source:

A Guide to Environmental Clearance Procedure,

http://doe.portal.gov.bd/sites/default/files/files/doe.portal.gov.bd/page/71a829c3_6b74_4ee9_90a6_158e2898b228/Environmental%20Clearance%20Procedure.pdf

Figure 3.1: Process of Obtaining Clearance Certificate from DoE

3.8 Application of WB ESSs

All ESSs will be applicable in the RIVER Project, except the ESS 9: Financial Intermediaries. The project components will involve minor civil works confined within smaller sites, and on government lands only. Anticipated environmental impacts will be addressed through implementation of various mitigation measures under supervision of PIU. The project will use mostly the local labors from the local communities, therefore, risks related to social issues and gender based violence/SEA are likely to be limited. Moreover, the project will follow standard Environmental and Social Codes of Practices throughout the cycle. Considering all the backgrounds, possible site locations and interventions, and LGED's capacity to sound implementation, the Environmental and Social Risk Classification (ESRC) of the RIVER Project has been classified as 'Moderate',

CHAPTER 4: ENVIRONMENTAL AND SOCIAL BASELINE

4.1 Introduction

The objectives of the baseline study were to gather information on the existing physical and ecological surveys and other studies (e.g., physical infrastructures, water supply and sanitation, solid waste management, water quality, and noise level measurements) of the areas within and around the project sites, and to assess peoples' perception on different aspects of the proposed project. The data and information gathered during the baseline study provide a detailed description of the existing conditions of physical and biological environment in and around the project areas. The possible environmental impacts of the sub-projects will be evaluated against these baseline environmental conditions.

4.2 Description of Environmental Baseline

General Background of the project area

The project area is spread over fourteen districts of Bangladesh, which fall in four different administrative divisions of the country. Among the districts, Sunamganj is the biggest district in areas covered, while Rajbari is the smallest one. Rangpur, Bogura, Faridpur, and Sunamganj are among the districts in respective divisions to have the highest numbers of administrative units (Upazila/Union); therefore, these districts seem to be more capable of taking coordinated efforts in disaster management.

Figure4.1: Administrative divisions and areas in project districts

Division	Districts	Area (sq. km)	No. of Upazilas/ Unions	No. of Pourashavas/ Municipalities
Rangpur	Nilphamari	1643.40	06/60	04
	Lalmonirhat	1247.371	05/45	02
	Kurigram	2245.04	09/72	03
	Rangpur	2400.56	08/76	City Corporation-01, Pourashava-03
	Gaibandha	2179.27	07/81	04
Rajshahi	Bogura	2919.00	12/108	12
	Sirajganj	2497.92	09/83	07
	Pabna	2371.50	09/74	09
Dhaka	Madaripur	1144.96	04/59	04
	Faridpur	2072.72	09/81	07
	Rajbari	1092.30	05/42	03
	Gopalganj	1489.92	05/68	04
Sylhet	Sunamganj	3747.18	11/87	04
	Habiganj	2636.58	09/77	06
Total		29,687.72 (20.12%)	108/1013	72/ CC-01

Presence of municipalities or pourashavas in a district demonstrates the progress of urban development in the areas along with associated urban support services that supports the population to secure knowledge in disaster management and preparedness options, and develop urges for education for their children.

The project area comprising of fourteen districts, covering 29,688 square kilometer of area that shares 20.12% of the total area of the country. This project intervention, thus, are targeting one-fifth areas of the country, where the recurring flooding events take the tolls at enormous scale, and building resilience/adaptation against the flood is pivotal for realizing the economic development in course of time.

Bio-Physical Environment

Climate

Bangladesh has a subtropical monsoon climate characterized by wide seasonal variations in rainfall, high temperatures and humidity. The most striking feature of its climate is the reversal of the wind circulation between summer and winter, which is an integral part of the circulation system of the South Asian subcontinent. There are three distinct seasons in Bangladesh: a hot, humid summer from March to June; a cool, rainy monsoon season from June to October; and a cool, dry winter from October to March. In general, maximum summer temperatures range between 30°C and 40°C. April is the warmest month in most parts of the country. January is the coldest month, when the average temperature for most of the country is about 10°C.

Table 4.2: Climatic Sub-Regions of project districts

Division	Districts	Climatic Sub-Regions
Rangpur	Nilphamari,	Northern part of Northern Region and North-Western Climatic Region
	Lalmonirhat	
	Kurigram	
	Rangpur	
	Gaibandha	
Rajshahi	Bogura	North-Western Climatic Region (part of Pabna- South Western Zone)
	Sirajganj	
	Pabna	
Dhaka	Madaripur	South-Western and South-Central Region
	Faridpur	
	Rajbari	
	Gopalganj	
Sylhet	Sunamganj	North-Eastern and South-Central Region
	Habiganj	

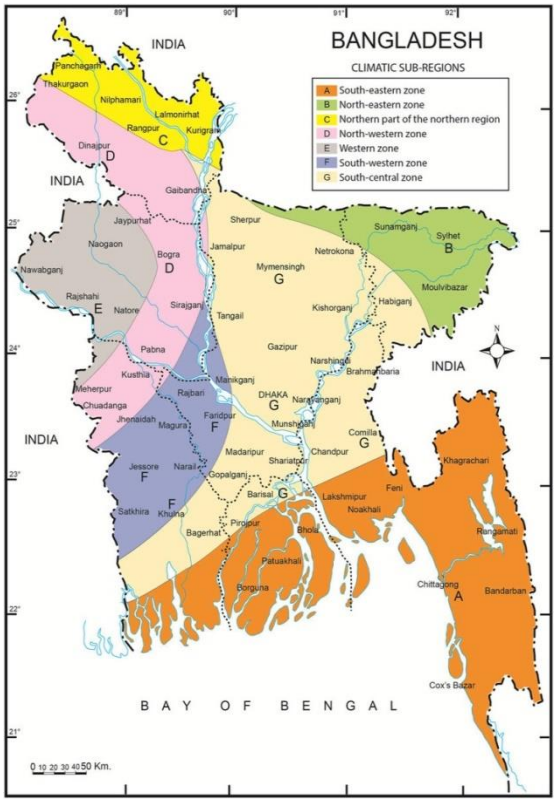


Figure 4.1: Climatic Sub-Regions in Bangladesh

There are widespread differences in the intensity of the seasons at different places of the country and based on these differences, Bangladesh can be divided into seven distinct climatic zones (refer to table

4.2 and figure 4.1). The project districts under the Rangpur division fall within Northern part of the northern region and North-western climatic region. The first climatic zone is an area of extremes, mean max. temperature goes well above 32°C whereas in winter the mean temperature becomes below 10°C. Dry summer, with a scorching westerly wind, and wet rainy season with 2,000 to 3,000 mm of rainfall further characterize the variation. The later region are of lesser extreme, the rainfall is lower that makes the area both atmospherically and pedologically drier.

The project districts under Rajshahi division, especially Bogura, Sirajganj and western part of Pabna fall into the same North-western climatic region, except South-eastern part of Pabna falls in South-western climatic zone, where rainfall is between 1500 mm and 1800 mm and the mean summer temperature is below 35°C, but heavier dew-fall in winter.

Rajbari and part of Faridpur under Dhaka division show the climatic characteristics of South-Western climatic zone; Madaripur and Gopalganj demonstrate the characteristics of South-central climatic zone where the rainfall is abundant (above 1,900 mm) and the range of temperature is much lesser than western part, and most of the several hail storms, nor'westers and tornadoes are recorded in this area.

Greater part of Habiganj district fall in the South-central climatic zone, but Sunamganj lies within North-eastern climatic zone where the mean maximum temperature rises rarely above 32°C, but mean minimum is 10°C or below. Average humidity in this zone is relatively higher and this zone is the cloudiest part of the country. Winter rain is much appreciable, where the Fog is also very common in the same season.

These prevailing climatic conditions contribute in soil formation, local hydrology and sometimes the types of natural disasters the respective zone faces.

Hydrology and Water Resources

Availability of fresh water in Bangladesh is highly seasonal and depends on monsoon rainfall both inside and outside of Bangladesh in the GBM (Ganges-Brahmaputra-Meghna) catchments. Monsoon accounts for 70 – 85% of annual rainfall, and about 92% of the annual run-off; 8% is generated by rainfall within the country. The entire water ecosystem of Bangladesh, comprised of the GBM Rivers, their tributaries and distributaries, and perennial and seasonal water bodies like haors, baors and beels, is characterized by this seasonality of rain and its variability. All three river systems originate outside Bangladesh. Of the 230 rivers in the country 57 are trans-boundary rivers and Bangladesh is situated at their lowest points. Of the 57, 54 come down from India and 3 from Myanmar. The same pattern of seasonality in rainfall is applicable to river flows as well, as river flows greatly depend on monsoon rainfall and the summer snow melt in the upper Himalayas.

The hydrology of the proposed project districts are inextricably related to the presence of some big rivers flowing across or through the areas, some of those are tabulated in Table 4.3. Among the districts, Rangpur is crisscrossed by the river Donai, Ghagat, Tista, and Brahmaputra-Jamuna, while Karatoya flows through the district Bogura, and the hydrology of Faridpur district is largely dependent on the flows of river-Padma, Kumar, Arial Khan and Banar. Pabna sees the presence of two mighty river system-Ganges-Padma and Brahmaputra-Jamuna. All these rivers contribute in replenishing the groundwater reserves in the districts as well as maintaining the total water budgeting that has a tremendous effect on local agricultural yields.

Table 4.3: Major rivers in the covered districts

Name of the rivers	Length (Km)	District Covered (covered length)
Donai-Charalkata-Jamuneswari-Karatoya	363	Rangpur (120), Bogura (98), Pabna(62)
Tista	113	Rangpur (70)
Ganges-Padma	355	Pabna (60) Faridpur (80)
Brahmaputra-Jamuna	150	Rangpur (75) Pabna (75)
Ghagat	247	Rangpur (237)
Banar	162	Faridpur(96)
Kumar	130	Faridpur (101)
Arial Khan	163	Faridpur (64)
Source: Bangladesh Water Development Board 2018		

Sunamganj, among all the 14 project districts is very rich in terms of having presence of large number of standing water bodies, especially haors and Beels, including Tanguar Haor, Kahabil Matin Haor, Banuar Haor, Sanir Haor, Rahimpur-Dupkushi Beel and so many other water bodies. Habiganj also has got many of such kind of water bodies. Eklaspur Hazhagi Beel in Bogura and Kagdir Baor in Faridpur are also famous for their presence with affluent aquatic habitats including different varieties of fishes and other aquatic faunal species. Table 4.4 presents some of the major water bodies in the project districts. These water bodies also has a great contribution as large water reservoirs providing aquatic ecosystem-based support services and a significant source of protein based nutrition for the poor people in the country.

Table 4.4: Major water bodies/Haor-baor/lake

Major Water Bodies/Haor-Baor/Lake	District
Tanguar Haor, Kahabil Matin haor, Chaular Haor, Kanamiya Haor, Pasua Haor, Sanir Haor, Banchapar Haor, Bohabula-Baldar Beel, Rahimpur-Dupkushi Beel	Sunamganj
Eklaspur Hazhagi Beel	Bogura
Kagdir Baor	Faridpur
Haitula haor, Raoband Haor, Pipir Haor, Haitula Haor, Medarkandi Haor, Sat Halia Haor	Habiganj

Though it is not confirmed yet whether or which water bodies exist by or near to any sub-project sites, necessary precautions or code of conducts have to be followed in order to avoid/ minimize potential events of water pollution that may disrupt the quality of water, and pose threat to the aquatic biodiversity and ecosystem services

Physiography and Soil

The country is divided into three broad physiographic units belonging to three distinct geological ages:

A. Tertiary hills occupying 12% area
B. Pleistocene terraces covering 8% area and

C. Recent floodplains spreading about 80% area of the country

These three physiographic units are again categorized into 20 different physiography considering their geomorphology and origin of soils.

All the project districts under Rangpur division fall in Teesta floodplain, with high to medium high land coverage. The soil type is Sandy loam to Silty-clay-loam. Whereas, Barind tract dominates the area of Bogura, and Sirajganj and Pabna relates to two other floodplain areas. All the districts in Dhaka division are physiographically the part of Ganges floodplain, while the two districts in Sylhet division falls in Sylhet Basin and partly in Old Meghan Estuarine Floodplain. Physiographic division and soil types of project districts are given in table 4.5.

Table 4.5: Physiography and soil type of the proposed districts

Division	Districts	Physiography	Land & Soil Type
Rangpur	Nilphamari	Teesta Floodplain	High & Medium High Land; Sandy loam, loamy, Silt-Clay-loam soil
	Lalmonirhat		
	Kurigram		
	Rangpur		
	Gaibandha		
Rajshahi	Bogura	Barind Tract, Karatowa-Bangali Floodplain, Lower Atrai Basin (Pabna-Ganges FP)	Bogura-Medium low, Grey, Silt loam and silt clay-loam; Sirajganj and Pabna-High, Medium High, Silt loam, Silt clay-loam
	Sirajganj		
	Pabna		
Dhaka	Madaripur	Ganges Floodplain	Medium high, medium low; Silt loam, Silt clay-loam
	Faridpur		
	Rajbari		
	Gopalganj		
Sylhet	Sunamganj	Sylhet Basin, Old Meghna Estuarine Floodplain (Habiganj)	Medium low to very low; Heavy silt clay loam, Grey color
	Habiganj		

Natural Land Coverage

Natural Land Coverage shows the potential sites for any development activities in a district. Terrestrial barren land is suitable for every physical development works to take place, whereas extent of inland water bodies in a district may restrict some of the development activities, or that may support developing those projects, which are more related to the development of natural resources or so on. Similarly, coastal water bodies and intertidal areas corroborate some very distinctive land cover features, which may not be suitable for all kinds of development activities. However, none of the sections in RIVER Project districts falls within the coastal water or inter-tidal areas; and Sirajganj has got the biggest amount of terrestrial barren land area followed by Habiganj; and Sunamganj tops in having the biggest area in Inland water bodies (refer to table 4.6).

Table 4.6: Land cover categories in the proposed districts

Division	Districts	Major Land Cover Categories (Area in Hectares)	
		Terrestrial Barren Land	Inland Water Bodies
Rangpur	Nilphamari	0.00	21833.46
	Lalmonirhat	0.00	9559.70
	Kurigram	0.00	57569.00
	Rangpur	0.00	36118.40
	Gaibandha	0.00	40701.00
Rajshahi	Bogura	0.00	41851.89
	Sirajganj	8595.22	100479.72
	Pabna	0.00	52202.00
Dhaka	Madaripur	650.00	47127.34
	Faridpur		
	Rajbari	750.00	26248.00
	Gopalganj	0.00	78598.20
Sylhet	Sunamganj	0.00	111952.15
	Habiganj	14238.00	60565.00

Source: Ministry of Fisheries 2019

Environmental Quality

i) Air Quality by reference districts

In 2019, Department of Environment conducted a survey campaign on air quality testing in several selected districts in Bangladesh; none of those is the project districts of RIVER. However, considering the close proximity from the districts in the respective divisions, Rajshahi from Rajshahi division, Narayanganj form Dhaka Division, Sylhet from Sylhet division have been chosen as reference districts to have a rough idea of how the air quality in those districts and surrounding project districts are evolved. Data for any reference point/district of Rangpur division was not found from the same source; hence, no information was presented for that division. The quality of air across the districts in Bangladesh should differ significantly for the effects of urbanization, temperature/climatic difference, and effects of blowing wind directions, density of people and commuters, and such other criteria. In comparing with the Country standard for all the parameters' value in following table, Air quality in the districts near to Dhaka is more likely to have much high concentration of pollutants as observed in the table 4.7, specifically particulate matter (may originating from construction works) and NOx (from vehicular movement). Particulate matters also can be originated from agricultural fields, car engines, power plants, etc. However, air quality in most of the project districts is expected to be within the tolerable and country standard limit, as those districts do not have a good industrial setups; but the elevated level of $PM_{2.5}$ from the agricultural fields and construction works and this level of $PM_{2.5}$ may get further elevated if suggested code of conducts/ mitigation measures are not followed in the working sites. In fact, effects of winds during the dry season and vehicular movement for construction works at site will also deteriorate the air quality for the time being. Table 4.7: Air quality in reference districts

Division	Reference Districts	Concentration level of particulate matter (PM_{10})	Concentration level of Particulate matter ($PM_{2.5}$)	Concentration level of tropospheric Ozone (O3)	Concentration level of Carbon monoxide (CO)	Concentration level of Sulphur Dioxide (SO_2)	Concentration level of Nitrogen Oxides (NOx)
Rajshahi	Rajshahi	148.11	73.76	5.14	1.02	2.98	81.56
Dhaka	Narayanganj	229.54	102.45	3.38	1.05	13.10	40.45
Sylhet	Sylhet	98.70	50.37	5.50	1.29	10.03	18.27
Country Standard		**150.00**	**65.00**	**157.00**	**10.00**	**80.00**	**100**

Source: Department of Environment, 2019

ii) Surface Water Quality

Rivers are one of the prominent sources of surface waters in the project districts. As rivers are the final and cumulative receptors of pollution loads from the respective areas and they are mostly interconnected, they govern the hydrogeological settings and quality of a particular area.

River water quality is not measured in Bangladesh quite often, so data in general is not available in secondary sources. However, Department of Environment, as part of their special campaign in 2018 to record water qualities of several rivers across the country, and most of the rivers flowing through the districts under RIVER project were not within the target list. Eight rivers passing by the sample collection points of respective eight districts have been counted and shown in table 4.8. The mighty Jamuna, flowing through Sirajganj district showed the highest pollution concentration in terms of BOD concentration, while Madhumati through Gopalganj showed the lowest pollution concentration in it. It's simply because of the industrialization of Jamuna bank areas in recent years and also the proximity to Dhaka and other nearby industrial or populous districts wherefrom pollution load may find its way to Jamuna. Water from all the rivers tested and tabulated here was found moderately polluted, while the pH level was found within the optimum range. Dissolved oxygen, in Jamuna river at Sirajganj also suffers from oxygen deficiency which is another marker for containing pollution load. Surprisingly, Madhumati in Gopalganj is the only river facing the salinity problem, which is alarming for the river ecosystem in the area, also for all the potential industrial, agricultural and construction sectors, as saline water is detrimental to the use of all these sectors.

Though it is not confirmed yet whether any of the rivers quoted here in the matrix are located at or flowing through the areas which are close to any sub-project sites, this water quality results signifies only a general picture of surface water qualities in those areas; this quality may vary significantly whenever sub-project specific survey and screening procedure will be undertaken in the field. Updated data of Dhaka division for the rivers covering the project area is absent.

Table 4.8: Surface water quality in reference rivers

Division	Districts	Major Rivers	Organic Matter		Physical and Chemical Characteristics		
			Biochemical Oxygen Demand (BOD)	Chemical Oxygen Demand (COD)	pH	Salinity	Dissolved Oxygen (DO)
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*
Rangpur	Nilphamari	Ichamoti	2.2	13.33	7.83	-	6.4
	Rangpur	Tista	2.22		7.51		7.22
	Gaibandha	Brahmaputra	2.2		7.51		7.07
Rajshahi	Bogura	Karatowa	2.15		7.5		7.08
	Sirajganj	Jamuna	4.02		6.94		3.42
	Pabna	Ganges	2.30		7.47		7.14
	Gopalganj	Madhumati	0.75		7.46	0.2	5.06
Sylhet	Sunamganj	Kushiyara	1.98	11	7.97		6.92
Country Standard			**0.2**	**4.0**	**6.5-8.5**		**6.0**

Source: Department of Environment, 2018

Stratigraphy and Seismicity

The major structural elements of the Bengal Basin (Bangladesh) areas are identified by a combination of existing, observable surface features. To the north of Bengal Basin is the Shillong Plateau, a Precambrian block believed to have been moved upward during Pliocene-Pleistocene time. The Dauki Fault borders the southern margin of the plateau. The Indo-Burman Ranges define the eastern margin of the basin, comprising a folded, thrusted and wrench faulted arc complex, developed along the edge of the Eurasian Plate due to subduction of oceanic crust and overlying sediments. In the Bengal Basin the Eastern Fold Belt marks the outermost part of this compression zone. The Rangpur Saddle, a Pre-Cambrian basement high located between the Indian Craton and the Shillong Plateau, to the southwest and northeast respectively, separates the Bengal Basin from the Himalayan Foredeep. The Bogura Shelf area rests on a Pre-Cambrian surface, gradually dipping towards southeast. The shelf itself is 60 to 130 km wide and its southeastern margin is defined by the continental slope. To the east of the slope is the foredeep, where the eastern part is folded as a result of plate collision and currently the folded belt connects the foredeep to the east subdividing the foredeep into two depocentres, the Surma Trough to the north-east and the Hatiya Trough to the south-east, separated by the Tangail-Tripura High. The tectonic map of Bangladesh and adjoining areas is given in figure 4.2 for clearer understanding.

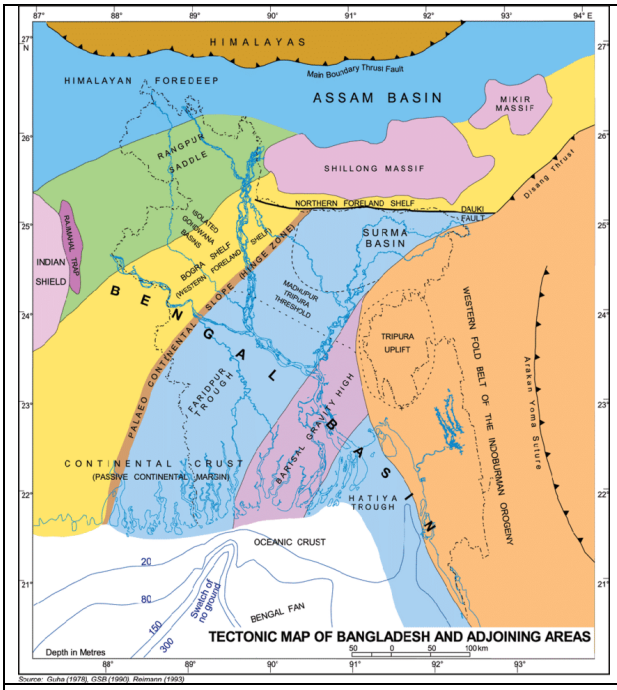


Figure 4.2: Tectonic map of Bangladesh and adjoining areas

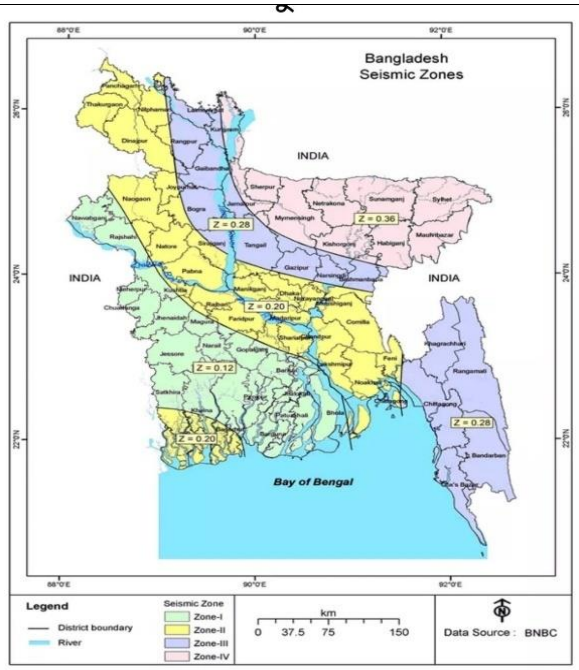


Figure 4.3: Seismic zoning map of Bangladesh (Source: BNBC'2020)

As shown above (figure 4.3) the seismic zoning map divides the country into four seismic zones with different expected levels of intensity of ground motion. Each seismic zone has a zone coefficient, which provides expected peak ground acceleration values on rock/firm soil corresponding to the maximum considered earthquake (MCE). Those coefficient has been counted based on the presence of different seismic plates in and around the country and adjoining areas, the risk potential caused by the movement of plates and release of internal energies; and the project districts fall within the seismic zones as per following table.

Table 4.9: Seismic zoning and risk potential of the project districts

Division	Districts	Seismic Zone	Risk Potential/ Seismic Intensity
Rangpur	Nilphamari	Zone-II	Moderate
	Lalmonirhat	Zone-III	Severe
	Kurigram	Predominantly Zone-IV Some parts in Zone-III	Severe to Very Severe
	Rangpur	Predominantly Zone-III A small part in Zone-II	Moderate to Severe
	Gaibandha	Zone-III	Severe
Rajshahi	Bogura	Predominantly Zone-III A small part in Zone-II	Moderate to Severe
	Sirajganj	Zone-II & III	Moderate to Severe
	Pabna	Zone-II	Moderate
Dhaka	Madaripur	Zone-II	Moderate
	Faridpur	Zone-II	Moderate
	Rajbari	Zone-II	Moderate
	Gopalganj	Zone-I	Low

Sylhet	Sunamganj	Zone-IV	Very Severe
	Habiganj	Zone-IV	Very Severe

The seismic forces on structures should be determined considering seismic zoning, site soil characteristics, structure importance, structural systems and configurations, height and dynamic properties of the structure. The structural system and configuration types for a building or a structure should be determined in accordance with the provisions of Sec 2.5.5.4 in BNBC 2020.

Flooding as natural disaster

Flood is a recurring natural disaster in Bangladesh that occurs into four different forms: i) flash Flood, ii) riverine Flood, iii) localized rain-fed flood and iv) coastal flooding. Flash flood is characterized by rapid rise and attenuation in streamflow or water levels with duration ranging from a few minutes to few hours. It occurs mostly in the north-eastern, south-eastern and north-western part of the country. Local rain-fed flood, occurs generally in the Gangetic deltas in the south-western part of the country, and in the flood plains. This type of flood is caused by excessive local rainfall and drainage congestion. Riverine flood, is a common phenomenon in the country caused by bank overflow and occurs mainly during the monsoon. 80% of total rainfall and river discharge occur during this period. The skewed temporal distribution of streamflow and rainfall results in abundance of water in monsoon, frequently resulting into floods and occasionally causing water scarcity during the dry season. More than a third of the country's population is concentrated on the 100-year's floodplains. The primary source of livelihood of these people is climate-sensitive agriculture. Therefore, when a major flood hits the country, these people suffer the most.

Table 4.10: Major rivers and flood hazard pattern in project districts

Division	Districts	Major Rivers	Flood Hazard Pattern
Rangpur	Nilphamari	Brahmaputra, Dharla, Ghaghat, Karatowa, Tista	Low flood to Severe River Flooding
	Lalmonirhat		
	Kurigram		
	Rangpur		
	Gaibandha		
Rajshahi	Bogura	Jamuna, Bangali, Karatowa, Nagar, Hurasagar, Ganges (Pabna)	Moderate River Flooding
	Sirajganj		
	Pabna		
Dhaka	Madaripur	Madhumati, Chandana, Arial Khan, Padma	Moderate to Severe Flooding
	Faridpur		
	Rajbari		
	Gopalganj		
Sylhet	Sunamganj	Zadukata, Khoyal, Longla, Kushiyara	Severe Flash Flood to Moderate River Flooding
	Habiganj		

Biological Environment

The Rajshahi division can be discussed with the three bio-ecological zones; and these are i) Himalayan Piedmont Plain (1), ii) Barind Tract (2), iii) Teesta Floodplain (4a), iv) Ganges Floodplain (4b) and iv) Chalan Beel (5b). Barind Tract is the largest Pleistocene physiographic unit of the Bengal basin, covering an area of about 7,770 sq km. It has long been recognized as a unit of old alluvium, which differs from the surrounding floodplains. The Barind Tract covers most parts of the greater Dinajpur, Rangpur, Pabna, Rajshahi, Bogra, Joypurhat, and Naogaon districts of the Rajshahi division. Barind Tract is located in the centre and western part of Rajshahi division. The greater part of the tract is almost plain and is

crisscrossed by only a few minor rivers. This tract is considered an ecologically fragile ecosystem with extremely low vegetation cover.

On the other hand, Chalan Beel, one of the largest inland depressions of marshy character and also one of the richest wetland areas of Bangladesh is extended over four adjacent districts, Rajshahi, Pabna, Sirajganj, and Natore. Besides, large parts of Habiganj and Sunamganj are covered with a lot many haors and baors, which are also fresh examples of having rich natural habitats and biodiversity. However, at this preliminary stage, as all the sub-project sites are not identified yet, sensitive places around the sites having rich biodiversity or living natural resources cannot be confirmed. It is noted that all the activities under this project is very site-specific, and impacts of construction/rehabilitation works will be confined within a small sub-project boundary or predefined alignment. Nevertheless, if any of the sites is found in closer proximity to a rich biodiversity area, special cautionary measures will be taken and site specific ESMP will cover the measures and stringent monitoring activities will be implemented as well.

Apart from the regional scenario, the biotic environment in the project areas consists of several ecological subsystems e.g., open agricultural land, homesteads, and roadside vegetation. The open agriculture land ecosystem dominates the area providing widespread habitat types for various species of flora and fauna. The vegetation covers of agricultural lands are different crop species, weeds and other herbaceous plants species. The faunal species in the agriculture land and roadside bush ecosystems include birds, amphibians, snakes rodents and a few mammals. The homestead ecosystem provides the main tree covered areas within rural Bangladesh including the project site. The homesteads are covered by fruit, timber, fuel wood, medicinal plants and various multipurpose tree species. The wildlife species in homestead ecosystem include the birds, amphibians, reptiles, rodents and mammals like mongoose, jackal, cats, etc.

National Parks/Wildlife Sanctuaries/ Ecologically Critical Areas

Only Habiganj district hold the presence of some type of conserved areas, which provide optimum benefits and support services to the habitats of wild species of mixed or some specific types. Among those, Satchari National Park (242.91 ha) and Rema-Kalenga Wildlife Sanctuary (1795.54 ha) are particularly notable, which are of IUCN category II and VI protected areas respectively. It's a broad picture of the presence of any conserved sites in any RIVER project districts; though it is not confirmed whether any sub-projects sites are located in or nearby the identified conserved areas. If any of the sub-projects is found located in or within the close proximity of any reserved places, strict adherence to the relevant ESCoPs and mitigation/management measures shall be attained throughout the project life cycle. It should be noted that none of the Ecologically Critical Areas are located in any of the fourteen proposed districts for targeted implementation under the project.

4.3 Socioeconomic Environment

Demographic and socio-economic baseline helps identify the target beneficiaries, other stakeholders, vulnerable groups and social issues associated with the project. These also present the basis for assessing potential social and economic impacts both during the construction and in the operation phase, and the project outcome in later period. Screening out of the social development factors (literacy rate, health facilities, etc.) in the project areas and its vicinity helps assess the receptor/ beneficiaries' coping capacity and design the social services that may be provided by the project in order to improve the quality of life and achieve the project's socio-economic goal.

Demographic Profile:

According to Population Census 2011, Sirajganj had the highest population in numbers, and the lowest populated district among the project districts was Rajbari, containing only little more than 1 million people, which is manifested from table 4.11. Considering the sex ratio (male-female ratio) Lalmonirhat, Rangpur, Sirgajganj and Sunamganj are in nearly equal in numbers, while highest discrepancies were observed in Kurigram.

Table 4.11: Population size and sex ratio in the project districts

Division	Districts	Population size	Male: Female
Rangpur	Nilphamari	19,07,497	9,59.857: 9,47,640 (1.01:1)
	Lalmonirhat	12,56,099	6,28,799: 6,27,300 (1:1)
	Kurigram	20,69,000	10,10,000: 10,59,000 (0.95:1)
	Rangpur	29,96,336	15,01,647: 14,94,689 (1:1)
	Gaibandha	24,71,681	12,14,563: 12,57,118 (0.96:1)
Rajshahi	Bogura	29,88,567	50.84:49.16 (1.03:1)
	Sirajganj	32,20,814	16,13,173: 16,07,641 (1:1)
	Pabna	22,60,540	11,56,809: 11,03,731 (1.04:1)
Dhaka	Madaripur	11,46,349	5,84,016: 5,62,333 (1.03:1)
	Faridpur	19,12,969	9,63,529: 9,49,440 (1.01:1)
	Rajbari	10,15,519	5,24,624: 4,90,895 (1.07:1)
	Gopalganj	11,72,415	5,77,868: 5,94,547 (0.98:1)
Sylhet	Sunamganj	24,67,968	12,36,106: 12,31,862 (1:1)
	Habiganj	20,89,001	10,25,591: 10,63,410 (0.96:1)

Source: Population Census' 2011

Vulnerability Profile:

Bangladesh Bureau of Statistics (BBS) reported a district level poverty map of Bangladesh, where among the RIVER project districts, Kurigram has the highest numbers of poor people (70.8%, below the upper poverty line) and poverty level in all the project districts in Rangpur division is miserable. Pabna, Rajbari and Sunamganj has the highest poverty among the respective districts in the divisions (table 4.12).
Female-headed households are the other vulnerable groups, who may face certain obstacles in getting the assistance during an event of disaster, and Kurigram district has the highest percentage of female-headed households among all the project districts, followed by Habiganj and Gopalganj.

Small ethnic groups also are more likely to face challenges in getting similar help or assistance during the disaster period, even sometimes in recovery period after the disasters. However, relatively a large number of ethnic population lives in Habiganj; two other popularly inhabited districts are Sirajganj and Rangpur, though percentage of the ethnic groups are very meagre in comparison to the native Bengalis.

Table 4.12: Socio-economic vulnerability of population

Division	Districts	Poverty level (HCR Upper, %)*	Female Headed Households (%) **	Ethnic Population (numbers & %) **
Rangpur	Nilphamari	32.3	11.09	495 (0.03%)
	Lalmonirhat	42.0	11.66	126 (0.01%)
	Kurigram	70.8	17.88	486 (0.02%)
	Rangpur	43.8	13.18	18,561 (0.64%)
	Gaibandha	46.7	16.13	4,312 (0.18%)
Rajshahi	Bogura	27.2	12.37	7,981 (0.23%)
	Sirajganj	30.5	12.22	19,772 (0.64%)
	Pabna	33.0	11.24	1973 (0.08%)
Dhaka	Madaripur	3.7	16.12	76 (0.0065%)
	Faridpur	7.7	15.32	3,233 (0.17%)
	Rajbari	33.8	11.61	1285 (0.12%)
	Gopalganj	29.5	17.81	2,066 (0.18%)
Sylhet	Sunamganj	26.0	14.88	6,911 (0.28%)
	Habiganj	13.4	17.87	65,802 (3.15%)

*Source: *Poverty Maps of Bangladesh, BBS 2016*
***Population and Housing Census, BBS 2011*

Area and Population Density:

Among the 14 project districts, highest number of population live in Siragjonj, and the population density is highest in Sirajgong as per Population Census'2011. Madaripur, Nilphamari and Rangpur are the three major densely populated districts after Sirajganj as shown in table 4.13. However, Sunamganj is the least densely populated district, followed by Kurigram. A large areas in Sunamganj is occupied by a large numbers of haors, which narrows down the habitable places in Sunamganj.

Table 4.13: Area and population density of project districts

Division	Districts	Area (sq. km)	Popn Density (per sq.km)
Rangpur	Nilphamari	1643.40	1215
	Lalmonirhat	1247.371	1007
	Kurigram	2245.04	667
	Rangpur	2400.56	1101
	Gaibandha	2179.27	981
Rajshahi	Bogura	2919	1040
	Sirajganj	2497.92	1842
	Pabna	2371.50	918
Dhaka	Madaripur	1144.96	1036
	Faridpur	2072.72	920
	Rajbari	1092.30	908
	Gopalganj	1489.92	787
Sylhet	Sunamganj	3747.18	659
	Habiganj	2636.58	792

Source: Population Census' 2011

Education and Institutions:

Sirajganj, being located close to the capital and having large urban population across the district, gets top ranking in educational attainment among all 14 districts, as per the Census result shows. Sirajganj has the highest numbers of educational institutions (1563 primary schools) among the districts, which helped the district to come up such high. However, Lalmonirhat and Gaibandha also have very high literacy rate, more than 60%; though Lalmonirhat got much lesser number of schools than many other districts. Sunamganj got the lowest literacy rate, followed by Habiganj. More details are given in table 4.14.

Table 4.14: Literacy rate and educational institutions in project districts

Division	Districts	Literacy Rate (%)	Educational Institutes
Rangpur	Nilphamari	49.69	Primary School-940; Secondary-295; College-45; Technical Training Centre (TTC)-19; PTI-01; University-0
	Lalmonirhat	65	Primary School-776; Secondary-197; College-45; Polytechnic Institute -03
	Kurigram	56	Primary School-1115; Secondary-257; College-43; Polytechnic Institute -01; Technical School & College (TSC)-01; University-0
	Rangpur	48.5	Primary School-1292; Secondary-510; College-62; University-01
	Gaibandha	64.2	Primary School-1251; Secondary-353 College-75; University-0
Rajshahi	Bogura	49.38	Primary School-1603; Secondary-390; College-16+36+45; Govt. Technical College-04; University-01
	Sirajganj	68	Primary School-1563; Secondary-374; College-77; Polytechnic Inst.-01; Private Medical Collge-02
	Pabna	47.4	Primary School-1086; Secondary-202; College-49; Cadet College-01; University-01; Medical College-01; Polytechnic Inst.-01; Textile Inst.-01; Nursing Inst.-01
Dhaka	Madaripur	48	Primary School-677; Secondary-128; Junior High School-27; College-21
	Faridpur	43.95	Primary School-783; Secondary-195; Junior High School-52; College-31; Medical College-01; Teachers Training College-01; Polytechnic Institute-01 Agri Inst.-01; PTI-01; Technical Training Centre-01
	Rajbari	52.3	Primary School-419; Secondary-140 College-25; Technical Inst.-06
	Gopalganj	58.1	Primary School-765; Secondary-157; College-21; University-01; Medical College-01
Sylhet	Sunamganj	35.00	Primary School-860; Secondary-209; College-26; University-01; Medical College-01
	Habiganj	40.50	Primary School-1311; Secondary-95 College-20; Polytechnic Institute-01; Technical School & College-03
			Source: Population Census' 2011

Professional Engagement:

Agriculture is still the dominant profession across the districts; shows the dominance where literacy rate is relatively poor. Highest engagement of population in agriculture is in Habiganj, followed by Madaripur, with 82% and 81% respectively. Lowest engagement in agriculture is manifested in Niphamari, where Agri-labor is 2nd in professional engagement. An overall idea of dominant professional engagement by the population in project districts is depicted in table 4.15.

Table 4.15: Major professional engagement of people in project districts

Division	Districts	Literacy Rate (%)	Profession (%)
Rangpur	Nilphamari	49.69	Agri-45.28; Agrolabor-27.81
	Lalmonirhat	65	Agri-48.03; Agrolabor-22.81
	Kurigram	56	Agriculture 70.41%, commerce 9.45%
	Rangpur	48.5	Agriculture 62.99%, Commerce 13.28%
	Gaibandha	64.2	Agri-65.08%; Commerce-11.85%
Rajshahi	Bogura	49.38	Agriculture 57.32%; commerce 13.63%
	Sirajganj	68	Agriculture 51.14%; Commerce 14.47%
	Pabna	47.4	Agriculture 53.75%; Commerce 14.97%
Dhaka	Madaripur	48	Agri-81%; Commerce 5.97%
	Faridpur	43.95	Agri-68%; Commerce 11.97%
	Rajbari	52.3	Agri-73%; Commerce 9.97%
	Gopalganj	58.1	Agri-76%; Commerce 8.92%
Sylhet	Sunamganj	35.00	Agri-79%; Commerce 13.7%
	Habiganj	40.50	Agri-82%; Commerce 7.97%
			Source: Population Census' 2011

Access to Health Facilities:

Access to Health facilities is one of the key criteria of development efforts that is taken place in respective districts by the government and also measures the status of living. Among the available information (table 4.16), Sunamganj has got the highest number of government hospitals, thereafter Gopalganj having 6 hospitals under government control. Faridpur, Rangpur and Bogura-each got medical college hospitals. Upazila health complex provides the basic treatment facilities to the local people; small scale surgery is also done in those complexes.

Table 4.16: Types and number of health service facilities in project districts

Division	Districts	Literacy Rate (%)	Health facilities (numbers)
Rangpur	Nilphamari	49.69	Hospital-09; Diabetic Clinic-02 Mother & Child Welfare Centre -02 Family Planning Centre-55
	Lalmonirhat	65	Hospital-01; Private Clinic-12 Comm. Clinic-160; Upazila Health Complex -05 10-bed hospital-01; Mother &Child welfare centre-01
	Kurigram	56	Govt. Hospital-01; Upazila Health Complex-08 Private Hospital-02; Eye Hospital -01; TB Clinic-01 Mother &Child welfare centre-01
	Rangpur	48.5	Medical College Hospital-01; Sadar Hospital-01
	Gaibandha	64.2	General Hospital-01; Govt. Hospital-06 Upazila Health Complex-06; Women & Child Welfare Centre-01; TB Clinic-01
Rajshahi	Bogura	49.38	Medical College-01
	Sirajganj	68	General Hospital- 01; Govt. Hospital-15 Private Hospital-09; Eye Hospital-02 Govt. Medical College-01; Upazila Health Complex-08 TB Clinic-01; Mother & Child Welfare Centre-01

	Pabna	47.4	Mental Hospital-01; General Hospital-01 Upazila Health Complex-08; TB Clinic-01 Health Service Centre -02; Health Service Sub-Centre-13
Dhaka	Madaripur	48	General Hospital-01; Upazila Health Complex-03 Health & Family Welfare Centre-50
	Faridpur	43.95	Medical College Hospital-01; General Hospital-01 Upazila Health Complex-07; Union Health Complex-36
	Rajbari	52.3	Govt. Hospital-01; Upazila Health Complex-03 Family Welfare Center-24; Health Sub-Centre-28
	Gopalganj	58.1	Govt. Hospital -06; Private Hospital-02
Sylhet	Sunamganj	35.00	Govt. Hospital-12; Health Centre-22
	Habiganj	40.50	100-bed Hospital-01; Upazila Health Complex-07 Sub-Health Centre-18 (outdoor health facilities only)
			Source: Population Census' 2011

Presence of Ethnic Minorities

There are several ethnic minority groups living in the project districts; primary information based on secondary sources has confirmed their presence. If any site for implementation works under the RIVER project comes closer to the areas where ethnic minority people are living, a specific management plan (Indigenous People Management Plan/ Small Ethnic Community Development Plan) has to be developed and their rights to have an uninterrupted access to their daily activities and resources they are living on must be reinstated. However, negligible impacts may turn to substantial to some of the ethnic minority community for his/her ethnic background. Habiganj district has the highest numbers of ethnic population from different sects/casts, such as Kormokar, Voumik, Bauri, Santal, Munda, Uria, Tati, Kondo, Telenga, Relikhashia, Monipuri, Chouhan, Ohir, Chotri, Bakti, Urang, Utkole, Vojpuri, Vumij, Telegu, etc.; some areas in Rangpur district also is inhabited by Santal, Urao, Pahari, Mushhor, Pahan, Turi, and a very small group of Buno, Bindi, Behara, Bagdi, and Kole live in Rajbari district.

Presence of Historical/Cultural Heritage sites

There are good numbers of important touristic, historical and cultural heritage sites, which have different socio-cultural, economic, religious and touristic values to consider. All these sites need to be conserved and protected from any kind of potential impacts caused by any development activities. Among those, Chandamari Mosque, Chandi Temple, Dolmoncho Temple, Sindurmati Dighi, and Chilmari Port in Kurigram; Mohasthangarh, Pundrabardhan, and Archeological Museum in Bogura; Orakandi Thakur Bari, Ulpur Jaminder bari, House of Jamindar Girish Chandra Sen in Gopalganj, Tanguar Haor, Lauer Gor, Pagla Mosque, Dohalia Jamindar Bari, Gourarang Jamindar Bari, House of Hason Raja, and Shrine of Asim Shah in Sunamganj are some of the known sites, and there are many more in other districts, which might be encountered when the contractors are mobilized in the field and may face the effects of construction works'; every possible measures should be taken to avoid those sites or protect those during the entire project cycle. However, World Bank has a specific guidance on 'Chance Find Procedure' for unidentified heritage/cultural sites which suggests measures if any archeological, cultural or religious sites are found incidentally in or nearby areas of physical interventions, and need to be recovered or conserved in a well-guided ways.

CHAPTER 5: POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS

5.1 Risk Classification Methodology

The assessment of effects and identification of impacts takes into account of any incorporated mitigation measures, and will be largely dependent on the extent and duration of change, the number of people or size of the resource affected and their sensitivity to the change. Potential impacts can be both negative and positive (beneficial), and the methodology defined below will be applied to define both beneficial and adverse potential impacts.

The criteria for determining significance are generally specific for each environmental and social aspect but the magnitude of each potential impact is defined along with the sensitivity of the receptor. Generic criteria for defining magnitude and sensitivity used for the Project are summarized below.

Environmental and social risk classification takes into account relevant potential risks and impacts, such as:

a. the type, location, sensitivity and scale of the Project including the physical considerations of the Project; type of infrastructure (e.g., power plants, airports, major roads, bridges and culverts, etc.); volume of hazardous waste management and disposal;
b. the nature and magnitude of the potential ES risks and impacts, including impacts on greenfield sites; impacts on brownfield sites including (e.g., rehabilitation, maintenance or upgrading activities); the nature of the potential risks and impacts (e.g., whether they are irreversible, unprecedented or complex); resettlement activities; presence of Indigenous Peoples; and possible mitigation measures considering the mitigation hierarchy;
c. the capacity and commitment of the Borrower to manage such risks and impacts in a manner consistent with the ESSs, including the country's policy, legal and institutional framework; laws, regulations, rules and procedures applicable to the Project sector, including regional and local requirements; the technical and institutional capacity of the Borrower; the Borrower's track record of past Project implementation; and the financial and human resources available for management of the Project;
d. other areas of risk that may be relevant to the delivery of ES mitigation measures and outcomes, depending on the specific Project and the context in which it is being developed, including the nature of the mitigation and technology being proposed, considerations relating to domestic and/or regional stability, conflict or security.

5.1.1 Assigning Risk

Risk or impact classification considers the assessment of magnitude, quality or sensitivity of the receiving environment and social receptor in order to determine the significance of each potential impact established using the risk classification matrix given below and in accordance with the ESS1. Risk classification can be divided into four distinctive categories- High, Substantial, Moderate and Low.

Table 5.1: Assessment of Risk Classification

Magnitude of Potential impact	Sensitivity of Receptors				
	Very Severe	Severe	Mild	Low	Negligible
Very High	**High**	**High**	**Substantial**	**Substantial**	**Moderate**
High	**High**	**High**	**Substantial**	**Moderate**	**Moderate**
Moderate	**Substantial**	**Substantial**	**Moderate**	**Moderate**	**Low**
Low	**Moderate**	**Moderate**	**Moderate**	**Moderate**	**Low**
Nil	**Moderate**	**Moderate**	**Low**	**Low**	**Low**

5.1.2 Impact Assessment

This section discusses the guideline to predict the potential and mostly typical impacts on the key environmental and social parameters of the RIVER Project area based on the overall baseline, assessment of project components/sub-components and the primary assessment of the activities.

Demonstration of environmental and social impacts from infrastructure development is a function of the activities that take place during project preparation, construction and operation of the infrastructure, on the one hand, and the particular environmental and social attributes of the local setting on the other. The people, communities and ecosystems that may be affected by a project (receptors) are variable in terms of their proximity to the infrastructure; their sensitivity to influences such as noise, disturbance and emissions; and their ability to adapt to change. The activities involved in construction and operation of infrastructure also vary based on the nature of the project, and how long different activities are carried out in one place. The significance of impacts depends on the particular juxtaposition of activities and receptors in specific locations.
The impacts that arise from particular configurations of infrastructure development activities and landscape features may emerge in different forms and through various pathways. It is useful to consider the types of impacts that may come into play - some of which may be more immediately obvious than others - when assessing the potential effects of a project on people and nature in the surrounding environment. Table 5.2 below explains the Impact categorization and typology adopted for this study.

Table 5.2: Impact Categorization and Typology Adopted for This Study

Impact parameter	Types of impact				Sign
Direction of change relative to baseline conditions	POSITIVE		NEGATIVE		+/-
Magnitude of impact in relation to ability of people and ecosystem to cope with change	NONE	MINOR	MAJOR	SEVERE	D/C/B/A
Spatial extent of effects	LOCALIZED		WIDESPREAD		Loc/Wid
Duration of effects experienced	TEMPORARY		PERSISTENT		Tem/Per
Timing of effects experienced	INTERMITTENT		CONTINUOUS		Int/Con
Nature of cause-and-effect linkage between project activity and impact experienced by receptors	DIRECT		INDIRECT		Dir/Ind
Relationship of project activities to impacts from other sources in landscape	ISOLATED		CUMULATIVE		Iso/Cum

5.1.3 Magnitude of Impact

The assessment of magnitude shall be undertaken in two steps. Firstly, the key issues associated with the RIVER Project are categorized as beneficial or adverse. Secondly, potential impacts shall be categorized as Very High, High, Moderate and Low based on consideration of the parameters such as:

- Ability of people and ecosystem to cope with change
- Spatial extent of the potential impact;
- Duration of the potential impact;
- Timing of effects experienced;
- Likelihood of potential impacts occurring;
- Relationship of project activities to impacts from other sources in landscape

The magnitude of potential impacts of the Project shall be identified according to the categories outlined in Table 5.3.

Table 5.3 Parameters for Determining Magnitude of Impact

Parameter	Very High	High	Moderate	Low/Nil
Ability of people and ecosystem to cope with change	The capacity of ecosystem and people to cope with the impact is not certain	The resilience and adaptive capacity to the impacts is regenerative with extensive management	Ecosystem can cope with the changes with specific planning and management	Ecosystem can cope with the changes with limited responses
Spatial extent of the potential impact	Widespread far Beyond site specific project boundaries	Beyond immediate Project components, site boundaries or local area	Within project boundary	Specific location within Project component or site boundaries with no detectable potential impact
Duration of potential impact	Long term (more than 20 years)	Medium Term Lifespan of the Project (5 to 10 years)	Less than Project lifespan	Temporary with no detectable potential impact
Timing of effects experienced	Potential impact is effectively permanent, requiring considerable intervention to return to baseline	Potential impact requires a year or so with some interventions to return to baseline	Baseline returns Naturally or with limited intervention within a few months	Baseline remains constant
Likelihood of potential impacts occurring	Occurs under typical operating or construction conditions (Certain)	Occurs under worst case (negative impact) or best case (positive impact) operating	Occurs under abnormal, exceptional or emergency conditions (occasional)	Unlikely to occur

		conditions (Likely)		
Relationship of project activities to impacts from other sources in landscape	The activity will cause several effects and difficult to predict and manage with all of its negative impact	The activity will cause effects and relatively easier to predict and manage its negative impact	The activity will cause effects and easy to predict and manage	Temporary with detectable potential impact

5.1.4 Sensitivity of Receptor

The sensitivity of a receptor shall be determined based on review of the population (including proximity/numbers/vulnerability) and presence of features on the site or the surrounding area. Criteria for determining receptor sensitivity of the Project's potential impacts are outlined in Table 5.4.

Table 5.4: Criteria for Determining Sensitivity

Sensitivity Determination	Definition
Very Severe	Vulnerable receptor with little or no capacity to absorb proposed changes or minimal opportunities for mitigation.
Severe	Vulnerable receptor with little or no capacity to absorb proposed changes or limited opportunities for mitigation.
Mild	Vulnerable receptor with some capacity to absorb proposed changes or moderate opportunities for mitigation
Low/Negligible	Vulnerable receptor with good capacity to absorb proposed changes or/and good opportunities for mitigation

5.2 Anticipated Potential Impacts

The proposed RIVER Project will construct resilient flood shelters and rehabilitate/repair a good number of community infrastructures, such as smaller climate resilient shelter connecting and community roads, culverts, bridges, rural markets, landing stages (river jetties), and so on. The size of this type of subproject component is relatively smaller and identical, and the extent of civil works is not significant. In some areas, the resilient shelter needs to be connected through a new connecting road or the existing road needs to be rehabilitated; but the road will be of smaller length and must follow a pre- defined alignment and further acquisition of land will not be entertained from the project end. In some of the proposed shelter areas, the playground/open spaces will be elevated to a flood-free level so that the spaces could be used for sheltering livestock, storage area for fodders, and to cater additional people. As a framework document, potential Environmental and Social impacts of the activities under the resilient flood shelter and rural market components are discussed here for clear understanding and guidance for doing the same for other components.

5.2.1 Construction of Resilient Flood Shelters (including raising lands) and rehabilitation/repair of Rural Markets

The investment on these physical component yields net positive benefit to the local community. The shelters constructed so that they are used as primary schools when there is no disaster. The shelters will be constructed with separate bathrooms for men and women. Safe water supply will be ensured, rain water harvesting facilities is included and provision of solar panels are provided. In addition, connections to existing road will be ensured by constructing a link, if needed. One floor will be constructed for livestock and animals and top floor is for human shelter. Ramp will be provided for disable people and

easy movement of livestock. Rural markets also need to similar type of physical interventions- only smaller civil works for different types of market sheds, and health and sanitary facilities will be ensured. The negative environmental impacts for both of these components will be triggered mostly from the construction related activities. These impacts are mostly temporary and limited within the project boundary. The anticipated impacts are air pollution, noise, drainage congestion and water logging during the construction period, temporary surface water and ground water pollution, etc. Also, the Environmental Health and Safety (EHS) issues like occupational safety of workers and safe movement of teachers & students/people living nearby is vital during the construction period. Alternative schooling facilities have to be ensured during the construction period, by the contractor, so that academic activities is not hampered and continued uninterrupted.

The potential impact assessment has been described below for construction of resilient flood shelter and rehabilitation/repair of rural markets components. These types of subprojects have the similar type of construction activities, covers a wide range of geographical locations, and may use the local workforce to implement the subprojects. The associated potential impacts of these types of components would be mostly similar to other subprojects for the construction period and in some cases during the operation period too in its life cycle.

5.2.1.1 Planning and Design Phase

Land Cover and Land Use Changes (ESS 1, 3, 6)

Construction of different infrastructures including school-cum-flood shelters and raising land may change existing land use and land cover at the local level, though these will be constructed within existing school premise he improvement works are relatively small in nature, and confined within school/market boundary but their quantity is significantly high and will be spread over villages/ unions under different districts. For the ease of construction works or storage of construction materials, roadside land-cover may face some changes.

Loss of natural vegetation and trees (ESS 6)

Siting of proposed infrastructures may require cutting of trees and removal of natural vegetation, which would not be significant in number.

Site readiness (ESS 1, 6)

Law of Bangladesh Government requires that any construction needs permission from local authorities prior to the starting the construction phase. Failure to obtain necessary consents, permits, No Objection Certificate (NOC) can result in design revisions and/or stoppage of the Works. Failure to obtain NOC from the local authority can hamper the entire project, even stop the construction project. In this project, the land is already available to the authority as it is government owned land for all the subprojects. However, the final locations will be selected during the detailed design stage.

The required actions during the pre-construction stage are to (i) Obtain Site Clearance Certificate (SCC) and later Environmental Clearance Certificate (ECC) from Department of Environment; (ii) acknowledge in writing and provide report on compliance all obtained permits, clearance, NOCs, etc.; (iii) collect permission from School Management Committee (SMC) prior to construction.

Contractor Selection (ESS 1)

The success or failure of environmental and social mitigation in infrastructure development hinges to a significant degree on the primary contractor's sense of ES responsibility and commitment to compliance with prescribed safeguards measures.

Labor Sourcing (ESS 2)

Procurement of labor has two main potential impacts, which can be either positive or negative, depending on where most workers come from. First, use of mostly or exclusively non-local labor means that a construction camp will be needed, and this has significant potential for environmental and social impacts. Second, hiring mostly non-local workers is a missed opportunity for the project to bring benefits to the local community. The people who live in nearby areas will bear the brunt of any negative impacts that arise during the construction and operation phases, and employment opportunities will go some way in compensating for inconveniences and discomforts experienced.

In order to minimize and prevent construction camp impacts and maximize the project's benefits to the local community, the primary contractor and all of its sub-contractors should be contractually required to hire mostly or exclusively local residents for construction jobs. This should be stipulated in the bidding documents and contracts. However, a separate LMP has been prepared to minimize the risk associated with labor influx.

Gender Based Violence (GBV) (ESS 1, 2, 4, 10)

The supply of labor is abundant in all the project districts, so labor influx will not significant in any construction works, and labor management will not be critical as well. Hence, incidence of gender based violence/SEA/SH in the construction and labor camp sites, will be very less likely.

The Project's GBV risks are assessed as "Moderate" due to the labor requirements to deliver civil works. The project will develop a stand-alone GBV action plan, if required. The action plan will include a separate grievance redress mechanism with GBV referral pathways and response protocol that will be set up during the project preparation phase. In addition, a supervision team comprising of social and Gender specialists of the PIU and D&SC will monitor and support the implementation of the action plan. The action plan will suggest specific provisions to ensure safety for and feedback from women and girls engaged as workforce. Besides, stakeholders' involvement, GBV sensitization training for the contractors, workers and affected community will be organized to mitigate the potential risks. PIU will include a GBV referral system in its project GRM as the components will not require major civil works. A GBV service provider mapping will also be included in the plan. During the implementation, ESMP and the implementation of GBV Action Plan will be monitored. Training of contractor personnel on GBV issues and relevant expectations/ requirement will be conducted.

Seismic risk (ESS 1, 4)

Seismic risk profile of project districts shows that some districts have severe to very severe risk potential, though the history of seismic hazards is not so prominent in those areas. However, as the areas are situated on active seismic zone, and any events of seismic tremor of more than 6.0 in Richter scale may cause significant casualty or fatality, proper care should be taken while designing the structures. BNBC 2020 has provided due guidance on building structures in seismic zone and that will be adopted in the design. Strong movement of earth or tremor is riskier when construction works are ongoing; so contractors will take initiative in providing recurrent training to the workers/staffs to avoid any potential human loss or damage to properties.

Flooding risks (ESS 1,4)

All the project districts are prone to flooding, especially during the monsoon, from river flooding. However, flash flooding is also very common in some project areas. Flooding, irrespective of its cause, leaves huge losses on agriculture, livestock, lives and livelihood, and losses tend to bigger as the retention time gets wider. During the design phase, intensive consultation events will be conducted to understand the localized nature of flood potentials and destructions, and knowledge/suggestions from local people will be incorporated in shelter/community infrastructure design, optimally within the project scope. Adaptive management options during a flood events will be sought and putting those options in place for building people's resilience against the disaster is very crucial to avoid or minimize the loss to the least.

5.2.1.2 Construction Phase

Air Quality (ESS 1, 3)

Construction shelter buildings/ rehabilitation of rural markets may generate emissions from excavation equipment, other machinery and construction traffic. The emissions may also include greenhouse gases (GHGs) from engine fuel combustion (exhaust emissions) and evaporation and leaks from vehicles (fugitive emissions) and emissions from asphalt works. The emissions from construction activities will deteriorate the ambient air quality and affect the public health. The densely populated areas and crowded market places (bazaars) are particularly vulnerable to these impacts. In addition, dust generated from the above activities will also have impacts on crops and livestock if not properly managed.

Noise Pollution (ESS 1, 3)

Noise and vibration from construction activity can be a serious nuisance for teachers and students in the school and people living near active construction sites, if there are residences in close proximity to the development sites. People staying temporarily (in school) and living in any nearby settlements experience some measure of nuisance during the construction works, particularly if any pile-driving is carried out, or if construction activity is conducted at night. People living along the roads, that will inevitably be used to bring bulk materials to the construction sites, may notice an increase in noise from haul trucks and construction activities such as mixing, hammering etc.

Water Pollution (ESS 1, 3)

Construction activity involving excavation and earthworks inevitably exposes loose soil and dust particles will be blown away to nearby water bodies causing turbidity and water pollution. If soils and stockpiles of erodible materials are inadequately protected from rain and surface runoff, sediment will make its way to local surface waters, and the result will be siltation and sedimentation. These processes will degrade the quality of local waters as habitat for aquatic species, and also lead to clogging of channels and culverts with sediment. If not properly controlled, process water from concrete mixing and pouring can also carry large amounts of fine silt to local waterways, especially where the drains are leading. This increase in turbidity is not likely to have any significant impact on overall water quality and the aquatic fauna primarily because of its temporary and localized nature. The construction camps and other site facilities such as offices and warehouses will also generate considerable quantities of waste effluents.

During construction, both surface and groundwater are at risk of contamination with noxious fluids used in the construction process, including fuels, lubricants. Spills and leaks soak into the soil and make their

way to the groundwater table. Construction camps are a common source of surface water contamination, as toilet facilities are typically rudimentary and likely to leak raw or virtually untreated effluent. This may exacerbate existing surface water quality problems.

Soil Contamination (ESS 1, 3)

Much like water pollution discussed above, soils in the construction area and nearby lands that are used for agriculture will be prone to pollution from the construction activities, construction yards, workers camps and other construction areas. Fuel and hazardous material storage sites and their handling are also the potential sources for soil and water pollution. Improper siting, storage and handling of fuels, lubricants, chemicals and hazardous materials, and potential spills from these will severely impact the soil and water quality and also cause safety and health hazards. If contaminated soil is used for land raising, that will trigger spread of pollution in shelter land as well as health and safety risks of students, users and nearby communities.

Traffic Congestion (ESS 1, 4)

Majority of the project sites will be located in rural settings, or in urban fringe areas. Therefore, the burden of usual traffic will be less in comparison to any urban busy areas. However, it is expected that during peak construction time when heavy vehicles and machineries will be transported at full scale, the extra traffic movement will disrupt the normal traffic, though not significantly. A group of trained personnel can be deployed to manage the traffic at different sections and traffic control measures such as sign posting at strategic places and placing traffic cones to divide/direct the lanes, etc. may be adopted.

Site Clearance and Restoration (ESS 1, 6)

After the completion of the construction activities, the left-over construction materials, debris, spoils, scraps and other wastes from the working sites, and camp areas can potentially create hindrance and encumbrance for the local communities in addition to blocking natural drainage**.**

Occupational Health and Safety (ESS 1, 2)

Generally, the construction activities will involve small to medium scale excavation, installation of steel structures, operations of construction machinery, and vehicular traffic. These activities may pose health and safety hazards to the workers at site during the use of hazardous substances, lifting and handling of heavy equipment and steel frames, operating machinery and electrical equipment, working near water or at height and more. The project will need fuels, oils, and asphalt during the construction phase. Inappropriate handling or accidental spillage/leakage of these substances can potentially lead to safety and health hazards for the construction workers as well as the local community.

Impact on labor, working Conditions and labor risks, including risks of child labor and forced labor, human trafficking (ESS 2)

The proposed sub-projects will entail employment of a significant number of labor especially during construction. The majority of labor will be locally hired, with the exception of skilled workers who may not be found in the project areas. However, potential risks engaged both for the hired skilled and non-skilled workers especially during construction period includes health hazards, poor living condition, accidental hazards risks, etc. Similarly, hiring labor from external area may cause social risk on the local communities includes gender based violence, price hiking of daily used products/foods, etc. Substantial risks are associated in-terms of hiring child labors or forced labors, and also due to

border districts risk associated to the labor trafficking is also very high. However, a separate LMP has been prepared to minimize the risk associated with labor influx**.**

Involuntary Resettlement Impacts (ESS 5)

The project will try to avoid taking any private land through involuntary acquisition and avoid any physical displacement of residents for activities under the project. Most of the works will be carried out within the existing available lands. However, acquisition of private lands would be required in some areas, likelihood that infrastructures construction may involve displacement of formal and informal private users. For all these reasons, and largely as a precautionary measure, the project triggers ESS5 on involuntary resettlement. A Resettlement Policy Framework (RPF) has been prepared by the LGED. Site-specific RAPs will be developed - if and as necessary - during the project implementation. The RPF and any RAP will ensure the proper calculation and recording of the involuntary displacement impacts as well as identification of the affected people and mitigation of their loss and impacts. The purpose of the RPF and implementation of the RAPs is to ensure that there is no adverse effect on the living conditions and livelihoods of the affected people because of the project.

Community Health and Safety (ESS 1, 4)

Community health and safety risks associated with construction activity are primarily related to proximity; works carried out in densely populated localities offer many more opportunities for members of the public to come into contact with heavy machinery, fall into holes, and get injured by unstable stockpiles of materials. All the sites will offer heightened risk in this regard, given the high density of residents nearby. Additionally, the community may be infected with COVID-19 by the workers when the construction works will be in heavily congested areas.

Community safety - especially the safety of women and girls - can also be threatened by operation of construction camps in proximity to local settlements, especially when camps house non-local workers who may feel unencumbered by the norms and mores of their far away home communities. Camps may become a locus for prostitution, and the violence that often accompanies it. Sometimes, local resentment over the hiring of non-local workers, perhaps exacerbated by cultural misunderstanding or racial and religious animus, can lead to violent conflict between resident workers and local people.

Community health is most often affected by construction activity when dust levels are very high for long periods, and also when poorly managed construction camps are situated near existing settlements.

Livelihoods (ESS 1, 4)

Construction activity typically affects livelihoods in a few ways. On the negative side, poor management of the construction site can lead to property damage in adjacent areas. In particular, crops in nearby areas may get trampled or damaged by operation and parking of machinery without regard to the site boundary, or by materials stockpiles spreading across the property line. Careless management of the construction process can also sometimes impair access to nearby businesses, leading to loss of revenue; this is also not expected to be relevant at either site. In addition to such negative impacts, construction activity can also have a strong positive impact for local communities, especially if all or most workers are hired from the local population.

Impacts on Small Ethnic Communities (ESS 7)

Small Ethnic Communities (SECs) if present in the project area can be characterized as indigenous peoples in view of their unique characteristics including language, culture, occupation, and traditions. They might be affected disproportionately by the construction works, and may not get access to the

grievance services for making complaints or so. If any of the sub-project sites find IPs within or around the site or influence area, Safeguards team from D&SC must conduct survey, prepare relevant action plan, and follow the measures strictly.

Impact on Cultural Heritage (ESS 8)

There might have some mosques, temples and graves along the proposed sub-projects area, which may be affected by project works (road construction/rehabilitation). However, project ESCoPs and site-specific ESMP will guide about and ascertain necessary measures to take for avoiding or minimizing the impacts to the least. Chance Find Procedures will be included in the ESMP and chance find clause will be included in work contracts requiring contractors to stop construction, if cultural heritage is encountered during construction.

Demolition & Construction Waste (ESS 1, 3)

Demolition of existing dilapidated school building/market structures will be required in some sites. The demolition will create modest amounts of waste that will need to be disposed of. Hazardous waste viz. waste oil etc. and the scrap material generated from the demolition of structures, and parts of construction debris (Brick, concrete and masonry) may cause pollution or nuisance. Further, waste generated during construction will consist mainly of packaging, from both construction materials and food products consumed by workers. The volume of waste produced is likely to be relatively small, but can easily get strewn and blown across the landscape and end up in local water bodies, if not appropriately managed.

Solid Waste and Sewage Effluent (ESS 1, 3)

Untreated sewage from the pit latrines may enter surface water if not adequately designed and positioned. Periods of high rainfall could lead to the overflow of the pit and overland flow, or rapid through-flow of the effluent to surface water prior to its full digestion in the soil. Raw sewage can potentially impact surface water quality by promoting the growth of algae and delivering pathogens may be harmful to human and ecological receptors. Use of toxic materials such as solvents and vehicle maintenance fluid (oil, coolant) and diesel fuel may contaminate surface and groundwater if these are disposed of directly into the ground or washed into the streams. Human waste from construction workers may also contaminate surface water and groundwater if there are no adequate sanitary facilities.

The waste stream during construction at most project sites can be expected to consist of (i) process water; (ii) excavated material not used in backfilling; (iii) packaging and containers; (iv) solid waste generated by workers (food and food packaging); (v) sewage from any temporary on-site toilets; and (vi) grey water from any temporary on-site kitchens and wash-up facilities. Based on the limited scale of the proposed buildings and absence of plans for any batch plants, process water is likely to be quite limited.

Similarly, waste management facilities, if improperly managed, may result in potential impacts to surface water by the introduction of harmful substances during runoff events. It is important to establish formal solid waste management strategy to properly handle solid waste generated in all sites.5.2.1.3 Operation & Maintenance phase.

Air Pollution (ESS 1, 3)

During the operation phase, small amount of dust and exhaust gas might be produced by the vehicles bound to the school, or the market; the quantity of exhaustion is expected to be bit high only for a small

period of time, when a disaster hit the area and relief distribution works are intensified for the sheltered people and during the market day. This impact is temporary, but may cause public nuisance and deteriorate the air quality for the time being.

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Decreased Energy Consumption (ESS 1, 3)

Flood shelters and rural markets will be equipped with solar-based energy system. Solar lights will be installed in or around shelters and markets, or will be connected to a Nanogrid or individual PV system for having an uninterrupted energy source both in regular and disaster period. This will significantly decrease the dependence on fossil fuel based energy (electrification) sources and consumption. This impact will be moderate in view of the measures that will be put in place to reduce consumption of fossil fuels as well as enhance the economic benefits.

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5.2.1.4 Impact & Risk Categorization

Given the assessed level of impacts for the School-cum-flood shelters and rural market subprojects discussed in the earlier sections, Table 5.5 gives a summary assessment (not showing all the potential impacts) based on the method explained in Section 5.1, as an example.

Table 5.5: Summary Impact Assessment & Risk Rating Matrix School-cum-flood shelters and rural markets

Activity / Potential Impact	Relevant ESS	Impact Ratings (when not mitigated)						Magnitude & Sensitivity of Impact		Risk Ratings (when not mitigated)
		Impact on Ecosystem	Spatial extent	Duration	Timing	Nature	Relationship	Magnitude	Sensitivity	

Planning & Design Phase										
Site Clearance	ESS 1, 3, 6	C-	Loc	Tem	Int	Dir	Iso	M	L	M
Involuntary Resettlement	ESS 5	B-	Loc	Tem	Int	Dir	Iso	L	L	L
Flora & Fauna	ESS 1, 6	C-	Loc	Tem	Int	Dir	Iso	L	L	L
Community Health & Safety	ESS 1, 4	C-	Wid	Per	Con	Dir	Iso	L	L	L
Waste Management	ESS 1, 3	C-	Loc	Tem	Int	Dir	Iso	L	L	L
Contractor Selection	ESS 1	B-	Loc	Tem	Int	Dir	Iso	M	L	M
Labour Sourcing	ESS 2	C-	Loc	Tem	Int	Dir	Iso	L	L	L
Gender Based Violence (GBV)	ESS 1, 2, 4	B-	Loc	Per	Int	Dir	Cum	L	L	L
Construction Phase										
Air Quality	ESS 1, 3	B-	Loc	Tem	Int	Dir	Iso	M	L	M
Noise and Vibration	ESS 1, 3	B-	Loc	Tem	Int	Dir	Iso	M	L	M
Water Quality	ESS 1, 3	C-	Loc	Tem	Int	Dir	Iso	L	L	L
Soil Quality	ESS 1, 3	C-	Loc	Tem	Int	Dir	Iso	L	L	L
Impact on Vegetation	ESS 1, 3	C-	Loc	Tem	Int	Dir	Iso	L	L	L
Traffic Congestion	ESS 1, 4	B-	Loc	Tem	Int	Dir	Iso	L	L	L
Occupational Health & Safety	ESS 1, 2	B-	Loc	Tem	Int	Dir	Iso	M	L	M
Community Health & Safety	ESS 1, 4	C-	Loc	Tem	Int	Dir	Iso	L	M	M
Livelihoods	ESS 1	C-	Loc	Tem	Int	Dir	Iso	L	L	L
Demolition and Construction wastes	ES 1,3	C-	Loc	Tem	Int	Dir	Iso	M	L	M
Impacts on SEC	ESS 7	D	-	-	-	-	-	-	-	-
Cultural Heritage	ESS 8	D	-	-	-	-	-	-	-	-
Operation & Maintenance Phase										
Air Pollution	ESS 1, 3	B-	Loc	Per	Con	Dir	Cum	M	L	M
Decreased Energy Consumption	ESS 1, 3	B-	Wid	Per	Con	Dir	Iso	M	L	M

Impact Ratings:		
/-	:	positive/negative impact
D/C/B/A	:	none/minor/major/severe
Loc/Wid	:	localized/widespread
Tem/Per	:	temporary/persistent
Int/con	:	intermittent/continuous
Dir/Ind	:	direct/indirect
Iso/Cum	:	isolated/cumulative
Magnitude and Sensitivity of Impact:		
VH/H/M/L/N	:	Very High/High/Moderate/Low/Nil
VS/S/M/L/N	:	Very Severe/Severe/Mild/Low/Negligible
Risk Ratings:		
H/S/M/L	:	High /Substantial / Moderate / Low

5.2.1.5 Key Issues relating to Impact Assessment for Community Infrastructures

Repair/rehabilitation of different types of community infrastructures, such as climate resilient shelter connecting or community roads, Jetties/Landing Station and Bridges/Culverts, etc. will have some similar construction and operational impacts, and there are also some additional or unique risks/impacts for

each type of components. Site-specific detail assessment will reveal the risks and impacts for the specific type of sub-project components.

However, road construction or rehabilitation will be confined within pre-defined alignment and will not make any changes to land use. It is expected that improved road condition will increase motorized traffic levels and may lead to little higher PM10 and PM2.5 pollution levels, which may result in causing public health risks, nuisance and other impacts on bio-physical environment.

Some of the anticipated potential impacts during the pre-construction and construction period are almost similar to other subprojects, such as dust, noise, occupational health and safety etc. Furthermore, all the activities with repair/rehabilitation of Jetties/Landing Stations, and bridges/culverts are to be undertaken on government land therefore site preparation may not cause any resettlement or significant vegetation clearance. However, the anticipated potential impacts for this subproject a bit different from other subprojects.

As Jetties will be repaired/rehabilitated at the bank of a river or canal, impacts during the planning & Design stage (Pre-construction stage) are limited to site clearance, aquatic flora & fauna, contractor selection and labor sourcing; and impacts during the construction phase include air pollution, water pollution, noise and vibration, aquatic vegetation and habitats, OHS, navigation and river traffic and Occupational Health and Safety. During the construction of small culverts/bridges, impacts on aquatic habitats, sediment pollution, and special consideration on the free passage of water and for fish species has to be made.

Installation of solar PV nano-grid system and lightning protection systems on some existing community infrastructure, or solar powered streetlights along the road length will pose risk related to occupational health and safety, among others. Solar infrastructures would create disposal problem for batteries and solar panels, once their active lifetime is over.

Another potential but indirect impact may arise from the use of solar system in sub-project facilities; many of the companies who sell solar panel reportedly use child labors in their production facilities, which should be very carefully taken care of while purchasing equipment or panels from any of those companies.

5.2.1.6 Summary of Impact Assessment

This section of the ESMF has analyzed the negative and positive impacts likely to be raised from development of the school cum resilient shelters, and rehabilitation of rural markets based on preliminary details of the infrastructure plan and knowledge gathered on the physical, environmental and social characteristics of the potential sites. All the sites that are proposed for all these components are predefined, so no significant changes of land use is involved; all these components will be built/developed in smaller sites, construction induced impacts will not be spread over large areas; no complex nature of works are involved and OHS protocol are relatively easier to maintain. All potential impacts during the construction phase are considered amenable by moderate to low mitigation measures that are both available and feasible. Similarly, many operation-phase impacts can be avoided or greatly minimized by sensible design decisions. Moreover, standard ESCoPs are effective in avoiding any significant negative impacts in relation to all these sites.

Considering the overall the ES risks associated with the investments it has been determined as 'Moderate'. Similar procedure can be adopted for other sub-project components and risk rating can be identified accordingly.

5.3 Typical Mitigation Measures

The ESMF suggests a broad range of mitigation and enhancement measures to reduce negative impacts and enhance benefits from different sub-project interventions under the RIVER Project. Mitigation measures are identified and designed to avoid or eliminate or offset adverse environmental impacts, or reduce them to acceptable levels during both construction and operation phases of a sub-project intervention. Example of mitigation measures for environmental and social issues for each sub-project are provided in **Annex-D** and a guideline of preparing ESMP is given in **Annex -F**.

CHAPTER 6: METHODOLOGICAL FRAMEWORK FOR ENVIRONMENTAL AND SOCIAL MANAGEMENT

6.1 Introduction

The RIVER project has primarily identified the types of infrastructures and facilities to be built across the places in fourteen non-coastal flood-prone districts. However, the sites for interventions have not been identified or finalized yet. Therefore, the sub-project locations, site-specific socio-environmental conditions, and design orientation are yet to be known at this project appraisal level. This level of preparedness suggests using a framework approach to environmental and social management to allow the project development process following the newly developed 10 ESSs of WB ESF along with applicable regulatory frameworks of Government of Bangladesh and following the mitigation hierarchy of avoidance, minimization, mitigation and compensation/offset for negative impacts and enhancement of positive impacts where practically feasible. Following sections describe what needs to be done at each stage of the overall project life – preparatory works for sub-projects implementation, implementation of the project activities, and reporting on progress.

Similarly, the project will repair or rehabilitate Jetties/landing stations in several designated places, where government land is available. Identification and finalization of sub-project sites for this special cluster are still under way by the feasibility team; and very much site-bounded and temporary adverse impacts are anticipated for the intervention for this type of sub-projects.

6.2 Environmental and Social Management Procedure

6.2.1 Overall Procedure

Due to the nature of the proposed activities under this project and potential environmental and social risks and impacts, the project falls under 'Orange B' category according to ECR, 1997 and also falls under "Moderate Risk Project' as per the World Bank ESF. The ESMF is prepared based on the following principles that can lead the planning and implementation of the LGED's sub-project activities under the project.

- The Project Director at PIU, LGED is responsible for the compliance with national policies, regulations and World Bank ESSs and Guidelines, as mentioned in this ESMF report. The ESMF will serve as the basis for ensuring the compliance for the project. LGED is also responsible for obtaining environmental clearance from DoE (Department of Environment), by submitting all necessary documents and design and fulfilling the due requirements.
- After the sub-project has been identified with outline design and location/alignment options, screening of environmental and social risks -will be conducted by D&SC firm. The outcomes of screening determine the requirement of conducting further in-depth assessment or survey for an IEE study. A Design & Supervision Consultancy (D&SC) firm (or a consortium for the same purpose) will be employed to carry out all forms of interventions after the identification of sub-project sites. Among the preparatory works before floating the biddings or the selection of contractors, the major tasks include ES Screening, design modification, site-specific detailed ES survey, preparation of ES documents incorporating site-specific ESMPs and recommendations from consultations and enhancement measures, incorporation of ESMP suggestions to the detailed design and preparation of BoQs, preparation of bidding documents incorporating the safeguards clauses as part of due diligence. E&S Specialists at PIU will complement the efforts of reviewing and finalization of all documents, on project's behalf, and simultaneously are

responsible for coordinating all ES safeguards works including continued cooperation with the world bank safeguards team, conducting trainings on ES issues, monitoring & supervision of contractors' works and the responsibilities undertaken by the E&S consultants of D&SC, among others World Bank needs to review the screening outcomes, categorization process and ES documents and after giving the concurrence from their end, the ES documents are disclosed publicly and ESMPs become the guiding documents for the respective contractor(s).

- IEE/ ESA and ESMP need to be prepared for each sub-project specific activities as determined/ administered by DoE and this ESMF. In this project, a mitigation hierarchy needs to be followed which is to be reflected in sub-project specific ESMPs. The first step in the Mitigation Hierarchy is to locate the sub-project site or design it in such a way so that the impacts can be avoided. However, in some situations, there might be some sub-project activities in/near environmentally sensitive sites and also with vulnerable communities, it is not possible to completely avoid risks and impacts. Therefore, the second step in the hierarchy is to reduce the potential risks and impacts of the proposed sub-project activity to acceptable levels through design considerations. When there are no further design solutions and the potential risks or impacts remain significant, then the third stem in the hierarchy is to develop feasible mitigation measures. The final step in the Mitigation Hierarchy is to offset any remaining significant residual impacts by technically and financially feasible means. This can be in the form of compensation or enhancement of similar environmental/social component in another location. However, proposed measures need to be practical given availability of appropriate skills, materials, equipment given the local conditions (geographical, natural, socio-political, infrastructure, security and disaster vulnerability).
- Suitable contractor(s) are selected through a requisite bidding process guided by the project PPSD (Project Procurement Strategy for Development) and contractor's suitability entails the capacity to follow the social and environmental due diligence for (the specific package of) the project. After mobilizing in the field, contractor(s) require to update the ESMPs and formulate necessary plans as directed in this ESMF in later part.
- LGED must ensure that contractor(s) follow every relevant Environmental and Social Codes of Practices (ESCoPs) during the preparatory, construction and post-construction (decommissioning/ site clearance after finishing of construction works) phases along with all the recommended measures that delineated into the ESMPs and other relevant plans. Though a Monitoring and Evaluation (M&E) consulting firm will be engaged as the individual third party monitoring entity (ToR included in annex-J) for the entire implementation period, other parties including the PIU and D&SC will be responsible for carrying out an effective monitoring and supervision of contractors' accomplishment of ESMP.
-
- Monitoring responsibilities for environmental and social issues appropriately relevant to operational period of the sub-project lie with LGED district/local offices and local administration (such as Upazila Nirbahi Officer/ DC) and further adjustment to any adverse outcomes could be mediated under the regular maintenance program of LGED or the respective authority responsible for the sub-project.

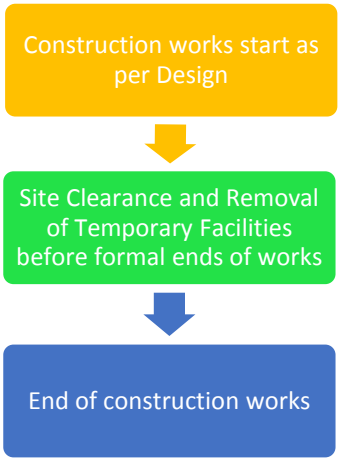
There are certain other considerations, which need to be carefully evaluated or followed throughout the project period, especially during the preparatory and construction phases of each sub-projects. Such as:

- PIU must ensure that planning and design of any additional activities should ensure minimal cumulative impacts.
- Environmentally Sensitive areas, cultural sites, restricted or disputed lands should be taken care of with appropriate mitigation or compensation measures during implementation.

- Participation of stakeholders (especially local community) should be ensured by the project in planning, implementation and monitoring of each sub-projects and associated activities.
- LGED will ensure appropriate institutional set up for implementing environmental and social management plan and inter-agency coordination (whenever required).
- As with mitigation measures, the expected costs of the enhancement measures need to be included in the project costs. Furthermore, monitoring is required to not only ensure that the enhancement measures are being properly implemented but also to determine whether the benefits of these measures are being realized over time. Again, the costs of monitoring needs to be included in the project budget**.**
- LGED will undertake public disclosure about the project interventions and potential impacts.

The following figure shows the steps or procedures to be followed under different stages of the sub-project implementation in a concise outlook. Some of the steps need more clarification for the sake of better implementation of ESMPs and other safeguards plans, which are described briefly in next sections.

Figure 6.1: Environmental and Social management procedure/steps during different phases

Phases		Environmental and Social Management Procedure/ Steps	Timeframe*	Review & Monitoring Requirement
Pre-Construction	1.	Environmental and Social Screening of Sub-project (Survey, consultation and screening by ES team at D&SC)	2 days	WB Review and Concurrence for the screening results
	2.	Outline Design Preparation (by the design team at D&SC with support from ES team)	2 days	
	3.	Preparation of ES documents for sub-projects, incorporating (Site-Specific) ESMP, recommendations and enhancement measures (by the ES team of D&SC in consultation with ES team at PIU)	3 days	WB Review and Concurrence for proposed design, IEE/ESMP
	4.	Detailed Design Preparation incorporating ESMP Requirements (by the design team at D&SC, in consultation with ES teams of D&SC/PIU)	2 days	
	5.	Incorporation of ESMP requirement in Bidding Documents (by the ES team of D&SC in consultation with ES team at PIU)	2 days	
	6.	Tendering, Evaluation and Selection of Contractor(s) (by LGED/other procuring authority, as per PPSD)	45 days (max.)	WB Review and Concurrence
Construction	7.	Commencement of ESMP Implementation including regular consultation with stakeholders (Starts immediately after mobilization of contractor) (by the Contractor in consultation with ES teams of D&SC and PIU) 	18-24 months	Monitoring by WB, PIU, D&SC, M&E Consultants and Contractor(s)
O & M	8.	Environmental and Social Monitoring (During Operation Stage) of Sub-projects (by the PIU/PSC during the project period and LGED for rest of the lifetime)		Monitoring by LGED and Local Government (UNO)
				*Timeframe is indicative for a single component under a package

6.2.2 Environmental and Social Screening and Categorization of Sub-Projects

Environmental and Social screening is essential to gather information on existing baseline status and to assess potential environmental impacts of the sub-project activities. Screening identifies the consequence of the proposed project in broader sense based on project interventions, locations of the project and its surroundings, anticipated impacts, stakeholder's perceptions and expert judgment, without having very much detailed investigation. Critical issues are also identified through the screening, which needs detailed investigation. Based on the extent of environmental and social impacts obtained from the screening, the decision for further environment and social impact assessment will be taken. It is intended to provide the first level of information for a key decision to be made as to whether further assessment of the project is required., The screening process can result in one of the two following outcomes under this project:

- no further level of assessment is required and a simple ESMP would be prepared;
- a more limited ESA is required (often called Initial Environmental examination) including ESMP
- .

In this project, environmental screening procedure would involve: (i) reconnaissance of the sub-project area and its surroundings; ii) identification of the major sub-project activities; (iii) preliminary assessment of the risks and impacts of sub-project activities on the socio-economic, ecological and physio-chemical environment of the sub-project surrounding areas; (iv) identification of applicable environmental safeguard standards; (v) determine the risk category of the subproject; and, (vi) determine the specific instrument(s) to be prepared for each subproject.

Screening is usually carried out with the help of simple matrix that includes a set of check list to identify the baseline status and proposed potential impacts of the project intervention. A screening format has been developed for all the components under this project and provided in annex-A. The forms will help to identify issues which can be verified during field investigations and also provide a preliminary idea regarding the nature, extent, and timing of environmental and social issues that would need to be handled during the subsequent stages. During screening, if it is found that any or cumulative effects of a sub-project activities may create major irreversible damage or violate an existing rules/regulations, the sub-project may be dropped from the implementation list.

ES Screening for a single component under a sub-project or package may require only 2 days (max.) to complete, but should be conducted within 2 weeks of identifying the potential location for the component. ES team at D&SC will conduct the screening survey and reporting, in consultation with the PIU (ES team) and World Bank safeguard team will review the screening results.

In order to ensure that the project meets its overall objectives, and that the national legal as well as Bank's safeguard requirements are met, the following will constitute criteria for the exclusion of subproject sites from project finance: (i) require involuntary acquisition of land and displacement of tribal peoples; (ii) affect mosques, temples, graveyards, cremation grounds, and other places/objects that are of religious and cultural significance; (iii) may significantly restrict access to common property resources and livelihood activities of groups and communities; (iv) threatens cultural/traditional way of life of indigenous peoples, restrict their access to common property resources (forests, water bodies, etc.) and livelihood activities, and affect their places/objects of cultural and religious significance (places of worship, ancestral burial grounds, etc.). (v) community agreement cannot be reached on sites and adequate public land area is not available for construction. These are also termed as the negative list for

screening criteria, and may create substantial project risks. After screening any high-risk and substantial risk sub-project will be excluded and will not be financed under this project.

6.2.3 Preparation of ES Documents

After preparing an outline design of project component considering the site specifications, relevant legal/guiding boundaries and available resource options, Environmental and Social documents are prepared befitting the risk categories. As all the subproject components of RIVER project fall under the 'moderate to low risk' categories, the procedures for the preparation of relevant documents are laid out below

6.2.3.1 Moderate Risk Sub-Projects

As per the procedures provided in the table below, Moderate Risk Category sub-projects will require an IEE/ESA with a site-specific ESMP. The IEE/ESA is a review of the reasonably foreseeable effects of a proposed development intervention/activity on the environment. Participation and consultation with local communities are important in identifying the potential impacts and suitable mitigation measures. Structure of Environmental and Social Assessment is provided in **Annex-B**. The major activities involved in carrying out an IEE/ESA include the following:

- Preparation of an environmental baseline within the sub-project influence area, against which impacts of the proposed sub-project would be evaluated;
- Assessment and evaluation of impacts of major project activities on the baseline environment during construction phase and operational phase;
- Identification of mitigation and enhancement measures and Environmental and Social Codes of Practice (ESCoPs);
- Development of site-specific environmental and social management plan (ESMP) including preparation of environmental monitoring plan with responsibility and estimation of budget for implementation of ESMP.

6.2.3.2 Low Risk Sub-Projects

A site-specific ESMP will be required to ensure enhancements measures are implemented. The ESMP should clearly lay out: (a) the measures to be taken during both construction and operation phases of a sub-project to eliminate or offset adverse environmental and social impacts, or reduce them to acceptable levels; (b) the actions needed to implement these measures; and (c) a monitoring plan to assess the effectiveness of the mitigation measures employed. The major components of an ESMP include:

- Mitigation and enhancement measures
- Monitoring plan
- Estimation of cost of ESMP

Guideline for preparation of ESMP is given in **Annex-F** and Monitoring Plan are provided in **Annex-E**.

Preparing the ESMP and IEE in an integrated manner to meet both WB and national requirements is an efficient step to be followed under this project. The project ES team will consider the more stringent or tougher actions or design modifications within the scope of the project, among the measures/ requirements suggested by both WB and national instruments. In this way, the adopted measures will satisfy both the requirements, and design team at D&SC will be notified on this provision.

6.2.3.3 National Environmental Clearance Requirements of the Proposed Investments and Sub-projects

The legislations relevant for environmental assessment for proposed investments and sub-projects are the Environment Conservation Act 1995 (ECA'95) and the Environment Conservation Rules 1997 (ECR'97). Department of Environment (DoE), under the Ministry of Environment, Forest and Climate Change (MoEFCC), is the regulatory body responsible for enforcing ECA'95 and ECR'97.

Table 6.1: National requirement for general environmental assessment

Category	General Environmental Assessment Requirement
Green	No environmental assessment required to support application for environmental clearance
Orange-A	No environmental assessment required, but detailed project information, including process flow diagrams and effluent treatment arrangement, must accompany application for environmental clearance
Orange-B	Initial Environmental Examination (IEE) required, and project can proceed to environmental clearance application once IEE is approved by DoE
Red	Brief IEE required to establish ToR for comprehensive Environmental Impact Assessment (EIA), and project can proceed to environmental clearance application after EIA and Environmental Management Plan (EMP) have been approved by DoE, often subject to conditions

It is the responsibility of the RIVER-PIU as a proponent to conduct IEE/ESAs of the sub-projects; the project authority would submit application for granting Environmental Clearance Certificate (ECC) in favor of the project, with submitting sample IEE/ESAs, project ESMF, NOC from local authorities, and appropriate fees and so on. Though the project involves a good number of sub-projects/activities under different work packages, a sample ESA (IEEs) along with respective site-specific ESMP will suffice the requirements for obtaining clearance certificate in favor of the project. The responsibility of DoE is to review the documents including the sample IEE/ESAs for issuing Environmental Clearance Certificate (ECC). Bidding documents for tendering a contract is prepared by the D&SC with inclusion of design and specifications. Cost estimate of a single component/package is drawn by the BoQ engineer/estimator, where budgeting for ESMP including monitoring cost is included. ES team at D&SC prepares the ESMP cost, which is reviewed and finalized by the ES team at PIU. Final estimate of cost requires formal approval from the Project Director. The specifications in bidding documents contains a section on Special Environmental Clauses (SECs) incorporated under General/Particular Specification. As shown in above table, development works are classified into four categories Green, Orange A, Orange B and Red.

6.2.4 Integration of Environmental and Social Assessment with the Design

After conducting reconnaissance site inspection, a general design philosophy aimed at integration of the environmental and social concerns to the infrastructure designs may be developed. Screening reports incorporating necessary design modifications/suggestive mitigation measures will be shared with the design team of D&SC, so that integration of ESA in project design is clearly realized. ES team at PIU will keep in constant contact and cooperation with the D&SC design and ES team. ES team at PIU will take administrative measures in receiving the concurrence from the Project Director and the World Bank on every specific design. Some sample examples on suggestions/design modifications are given in the following Tables 6.2.

Table 0.2: Environmental and Social Consideration in Construction of Resilient Shelters

Sl. No.	Category of land use/ social and environmental features for the proposed Subproject	Recommended suggestions/ design modification options
1.	Waste management	▪ Inclusion of adequate number of color separated waste bins ▪ Ensuring the regular management of collection and disposal of wastes ▪ A well-bunded brick-built temporary waste dumping area

		to be included in site layout and periodic collection and dumping to a designated site away from the construction site; and using part of the construction debris for the preparation of temporary access road.
2.	Energy efficiency	▪ Adopt the design to use of day light ▪ Provision of adequate ventilation ▪ Use of renewable energy
3.	Universal access	▪ Adopt the design of universal access considering all ages, gender, and people with disabilities.
4.	Gender consideration	▪ Availability of adequate gender separated rooms and toilet provision, both during the normal and disaster time. ▪ Regular cleaning provision of the shelter (along with toilets and waiting room)
5.	Health & safety	▪ Design would consider availability of safety equipment within the building

Table 0.3: Environmental and Social Consideration in Construction/Rehabilitation of road sub-projects

Sl. No.	Category of land use/ social and environmental features for the proposed Subproject	Recommended suggestions/ design modification options
1.	Presence of homestead, shop, commercial buildings etc. in a village section, on one or both sides of the proposed road	Minimize social impacts by reducing standard road cross-section, say restricting top width to 5.7 m instead of 7.3 m (i.e. eliminating the provision of the soft shoulder; provide side drains.
2.	Presence of paddy field or water bodies along the road (on one side or both sides)	Concentric/eccentric widening based on local community consultation; reduce embankment slope by providing piling, retaining walls towards the side of the waterbodies.
3.	Presence of school/ mosque/ grave/paddy field/ pond/ ditch/ borrow pits on one or both sides, along the road	Widen the opposite side of the features presented, if government land is available.
4.	Presence of avenue trees along the road side	Concentric/eccentric widening based on local site condition and/or based on community consultation.

Table 0.4: Environmental and Social Consideration in Construction/Rehabilitation of Jetties/Landing Stations (Ghat)/Bridge or culverts

Sl No.	Category of land use/ social and environmental features for the proposed Subproject	Recommended suggestions/ design modification options
1.	Availability of suitable khas land inadequate	• Reduce size and number of infrastructures as per available space • Fill the low khas lands to make suitable for construction

2.	Erosion prone area	• Arrange to protect the area by suitable protection measures. • Avoid the site if it seems that the area would be eroded in next 20 years
3.	No approach road available	• Keep special provision for construction of approach road to connect the Jetty/landing station
4.	No suitable site for final disposal of wastewater	• Additional filter bed after the conventional septic tank and soak pit arrangement

6.2.5 Environment and Social Management Plan (ESMP)

This section presents the outline of environmental and social management plan (ESMP) of the RIVER Project. A more detailed version of ESMP will be included in the assessment documents (IEE/ESA) of respective subprojects.

6.2.5.1 Scope and Objectives of ESMP

The basic objective of the ESMP is to manage adverse impacts of project interventions in a way that minimizes the possible adverse impact on the environment and people of the project influence area. The specific objectives of the ESMP are to:

- Identify the mitigation measures during ESMF and ESA; and facilitate implementation of those during implementation of RIVER;
- Maximize and sustain potential project benefits and mitigate negative impacts;
- Draw responsibilities for project proponent, contractors, consultants, and other members of the project team for the environmental and social management of the project as a whole;
- Define a monitoring mechanism and identify monitoring parameters in order to:
  - Ensure the complete implementation of all mitigation measures,
  - Ensure the effectiveness of the mitigation measures,
  - Maintain essential ecological process, preserving biodiversity and where possible restoring degraded natural resources and habitats; and
  - Assess environmental training requirements for different stakeholders at various levels.

The ESMP will be managed through a number of tasks and activities and site-specific management plans. One purpose of the ESMP is to record the procedure and methodology for management of mitigation identified for each negative impacts of the activities under the project. The management will clearly delineate the responsibility of various participants and stakeholders involved in planning, implementation and operation of every single sub-projects under the RIVER.

6.2.5.2 Inclusion of Relevant Components of ESMP in Bidding and Contract Documents

Bidding documents for tendering a contract is prepared by the D&SC lead by a Team Leader, with inclusion of design and specifications. Cost estimate of a single component/package is drawn by the BoQ engineer/estimator, where budgeting for ESMP including monitoring cost is included. ES team at D&SC prepares the ESMP cost, which is reviewed and finalized by the ES team at PIU. Final estimate of cost requires formal approval from the Project Director and the World Bank. The specifications in bidding documents contains a section on Special Environmental Clauses (SECs) incorporated under General/Particular Specification. These clauses are aimed at ensuring that the Contractor carries out his responsibility of implementing the environmental and social management plan (ESMP), monitoring plan

as well as other environmental and safety measures. Such clauses may specify, for example, penalties for non-compliance as well as incentives to promote strong compliance. The contractors must be made accountable to implement the plans and mitigation measures, which pertain to them through contract documents and/or other agreements of the obligations and importance of the environmental and social components of the project. In addition, the contractor will be asked to submit an Environment Management Action Plan (EMAP) with all detailed plans, measures and management systems those are required to develop and implement, based on the ESMF recommendation and findings of the assessment, their work methodology, work force involvement, equipment's standard, and work scheduling. This document will be forwarded to the ES specialists at PIU for detailed review and concurrence.

6.2.5.3 Payment Milestones

Payments to contractors would be linked to environmental performance, measured by completion of the prescribed environmental and social mitigation measures. Contractors would be required to coordinate with the executing agency, project implementation unit, supervising consultants and local population for the mitigation of adverse impacts of the project activities. For effective implementation of the proposed mitigation and monitoring measures they should employ trained and experienced environmental management staff.

6.2.5.4 Environmental and Social Codes of Practice (ESCoPs)

The environmental and social codes of practice (ESCoPs) are generic, non-site-specific guidelines. The ESCoPs consist of environmental and social management guidelines and practices to be followed by the contractors/ implementation organizations for sustainable management of all environmental and social issues. The contractor will be required to follow them and also use them to prepare site-specific management plans. Details of the ESCoPs listed below are in **Annex- G**.

- ESCoP 1: Waste Management
- ESCoP 2: Fuels and Hazardous Substances Management
- ESCoP 3: Water Resources Management
- ESCoP 4: Drainage Management
- ESCoP 5: Soil Quality Management
- ESCoP 6: Erosion and Sediment Control
- ESCoP 7: Top Soil Management
- ESCoP 8: Topography and Landscaping
- ESCoP 9: Borrow Areas Management
- ESCoP 10: Air Quality Management
- ESCoP 11: Noise and Vibration Management
- ESCoP 12: Protection of Biota
- ESCoP 13: Road Transport and Road Traffic Management
- ESCoP 14: River/Canal Transport management
- ESCoP 15: Construction Camp Management
- ESCoP 16: Cultural and Religious Issues
- ESCoP 17: Workers Health and Safety
- ESCoP 18: Stakeholder Consultation

6.2.5.5 Mitigation Measures to Address Environmental and Social Impacts

Possible environmental and social impacts during pre-construction, construction and operation phases from subproject activities should be identified beforehand. Detail activities need to be identified first and thereafter set of actions or interventions are to be demarcated and any possible effects due to an action is to be determined. Best practice mitigation or enhancement measures should be explored accordingly and deployed in the field. For giving an instance, a set of mitigation measures against possible environmental and social impacts due to the subprojects at its different phases is proposed in **Annex-D.**

6.2.6 Required Site Specific Management Plans (ESS 1-10)

Site Specific Management Plans will be prepared by the contractors of the sub-projects/work packages as and when required. Selection of the management plans required by the sub-projects will be determined by the ESS requirements, applicable ESCoPs and recommendation of ESMP. These documents will be reviewed and cleared by the PIU.

Construction Camp Management Plan: will be prepared by each contractor. The Plan will include the camp layout, details of various facilities including supplies, accommodation, water supply & sanitation, toilet, storage, and disposal. The Plan will be submitted for review and approval before camp establishment.

Occupational Health and Safety (OHS) Plan: will be prepared and implemented by each contractor on the basis of the WBG EHS Guidelines (1997), ESCoPs, mitigation plan, and other GIIP. The Plan will be submitted for review and approval before contractor mobilization. For labor-intensive maintenance works to be carried out by poor people in different areas, OHS measures outlined in the Labor Management Procedures will be implemented by RIVER-PIU. Further, to inspect the OHS plan at construction sites and its evaluation will be carried out with different checklist.

Traffic Management Plan: will be prepared by each contractor after discussion with PIU/LGED local office and authorities responsible for roads and traffic. The Plan will be submitted for review and approval before contractor mobilization. The Plan will identify the routes to be used by the contractors, procedures for the safety of the local community particularly pedestrians, and monitoring mechanism to avoid traffic congestion.

Emergency Preparedness Plan: will be prepared by each contractor after assessing potential risks and hazards that could be encountered during construction. The Plan will be submitted for review and approval before contractor mobilization.

6.2.7 Labor Management Procedures (ESS2)

A standalone LMP has been prepared to fulfill the requirement of ESS2 and will be disclosed by PIU. Besides the LMP, separate OHS management plan will be developed and implemented at the project activities.

6.2.8 Guideline for Preparation of Environmental and Social Monitoring Plan

The monitoring plan is the key element of ESMP to be prepared on the basis of impact assessment described in earlier section. The Plan describe the potentially negative impacts of each sub-project activity, lists mitigation and control measures to address the negative impacts, and assigns

responsibilities for implementation and monitoring of these measures. The Plans for the RIVER project will be prepared and included in the ESA.

6.2.9 Monitoring Framework

The objective of the monitoring framework 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.

The project will adopt a real time monitoring procedure with support from project IT support unit, whereby a good numbers of real time photographs with comments on implementation status, condition of safeguards management and visible setbacks in different sites will be taken by field level staffs, sent to the server for storage at once and readily accessible from any places in the world by the project authority, consultants as well as world bank. Computer generated monitoring reporting and procedure will be an added advantage from the system.

However, in order to reduce adverse impacts and enhance positive impacts from project activities, LGED with support from the consultant will be responsible to monitor and make sure that the environmental mitigation/enhancement measures (including health and safety measures) outlined in the ESMP for the particular sub-project are being implemented in accordance to the provisions of the Tender Document. Apart from general monitoring of mitigation/enhancement measures, important environmental parameters to be monitored during the construction phase of the sub-projects including air quality, noise level, water quality, drainage congestion, and traffic problems. However, the requirement and frequency of monitoring would depend on the nature of sub-project and field situation. IEE report for each sub-project will include every details of monitoring activities, including monitoring frequency, responsible persons, monitoring indicators, etc. and a sample monitoring plan for environmental and social management issues are given in Appendix- E. Based on monitoring outcomes, further course of corrective actions is to be set up and implemented.

The PIU environment and social specialists will carry out ESMF monitoring to ensure that the mitigation plans are being effectively implemented, and will conduct field visits on a regular basis. A synopsis of ESMF monitoring plan is provided hereunder.

Table 6.5: Monitoring responsibilities in phases

Project Phase	What	When	Who (monitoring authority)	How
Preparation	Training and capacity building	Before preparation of tender documents	PD with Safeguards Specialists at PIU	Reviewing training records
Preparation	Ensure screening of environmental and social issues, and conducting survey for ESA reports.	After locations, primary design and alignment are confirmed	PD with Safeguards Specialists at PIU	Review completed screening reports
Preparation and Construction	Consultation meetings with stakeholders	During the sub-project screening survey and feasibility; throughout	PD with Safeguards Specialists at PIU	Review of Screening reports and quarterly safeguards reports; and incidents

		project cycle		reporting protocol
Construction	Training and capacity building	Monthly	PD with Safeguards Specialists at PIU	Reviewing training records
Construction	Grievance Records	Monthly	PD with Safeguards Specialists at PIU	Review Grievance Register
Construction	Environmental and Social mitigation/ enhancement measures (including health and safety measures) outlined in the ESMP and incorporated in the bidding documents and the approved contracts.	Monthly	PD with Safeguards Specialists at PIU	Review ESMP monitoring documents/progress reports.
Construction	Environmental and Social mitigation/ enhancement measures	Monthly	PD with Safeguards Specialists at PIU	Review ESMP monitoring documents
Operation and maintenance	Grievance records	Monthly	PIU	Review GRM Register
Operation and maintenance	ESMP (including health and safety measures)	Monthly	PIU	Review ESMP monitoring documents

A third party monitoring firm may be employed by the project as M&E Consultants within 1st year of the project implementation under an open bidding process. This independent monitoring body is responsible for systematic, regular and constant monitoring of all the activities undertaken in the field with vigorous services by a specialized set of consultants, including Social, Gender and Environmental specialists, adept in all their respective fields. The monitoring reports produced by the firm is forwarded directly to WB and the office of the Project Director.

6.2.10 Adaptive Management during implementation

All ES documents are subject to amendment or changes from time to time during Project implementation, to reflect adaptive management of Project changes and unforeseen circumstances or in response to assessment of Project performance under those documents. In such circumstances, LGED will make necessary changes in documents, obtain concurrence from the world bank and will promptly disclose the updated versions.

Apart from documentary adaptation, adaptation in physical construction or to an evolved situation may be required. For example, flood may occur during the construction period and people may need to take immediate refuge in under-construction shelter (if the progress of physical works permit that) buildings, adaptive management options will be put in place for minimizing the plights; similar experience was very common in cyclone shelters under the ongoing MDSP project.

6.2.11 ESMP Implementation Cost

Cost estimates will need to be prepared for all the mitigation and monitoring measures to be proposed in the specific assessment in accordance with the ESMF. The cost estimates for some of the mitigation measures to be identified in the ESMP will be part of civil works contract.

The Development Project Proposal (DPP) of LGED for the proposed project should reflect the ESMP activities with budget for successful environmental and social management of the project. Total US$ 3.12 million is estimated for implementation of ESMF, which should be embedded in the proposed total project budget from World Bank. All the budgetary allocation for the components under table 6.6 will be coming from the PA (Project Assistance) part of the project financing.

Table 6.6: Cost Estimates for ESMF implementation of the RIVER Sub-projects

SN	Description	Amount million US$
1	Contractor's Budget for development of management plans, staff, training, etc.	0.2
2	Water, soil and air quality monitoring during construction (quarterly for 5 years)	0.5
3	Tree plantation development and maintenance	0.2
4	Development of ES assessment, management and monitoring documents during construction and operation (3 years), training to workers, monitoring of sites	0.5
5	Implementation of Resettlement Policy Framework (without requisition and resettlement)	0.08
6	Implementation of GBV Action Plan	0.06
7	Implementation of SEP	0.98
8	PIU Safeguards Consultants	0.4
9	Capacity building and institutional strengthening	0.2
	TOTAL	**3.12**

CHAPTER 7: STAKEHOLDER ENGAGEMENT, GRIEVANCE MECHANISM AND DISCLOSURE

7.1 Introduction

Stakeholder refers to individuals or groups who are affected or likely to be affected by the project or other interested parties who have an interest in the project; and the term "stakeholder engagement" refers to a way to describe the process of engagement between a project developer and those potentially affected by the subprojects or way of supporting the implementation. Stakeholder engagement can cover a range of activities and approaches and those are; consultation, engagement, external relations, information disclosure and dissemination, community participation etc. In the RIVER project LGED has already designed a common stakeholder engagement plan (SEP) for all the sub-projects to be developed or constructed across the fourteen selected districts. This project SEP has primarily identified the potential stakeholders, requirements to the engagement with the project, methods of engagement, and also delineated a set of strategy for engagement program, target information to be disclosed with the relevant groups and pathways to review and inclusion of views/perceptions/concerns/suggestions into the various decision making stages of the project. Specific considerations on vulnerable groups from every possible circumstances have been taken into good care of while drafting the project SEP.

As a part of the preparation of ESMF and other ES documents, a series of consultation events with the potential stakeholders were carried out from 15 to 18 November 2021 in four project districts- Kurigram, Sirajganj, Gopalganj and Sunamganj under four project divisions of the country. The mode of consultations were limited to Public meeting, Focus group discussion, and the Key Informant Interviews (KII) as the sub-projects will be spread across the districts, and were conducted in Bengali (with local dialects, with the help of local LGED officials).

This chapter will put a glimpse of the project SEP along with the outcome of the carried out consultation meetings (in person) and the project mechanism to resolve the grievances that may come throughout the project life cycle and the project framework for disclosure of information.

7.2 Stakeholder Consultations and Disclosure

7.2.1 Objective of the Consultations

The World Banks's Environmental and Social Framework (ESF) underscores the importance of open and transparent engagement between the borrower and project stakeholders as an important pillar of good practice. Effective stakeholder engagement through a robust consultation and disclosure mechanism promotes environmental and social sustainability of the project, enhances its acceptance and makes important contributions to design and aids in smooth implementation of the project. Stakeholder engagement is an inclusive process and is carried out throughout the life cycle of the project. ESS10 refers to Stakeholder Engagement and Information disclosure requirements of the ESF. The following are the objectives of ESS10:

- Establishment of a systematic approach to stakeholder engagement that will enable borrowers to identify and form constructive relationships with the relevant stakeholders, including Project Affected People (PAP).
- To assess the level of stakeholder interest and support for the project and ensure that through this mechanism, the views of the stakeholders are incorporated into the project design.

- Encourage and facilitate methods of effective, meaningful consultation and engagement with PAPs throughout the project cycle on issues that could potentially have an impact on them
- Ensure that project information related to environmental and social risks and impacts is disclosed to stakeholders in a timely, understandable, accessible and appropriate manner and format.
- To provide project-affected parties with accessible and inclusive means to raise issues and grievances, and allow LGED to respond to and mange such grievances.

ESS10 promotes meaningful consultation and communication with all stakeholders, and the process of stakeholder engagement involves the design and implementation of a Stakeholder Engagement Plan (SEP).

7.2.2 SEP formulation and implementation arrangement

The SEP for this project has been prepared as a standalone document for the project life cycle. Mapping the project stakeholders is the first and foremost task in the preparation, and similar to the other LGED implementing projects, stakeholders primarily fall into two major groups (i) project affected parties who are affected or likely to be affected by the project activities, and (ii) other interested parties who may have an interest in the project. Communities in the subproject areas who could be directly affected by the project activities, local boatmen, market goers, businessmen using the ghat/landing stations, teachers and students, unemployed working class people, and people from different vulnerable groups, such as, elderly, disabled, children, pregnant women, single mothers, informal settlers, among many others fall into the first group, while civil society groups, local suppliers and businessmen, SMCs, NGOs working on labor/GBV/SEA/SH issues in the locality, different government bodies including MoDMR, MoPME, finance and planning ministry, and many others constitute the 2nd group of stakeholders in this project. The level of engagement required for each group of stakeholders is based on their level of interest and impact they may face or exert on the project. The overall coordination and monitoring mechanisms established in the SEP are overseen by project PIU where one Social Development Specialist and a Communication Specialist will be stationed, and the safeguards consultants at D&SC, XEN, UE, district sociologist, will be taking care of day-to-day progress of the activities that sketched out in the SEP.

7.2.3 Stakeholder Consultation in project districts

As part of the appraisal and formulation of this ESMF, eighteen (18) stakeholder consultations (three consultations in each of the four selected project districts) were carried out on different days and the participants included potential group of PAPs in the sub-project areas, different vulnerable groups, and relevant government and non-government stakeholders. Officials from district level LGED offices, government officials from relevant departments, NGOs, journalists were among the stakeholders too. The consultation and participation process was carried out in person mode and was limited to selected stakeholders in four project districts- Kurigram, Sirajganj, Gopalganj and Sunamganj under four project divisions of the country. Though the country is not fully recovered from the outbreak of COVID-19, a series of consultation meetings were necessary to apprehend the nearly precise outcomes.

During the consultation all the stakeholders were briefly informed about the project, its background and components, environmental and social concerns/ impacts, and intended mitigation measures which would also take into account the opinion/ suggestions of the stakeholders (it was instructed to the study team to note down any specific suggestions/ possible concerns from the local people or stakeholders about any parts or components of the project and whether they have any specific suggestions to manage/mitigate environmental or social problems in the field.)

Participants were also consulted about existence and status of any socio-cultural/ religious heritage or (centennial) old trees/buildings, specific sites where people visit/gather, and so on, near to any of the sub-project sites, including the approximate distances from particular sub-project sites. LGED Sub-Assistant Engineers/ District Sociologists were the key informants in this regard. As the project will have a well-functioning grievance redress mechanism/ formal complaint submittal / resolution mechanism, and participants were informed that they would be able to lodge formal complaints/suggestions about the project throughout the entire implementation period and complaints will be resolved very quickly by different tiers of redressal committees.

The study group were also instructed to take into account the presence of any small ethnic or indigenous group near to any sub-project sites (in that case, group/ caste name, distances of any sub-projects from their residential areas, etc. were noted down) as per WB requirement, and consultation would be carried out in an universally recognized method of Free, Prior and Informed Consent (FPIC) process. However, none of such that group members were found during these series of events.

The consultation and participation process undertaken so far has adopted a highly participatory approach through Focus Group Discussion (FGD) and Key Informant Interviews. General public meetings were also carried out. Due to the selective nature of these consultation events, couple of meetings found no presence of women representatives, though separate meetings with vulnerable women group was also conducted. The discussion and the concerns and responses are extensively documented in SEP.

Table 7.1: Summary of Consultation Meetings and FGDs

Date	Place	Upazila/ District	Division	No. of Participants			Mode of Consultation
				F	M	Total	
District: Gopalganj							
16/11/2021	Tuthamandra GPS, 10 No Shahapur Union Parishad	Sadar Upazila, Gopalganj	Dhaka	9	26	35	Community consultation
16/11/2021	-do-	Sadar Upazila, Gopalganj	Dhaka	0	17	17	FGD with Vulnerable women
15-17/11/21	Concerned Offices-LGED, UEO, WDB	UEO, XEN, LGED, SDE, WDB, Gopalgon	Dhaka	2	4	6	Key Informants Interview
District: Sunamganj							
16/11/2021	120 No. Shekhergaon GPS, Kurban Nagar Union	Sadar Upazila, Sunamganj	Sylhet	30	15	45	Community consultation
18/11/2021	-do-	Sadar, Sunamganj	Sylhet	10	0	10	FGD with Women group
18/11/2021	Concerned Offices- LGED, UNO, UEO, WDB, DPHE, PIO, BRAC,Newspaper	Sadar, Sunamganj	Sylhet	0	13	13	Key Informants Interview

	Contractor's Rep.						
District: Kurigram							
16/11/2021	Notan Para Govt. Primary School, Rowmari,Kurigram	Rowmari, Kurigram	Rangpur	18	30	48	Public consultation
16/11/2021	Notan Para GPS, 4no. Rawmari Union	Rowmari, Kurigram	Rangpur	7	3	10	FGD with School teachers
16/11/2021	Nomodas para, 4no. Rawmari Union	Rowmari, Kurigram	Rangpur	20	0	20	FGD with Local women
16/11/2021	Sobujpara, 4no. Rawmari Union,	Rowmari, Kurigram	Rangpur	9	0	9	FGD with Adolescent girls
16/11/2021	Sobujpara, 4no. Rawmari Union	Rowmari, Kurigram	Rangpur	10	0	10	FGD with Vulnerable group (Elderly women)
15-16/11/21	Different Offices- DEO, WDB, RDD, Tv, Press club & Grameen Bank.	Rowmari, Kurigram	Rangpur	0	6	6	Key Informant Interview(KII)
District: Sirajganj							
18/11/21	K R Kowkor Govt. Primary School, Ullapara, Sirajganj	Sirajganj	Rajshahi	0	25	25	Public consultation
16/11/2021	K. R. Noukoir GPS, Solp Union, Ullapara, Sirajganj.	Sirajganj	Rajshahi	0	6	6	FGD with School teachers
16/11/2021	Halder para, Solp Union, Ullapara, Sirajganj	Sirajganj	Rajshahi	18	0	18	FGD with Local women
16/11/2021	Noukoit, West para, Solp Union, Ullapara, Sirajganj.	Sirajganj	Rajshahi	7	0	7	FGD with Adolescent girls
16/11/2021	Noukoit, West para, Solp Union, Ullapara, Sirajganj.	Sirajganj	Rajshahi	20	0	20	FGD with Vulnerable group (Elderly People)
16/11/2021	Concerned Offices- LGED, DSHE, DPE, BRAC & Newspaper.	Sirajganj	Rajshahi	0	5	5	Key Informants Interview (KII)
			Total	16	150	310	

Prior to these consultation events conducted by LGED, a total of 2,415 face to face interviews, 16 mini group discussions, 15 in-depth interviews, and 45 key informant interviews were conducted by the project feasibility team in August 2021. All these meetings/consultation events demonstrates the fact that various other tools should be used for consultations including household level interviews, participatory rural appraisal, issue specific consultation meetings, and open meetings during the E&S survey for screening and assessment of each sub-project/ components.

7.2.4 Outcomes of Consultation Meetings

During preparation of ESMF and other safeguards documents, the feasibility study team for this project, has taken stakeholders opinion and those are incorporated with the entitlement matrix. A summary of consultation outcomes is given in the Table 7.2..

Suggestions from the consultation meetings will be incorporated into the project design, and the extent of incorporation will depend on the scope of design statement within the proposed activities of the project. As the design of physical components and services is prepared and finalized in a consultative process, stakeholders inputs or suggestions will complement to attain the project objectives. For example, shelter design with higher plinth level and having provision for ramp and uninterrupted power supply, as suggested from the consultation meetings, will ensure improved protection and resilience against flood events for the target people. Provision of incorporating adequate window to allow natural light and air inside the shelter while designing, and ensuring the use of safety gears, properly managed stack yard during the construction works are also the suggestions from the consultation meetings, which will be incorporated as mitigation measures

Consultations with vulnerable groups (adolescent girls, women, elderly, poor people, etc.) has revealed some of the key concerns which are predominant in the rural settings of the country. Their suggestions include provision of separate toilets and shelter room for male and female with high commodes in toilets for aged & physically challenged persons, wheel chair for the elderly and physically challenged people, breastfeeding corner cum changing room, primary medical facilities, installing 24-hour security cameras in the shelters, job placement for women during the construction period, and so on. All these requirements and suggestions have already been consulted for due inclusion with the design engineers under the project feasibility study team who are also responsible for preparing the design and bidding documents for the first two contract packages under the project. The same procedure will be replicated when the D&SC services are put in place.

However, design prototypes including the facilities that are suggested by the target stakeholders are being developed at this appraisal stage and will be finalized shortly. Adequate consideration will be put in place while conducting and managing stakeholder engagement events in or around the sites so that free, prior and informed suggestions/ comments are received and incorporated into the design and mitigation measures with due priority as indicated in SEP. ES team under the D&SC will record the outcomes of meetings and consult with the design team for adequate and functional incorporation.

Table 7.2: Stakeholder Discussion Outcome

Issues Discussed	Bottlenecks/ Problems Raised	Suggestions come out through the discussions
Necessity of the Project	Flood shelters and other facilities are not present in many areas; in some areas existing facilities are not in usable condition, and having access road and ensuring security is still a matter of concern.	Participants are delightedly welcoming the project and would like to support the project and putting an advice to take necessary precautions to mitigate various impacts during the construction and operational stages of the project. They also opined that shelters and associated facilities should be constructed evenly across the district, considering the population density of each area; and remote areas should receive more priority. Identification of proper catchment area for each shelter site is also crucial for the best use of the facilities.
Basic Design Requirement	Many of the schools goes under water in times of flooding events, some collapsed into the river, and some are constructed without considering the proper catchment area or connecting pathways or the differentiated facilities needed for different groups of people in the catchment area.	Considering anticipated impacts while making design layout. Before selecting the sites and finalizing the design, last 40-50 years' flood nature, extent and duration should be considered. Shelter should be constructed to minimum 3-5 storied and highest flood level should be considered for the ground level for shelters; even the entire premises within the school boundary could be elevated. Adequate lighting in and around the shelters, health care services, separate place for cattle, and proper shelter connecting road must be included in design. Provision for uninterrupted power supply facilities and security measures (security camera) in the shelters. Elevated access road to the shelters in comparison to local roads considering highest flood level in the area. Provision for Ramp in the shelters for the older and physically challenged persons; and living arrangements with toilet facilities for elderly people should be provided on 1st floor. Provision for guide Wall around the Haor surrounded schools. Integrating in design for the provision of 'Wash Block' and ramps on both sides.
Potential Environmental and Health & Safety Issues	• Site selection was done not realizing the necessity of the community people in case of constructing	Avoiding cutting down trees during the construction works. Provision for adequate medicinal supplies to the shelters during the flooding period,

	previous shelter buildings. • Occupational H&S during the construction period was not maintained adequately. • People's apathy to coming to the shelters due to the insufficiency and poor condition of provided facilities, and serious mismanagement. • Some dilapidated old school building needs rehabilitation for the betterment of students and local community under this project (may not be included as disaster shelters). • Insufficient classrooms in some of the existing school buildings, and waterlogging inside the shelter premises.	and ensure health care services in that crisis moment. Ensuring drinking water facilities in the proposed shelter for flooding period, and taking appropriate measures to avoid pouring polluted water into the tubewell. Adequate window to allow natural light and air to enter the room while designing, and preventing environmental pollution during construction works. Ensuring using of safety gears, properly managed stockyard during the construction works. Ensuring hygiene/ cleanliness and kitchen/dining, storage facilities, and separate facilities for male and female persons inside the shelters, as people usually stay longer time in flood shelters. Construction area within the school boundary should be fenced completely during construction period, and ensuring cleanliness during construction and operation period. Making arrangement for keeping cattle on the ground floor/ shelter area and sufficient fodders for the shelter period. Provision for sufficient medical facilities & doctors during the flood period.
Potential Social and Gender Issues	• Women's sufferings due to the jobs scarcity during the period from late July to Early October, and with very low payment in other times of the year. Eager to get engaged as labors during the construction period. • Feeling unsafe by women during flood/ disaster, and facing difficulties to get access to the WASH facilities, and emergency food and health care facilities.	Boat schooling during the flood period. Provision of separate male & female toilets including high commode for aged & physically challenged persons. Provision of wheel chair for the transport through the ramp, for the elderly or physically challenged ones. Provision for separate toilet facilities and shelter rooms for male and female, breastfeeding corner cum changing room, and ensuring safety and security of the women and children, while in the shelter. Provision of good landscaping, including a playground, cycle stand, and cattle shed, within the school premises and students may avail the facilities in regular time as well. Ensuring proper facilities for physically challenged and older people, breast-feeding corner, and primary medical facilities during sheltering. Provision of wheel chair for the women and elderly persons. Other facilities for elderly persons include living arrangement with attached toilet facilities on 1st floor.

		Adequate security measures including installation of security camera at different strategic places in the shelter to prevent any unlawful activities including GBV. Provision of 24-hour security and surveillance all the year round. Provision of supplying educational equipment (chairs, tables, cupboards etc.) for the students of the school, and keeping arrangement for playground for children Alternative and temporary arrangements for schooling of children during the construction period, in consultation with the contractor, local communities, school management committee, etc. Expecting by the participants for relief and emergency health care support during the flood; and financial and technical support after the flood for restoration of living/ livelihood.
Employment Opportunities	Employment opportunities halted down severely, due to recent COVID-19 outbreak across the country.	Preference of unskilled local labours for shelter construction works and a separate GRM (Grievance Redress Mechanism) should be enacted for the labors only.
Stakeholder Engagement and Grievance Redressment	• Lack of coordination, mismanagement, and maintenance in existing shelters, and unavailability or poor maintenance of required facilities, including WASH facilities in existing shelters are very common • Many of the vulnerable families opt to stay at home or on nearby highlands, and even many families do not know if there is any shelter present in the area.	Before finalizing any shelter for construction, Upazila Education Officer should be consulted, and prioritizing the construction of access road to the shelter. Organizing a daylong seminar involving project related officials and public representatives to let people know how and which sites are finally selected; and the benefit of proper using and maintenance of shelter and associated facilities. Coordination committee for each school with representation from LGED, WDB, School teachers, District Education Office, NGO, etc. could be formed for proper running and maintenance of the shelters, throughout the year. Enhancing regular coordination, monitoring and supporting among LGED officials, contractors, SMC for good working condition. Formation and properly activation/running a grievance redress committee at school level to resolve any potential conflicts during the construction period. Preparing multiple design options and sharing those with different stakeholders; considering river erosion data during design to ensure embankment protection (if required).
Information Disclosure	There were some disasters shelters in the	Emphasizing on public communication and awareness regarding the shelter placement,

	area, but many people didn't even know the existence of those shelters and didn't go for sheltering even in last prolonged flooding period in 2020.	facilities provided and proper use and maintenance of the facilities, and the disclosure of information to the local people with different events. Developing Standard Operating Procedure (SOP) for shelters, and public-private partnership for public awareness and consultation, along with Upazila and Union level committees for shelter management under the project; information disclosure and public awareness by using local media.

7.2.5 Stakeholder engagement during the implementation period

Consultation with the potential project affected people and other interested parties, including vulnerable groups, will be conducted at regular intervals (e.g. quarterly) by the different entities under the project implementation framework, as stated in the SEP. The mode of consultation may be public meeting, FGDs for different vulnerable groups (women, female headed households, elderlies, ethnic communities, etc.), communication through mass/social media, distributing brochure/leaflets, posting on notice boards and so on, and the events will be conducted by the PIU team (during visiting a site), LGED officials from local offices, ES consultants and support staff of D&SC, M&E firm, contractor/sub-contractors and other skilled/contracted facilitators to inform about the project scope, activities, grievance system, employment opportunities, etc. and learn on the suggestions/comments/ grievances that could be used for sub-project specific rectification measures or further decision making process including design and mitigation activities. Consultation with vulnerable groups will be conducted with great care and sophistication in order to ensure that none of the project activities will cause a least harm to them, and project design and implementation will put maximum emphasis on their needs and amelioration or restoration of their livelihood, within the project scoping boundary. Moreover, contractors will employ at least 75% of labors from the local communities/sources, and to avoid any dispute with the local communities/potential stakeholders and if raised, settle the disputes amicably. However, contractor's activities relevant to ES issues must be presented in the compliance/progress reporting.

7.2.6 SEP revision and updating

The project may experience different scenario/ circumstances or new stakeholders of significantly important for the project, at some point in project life cycle, when the proposed plan, method or resources may not be found suitable or sufficient for addressing the newly evolved scenario or may found inconsistent or obsolete in terms of effectivity. Considering such unforeseen situation or circumstances, if arised, the SEP needs to be revised and updated incorporating the best available practices or required plans. A periodic revision would be more feasible to get abreast with the contemporary scenario, by the Social Development Specialists in consultation with the Communication Specialist, specifically in context with the project requirement at that point of time and specific phases of development. Any major changes in project related activities or its schedule, or inclusion of any missing stakeholder groups (that may have significant effects in decision-making) shall be reflected properly in the newly revised document. M&E consultants should also be communicated for their valuable observations/suggestions regarding any required changes in SEP, and the revised version will have concurrence from the World Bank's safeguards team.

7.3 Grievance Redress Mechanism (ESS10)

As the implementing agency, LGED will respond to concerns and grievances of project-affected parties related to the environmental and social performance of the project in a timely manner. For this purpose, a well-functioning Grievance Redress Mechanism (GRM) will be established and implemented which is an accessible, inclusive system, process, or procedure that receives and acts upon complaints and suggestions for improvement in a timely fashion, and facilitates resolution of concerns and grievances arising in connection with the project. This procedure will answer sub-project -related queries and address complaints and disputes about any aspect of the implementation activities, including disagreements regarding the assessment and mitigation of environmental and social impacts. An

effective grievance mechanism provides project-affected parties with redress and helps address issues at an early stage to receive and facilitate resolution of such concerns, complaints and grievances.

A separate GRM has been proposed under the LMP and SEP, which will guide the project GRM during the implementation and is proportionate to the potential risks and impacts of the project. LGED would ensure that grievance redress procedures are in place and would monitor those procedures to ensure that grievances are handled properly. Details of the institutional arrangements and procedures are discussed in the standalone LMP and SEP.

Overview, Scope and Principles. The proposed Grievance Redress Mechanism (GRM) will be answering queries, receiving suggestions and addressing complaints and grievances that are likely to get raised in the project cycle including identification, planning, design and implementation. It spans the entire implementation period and will cater to both the beneficiary communities and the directly and indirectly affected population including the workers employed by the contractors at different levels. Though the GRM generally is meant to set a mechanism to redress or to address environmental and social problems identified during the implementation, it will also cater to manage any disconnects that emerge from the field level and that has significant implications for effective implementation of the project interventions. Handling of grievances will be done in a culturally appropriate manner and be discreet, objective, sensitive, and responsive to the needs and concerns of the project-affected parties. There are certain principles that must be uphold during the functioning of GRM, such as

a. All grievances are to be treated impartially, objectively, and in a timely manner and users of a grievance mechanism will not be subject to retaliation, abuse, or any kind of discrimination and any allegations of retaliation, abuse, or discrimination must be remediated appropriately.
b. The grievance mechanism is expected to address concerns promptly and effectively, in a transparent manner that is culturally appropriate and readily accessible to all project-affected parties, at no cost and without retribution.
c. Any discrimination in providing access to the mechanism or system, under any circumstances is completely prohibited and will be considered punishable offences.
d. Anonymous complaints, grievances or suggestions shall be treated with the same priority as other regular cases and confidentiality of every single cases are to be strictly maintained, up until the complainant gives concurrence on identity disclosure.
e. The mechanism, process, or procedure will not prevent access to judicial or administrative remedies.
f. The results of every cases are to be communicated back with the complainants/affected persons/ entities.

Objectives of Grievance Redress Mechanism. GRM will be well accessible and inclusive. The fundamental objective of grievance redress mechanism (GRM) will be to resolve any project -related grievances locally in consultation with the aggrieved party to facilitate smooth implementation of the social and environmental action plans. Another important objective is to democratize the development process at the local level and to establish accountability to the affected people. The procedures will however not pre-empt a person's right to go to the courts of law.

The GRM will be consistent with the requirements of the World Bank's safeguard policies to ensure mitigation of community concerns, risk management, and maximization of environmental and social benefits. The overall objective of the GRM is therefore to provide a robust system of procedures and processes that provides for transparent and rapid resolution of concerns and complaints identified at the local level. It will be accessible to diverse members of the community, including women, senior citizens

and other vulnerable groups. Culturally-appropriate communication mechanisms will be used at all sub-project sites both to spread awareness regarding the GRM process as well as complaints management. Where project intervention areas cover beneficiaries from the small ethnic communities, project GRM will integrate traditional grievance management system available with the small ethnic communities.

Communication & Awareness raising on GRM. In order to make GRM accessible to all stakeholders, the entire procedure should be simple and easy to understand. With this in mind, LGED will inform the project-affected parties about the grievance process in the course of its community/stakeholder engagement activities and will make publicly available a record documenting the responses to all grievances received. All potential PAPs will be briefed on the scope of the GRC, the procedure for lodging grievances cases and the procedure of grievance resolution at levels, and indicated about the expected length of timelines for acknowledgment, response, and resolution and the provision of anonymous complaints lodging.

The final processes and procedures for the GRM will be translated into local language (i.e., Bangla) and disseminated at all project locations. These shall be made available (in both leaflet and poster format) to all project locations with the staff on site and in the offices at Villages, Upazila, and District.

Proposed Structure of Grievance Redress Mechanisms (GRM). For addressing grievances, four tiers of redress mechanism (GRM) as suggested in SEP and a single tier grievance redress system for labor management will be established with representations from beneficiary communities including men and women, civil society organizations, elected representatives and the project proponents (LGED). The first and most accessible level of a grievance redress system lies at the Upazila Engineer (UE)'s Office. A 'complaint box' as well as a 'Grievance Registry' will be kept at UE office, where an aggrieved, affected or interested person can either drop his/her letter of complaints into the box or hand-write the complaints on the registry. Both the complaint box and the registry will be placed at a well-visible and strategic place in the UE's office, so that people do not feel intimidated or followed while the complaints are lodged. Apart from these formal way of complaining, District Sociologist and other local level project officials could make periodic visit to the sub-project sites to interact with the local communities, project workers, or affected persons and to register any issues of concerns, complaints or suggestions. Whatever the mode of receiving grievances, all must be registered and a notification of receipt and back-to-back resolution processes and decisions has to be communicated with the aggrieved person in writings. For resolving the grievances or issues of concerns, each of the four levels in the grievance redress mechanism has respective Grievance Redress Committees (GRCs):

(i) the first GRC is at the Upazila level to be convened by the Upazila Engineer,
(ii) 2nd tier of GRC will be at the district level at Executive Engineer's Office with the district XEN being the Convener ,
(iii) 3rd tier of GRC will be at the Project Director's Office/PIU level where the Project director will convene the committee, and
(iv) the National level GRC will be functioning at LGED HQ level headed by an Additional Chief Engineer as the Convener. The detail structures of each GRC is detailed out in SEP for more clear understanding.

The structure and responsibilities of the GRCs in each level are described more comprehensively in the project SEP. However, all the committees will have a Convener and a Member Secretary, and the Member-Secretary will be coordinating and formally carry over the unresolved cases to the next level/committees. Therefore, the Member-Secretary of a GRC will take a member position in the subsequent level of GRC. The project will show highest integrity and commitment to address every grievances received at the very first level. All the grievances will be brought to the respective committees

for review and decision within three days of registration, and if the satisfactory resolution is not achieved in the GRC meetings, the cases will be forwarded to the next level GRCs.

The Social Development Specialist/consultant with the PIU will be the Member-Secretary or the key contact person at the project level. In case the issue is not resolved, the aggrieved person has the option to adopt judicial procedure. In cases where vulnerable persons are unable to access the legal system, the GoB will provide legal support to the vulnerable person(s). As well as, the PIU will assist the vulnerable person(s) in getting this support from the GoB. The PIU will also ensure that there is no cost imposed (such as for travel and accommodation) on the aggrieved person, if the person belongs to the vulnerable groups including the small ethnic communities. The verdict of the judiciary will be final. Details of the mechanism and structure are described in relevant documents.

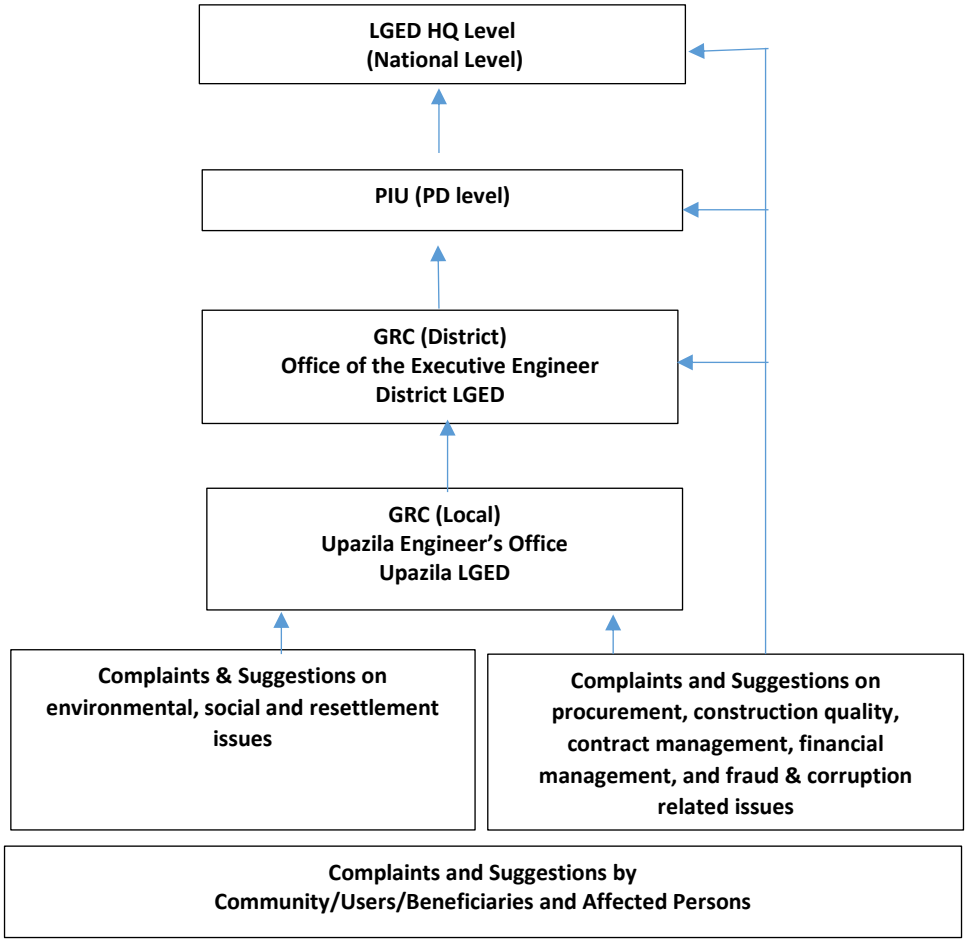


Figure 7.1: Grievance Redress Committees (GRCs) at different levels (excerpted and modified from SEP)

7.4 Information Disclosure and Revision of Documents

Disclosure of project information in project websites of LGED is a common practice for long. However, stakeholders are required to have open access to project appraisal documents including all the E&S safeguards documents, in order to allow them to understand the risks, impacts or potential opportunities from the project and the mechanism of information dissemination should be simple and understandable to all. Under the recent guidance of World Bank's Environmental and Social Framework, five key

materials (to the least) are required to prepare by LGED as part of E&S Safeguards documents at the appraisal level: (i) Environmental and Social Management Framework (ESMF)/ Environmental Impact Assessment (EIA) Report, (ii) Resettlement Policy Framework (RPF), (iii) Stakeholder Engagement Plan (SEP), (iv) Labor Management Procedure (LMP) and Environmental and Social Commitment Plan (ESCP), which need to be disclosed in full length, both on the World Bank and Project websites. Some other documents related to E&S safeguards are to be prepared and disclosed widely, based on the project scope and circumstances arised, e.g., Small Ethnic Community Development Policy Framework (SECDPF) will be required, if any project component will fall in or pass through an area where any small ethnic community inhabits or have some livelihood activities.

Two of the important means for information disclosure or dissemination that have been followed until now include briefing materials and organization of community consultation sessions. Besides the full-length copies of the previously said documents to disclose electronically, executive summary or some collected or excerpted portion of those documents need to be disclosed or circulated in the project sites as briefing materials or brochures, preferably in Bengali for an ease understanding by the communities and relevant stakeholders. The briefing materials and brochures should include project information, applicable assistance to be given to the PAPs; grievance mechanism, etc. that can be kept in the offices of local government (union parishad offices) and project offices. Posters on OHS, GRM, CoCs, GBV/SEA/SH, etc. are to be displayed at strategically visible locations and leaflets on the same topics can be distributed in the project areas. Consultation meetings should also be organized at regular intervals by the project to acquaint the communities, target group beneficiaries and affected persons of the following:

- Timeline and progress of the project by components;
- Information on beneficiary participation;
- Information of involuntary displacement, compensation and entitlements;
- Information of participation of small ethnic communities;

Also, opinion and consensus of the community needs to be sought for livelihood transformation, relocation of any community assets and involuntary resettlement management. Information disclosure procedures are mandated to provide citizen centric information as well as all documentation necessary for addressing any queries and it will enhance governance and accountability specifically with respect to strengthening of monitoring indicators to help the World Bank monitor compliance with the agreements and assess impact on outcomes. A set of disclosure requirement has been presumed and presented hereunder in table 7.3 for tracking the progress and outcomes of the disclosure initiatives.

Revision of E&S documents including the progress monitoring documents are subject to revision if and whenever required. The draft final E&S documents will be disclosed to the project website, after necessary concurrence from the World Bank is received. An invitation notice for further comments/suggestions will be posted on the same quoting a time frame (3 months) for submission deadline; and simultaneously, the translated versions (in Bengali) of the executive summary of the documents will be made available to the people/stakeholders in the project districts, in the form of project briefing/leaflets. During the consultation meetings with stakeholders, especially while doing the screening survey, project briefings including grievance redress mechanism shall be communicated, along with distributing the hard copies (leaflets). Any suggestions/ recommendations concerning any topic in the E&S documents will be recorded/ tabulated by the ES consultants at PIU and necessary incorporation/amendment of the documents will be made by the ES documents revision committee comprised of following personnel:

(i) Deputy Project Director at PIU

(ii) Environmental, Social and Gender Specialists at PIU
(iii) Environmental and Social Development Specialist at D&SC

Apart from the review and revision induced by the suggestions/recommendations received from the stakeholders, yearly review of the documents considering the evolved situation/available technology or services options will be conducted by the committee. Revision should be made bi-annually if required, or annually under regular procedure. Necessary concurrence on the review and revision of ES documents will be received from the World Bank.

Progress monitoring reports will also be disclosed on the project website, as stated above. If any discrepancies between the original project status (or any part of it) in the field and the progress reports are found and notified by any means of communication, the circumstances/ status shall be communicated by the respective receiving authority with the ES team at PIU, within 3 days of reporting. Review and relevant revision of progress monitoring reports will be conducted in 2 weeks of reception.

All the revised documents will be posted in the project website, replacing the older versions of the documents, within 2 weeks of receiving concurrence from the world bank.

Website link of every document (or the project website link) will be posted on the notice boards in LGED local offices under the project districts and contractor's site offices as well.

Table 7.3: Disclosure Requirement of RIVER Project

Project stage	List of documents/ Information to be disclosed	• Methods proposed	Locations/Time Frame	Target stakeholders	Responsibilities
Preparation	**Documentary Disclosure:** Project Appraisal Documents including SEP, ESMF, LMP, ESCP, RPF. **Activity dependent Information Dissemination:** Project Information relating to activities, impacts and opportunities, access to GRM, etc.	LGED and World Bank websites, District and Upazila administration website and notice board, Sub-Project office at the LGED District HQ, Social Media including Facebook, mobile SMS, FGD, KII, meetings etc.	As soon as the documents are prepared, and before project appraisal.	PAPs and Local Population including VG, marginalized population and tribal community; local administration and local business community, and boatmen; Expert in the field of E&S matters, Journalists, NGOS/CBOs, etc. Community Leaders, SMC members, BDRCS volunteers, BWDB Officials, potentially project affected persons (PAPs).	LGED/PD Project Feasibility team, Communication Specialist /XEN/UE
Implementation	**Documentary Disclosure:** Sub-project Specific ESA/ ESMP including Gender Action Plan/SEA/SH Prevention and Response Action Plan/ Code of Conducts (CoCs)/Traffic management plan/ Labor Influx Management Plan (LIMP)/ Community Consultation Plan/ RAP and SECDPF (when Required)/ GRM leaflets/ All progress and monitoring reports. **Activity dependent Information Dissemination:** Consultation, meetings and regular on-the-job training on the above topics.	Documents at site offices/ UE's office, disclosed on project websites. Presents in meeting, Signboard/posters at the subproject sites, Brochures/leaflets, engaging safety workers, community consultation, FGD, KII.	Immediately after producing (and revising) the documents. Training/motivation/consultation meeting once in a month and other activities as required.	Community people, workers, PAPs including VG and SEC, Contractors, commuters, including pedestrians and drivers, homestead owners whose land is planned to be raised, farmers, fishermen, boatmen etc. Community Leaders, SMC members, BDRCS volunteers, SMCs, relevant stakeholders as identified.	Contractor, XEN/UE/ Social Development Specialist, D&S Consultants, Communication Specialist, District Sociologist in coordination with local administration
Operation	Standard Operational Manual (SOM) for Resilient Shelters, Traffic management along the access roads.	Formulation of documents, preparing Brochures and organizing FGD, KIIs, and public consultation.	Formulation of SOM before the implementation is done, and placed at SMC offices; and other works as required/ daily.	PAPs, Community Leaders, SMC members, BDRCS volunteers, Community at the sub-projects, NGOs, local elected leadership etc.	UNO/XEN/UE/District Sociologist, Communication Specialist, local administration.

CHAPTER 8: INSTITUTIONAL FRAMEWORK AND CAPACITY BUILDING

8.1 Project Implementation Arrangements

The Government will have overall responsibility for project implementation and management through its Ministry of Local Government, Cooperatives and Rural Development (MoLGRD&C) and the Local Government Engineering Department (LGED) will be responsible for implementing the project under the ministry. LGED will implement the project through a dedicated Dhaka-based PIU, headed by a Project Director (PD). The PD will be supported by a dedicated Deputy Project Director (DPD), Senior Assistant Engineer, Assistant Engineer as well as the associated technical and E&S support staff. A majority of the implementation will be based on the district and upazila levels, where the associated LGED field officials (i.e., Executive Engineer, Sr. Assistant Engineer, Assistant Engineer, Sub assistant Engineer etc.) will act as the focal person(s) responsible for supervision and monitoring of work implementation in their respective districts and upazilas. The Project will have these LGED officials dedicated for the Project approved by the manpower committee of Ministry of Finance. To the extent possible, all staff will be expected to serve for the duration of the project in order to ensure consistent implementation of the project. Following the Government's Rules of Business, the PIU will report to the respective Ministerial Project Steering Committee (PSC).

The PSC will be chaired by the Sr. Secretary/Secretary, LGD, MoLGRD&C and will include representatives from ministries, division, departments/agencies that are part of overall implementation, coordination, and strategy. PSC will be responsible for: (i) providing implementation advice and operational guidance; (ii) reviewing financial and physical progress; (iii) resolving any implementation problems (iv) providing any other necessary direction for effective implementation. PSC will meet at least every six months.

Project implementation agency will have a Project Implementation Committee (PIC), chaired by the head of the agency (CE of LGED), which will assist in the supervision of project components. The PIC is expected to include relevant representatives from ministries, division, departments/agencies. The PIC will ensure that implementation follows both Government and Bank rules and regulations. Specifically, the PIC will be responsible for: (i) supervising and reviewing implementation and providing necessary advice for timely delivery; (ii) monitoring and evaluating implementation progress and suggesting necessary course corrections; (iii) resolving issues and conflicts that may emerge during implementation; (iv) facilitation coordination and convergence with other line ministries, division, and departments/agencies; and (v) keeping the PSC apprised on overall performance and key issues relating to the project.

This PIU will be strengthened to implement the proposed Project. Therefore, it will hire a , Senior Environment Specialist, Senior Social Development Specialist, and a Gender Specialist, to complement its capacity in dealing with project ES issues. The E&S Specialists at PIU are responsible for overall coordination, supervision and monitoring of environmental and social issues under the project. They will also review and endorse the screening documents, training documents, support in ESMP implementation, finalizing the specifications to be adopted in bidding/ contract documents and provide guidance to the supporting consulting firms in upholding the ESMF and other ES documents. The specialists will provide technical advice to the Project Director in all ES issues under the project purview, including management of contractual obligations on ES instruments.

The LGED will hire and use the design and supervision consultancy (D&S) services of international /national firm through competitive selection in engineering surveys, designs, environmental and social assessments of subprojects, and preparation of ESMPs, along with RAP (if required) including data collection and construction supervision including quality assurance, preparation of bidding documents and final certification of quantity and quality compliance of works completed by the contractors. As part of the activities of the safeguards team Environment Specialists of D&S consultants will conduct

the site specific IEEs (where applicable) along with ESMPs. If additional environmental assessment is necessary, LGED will take necessary steps for carrying out the assessment (e.g., through hiring a Consultant). The cost of the environmental mitigation measures will be estimated and included in the bill of quantities. The contractors will be assigned for implementation of these environmental mitigation measures. The Social Development Specialist of Safeguards team of the D&SC will carry out social screening, social impact assessment and prepare SMP and where applicable RAP for the implementation before civil works construction. Preparation of bidding documents for the project interventions incorporating special considerations in safeguards issues will also be undertaken by D&SC firm.

A Monitoring and Evaluation (M&E) firm will assist LGED in monitoring project impacts and supervising the implementation of the social and environmental compliance. Separate firms will also support LGED for the activities related to environment and social safeguard and community participation. The PIU support staff will comprise experts in environment and social safeguards, gender, procurement and financial Management, GIS and other as necessary. More comprehensive roles of M&E firm is articulated in the given ToR in Annex-J.

Contractor's role and responsibilities commence at the tender preparation stage and continue until all monitoring responsibilities end, which may extend beyond the construction phase. To facilitate environmental and social management plan (ESMP) implementation, the contractors must be prepared during the tendering and preconstruction phase to cooperate with PIU, D&SC and the local population in the mitigation of impacts. Contractors will play a vital role in this project to ensure that environmental and social risks and impacts are minimized effectively. They also play an important role in ensuring adequate health and safety measures are put in place not only for their workers but also for the surrounding communities.

Contractors have a duty to ensure that their activities do not cause significant and irreversible damage to the environment they are working in and have the responsibilities to ensure that social risks and impacts are managed adequately. They will make sure that no social conflict arises due to engagement of labors and engage labors within the local communities as much as possible during construction. All necessary measures, as specified in the Screening Form and/or ESMP, should be followed and monitoring measures put in place. Special care needs to be taken during pre-construction and construction phases when heavy machinery and equipment are used. Also, felling of trees or removal of vegetation need to be carefully managed through consultation with the local communities. Specific management plans, e.g. drainage management, traffic management, emergency preparedness and response, etc. need to be prepared by the Contractor prior to commencing any physical works. In addition, the Contractors need to ensure that proper induction and training is given to all of their workers. A full-time, on-site ESHS Specialist by the contractor will be required for sub-projects working in/near particularly sensitive environmental sites. Proper signage and fencing need to be used at all times.

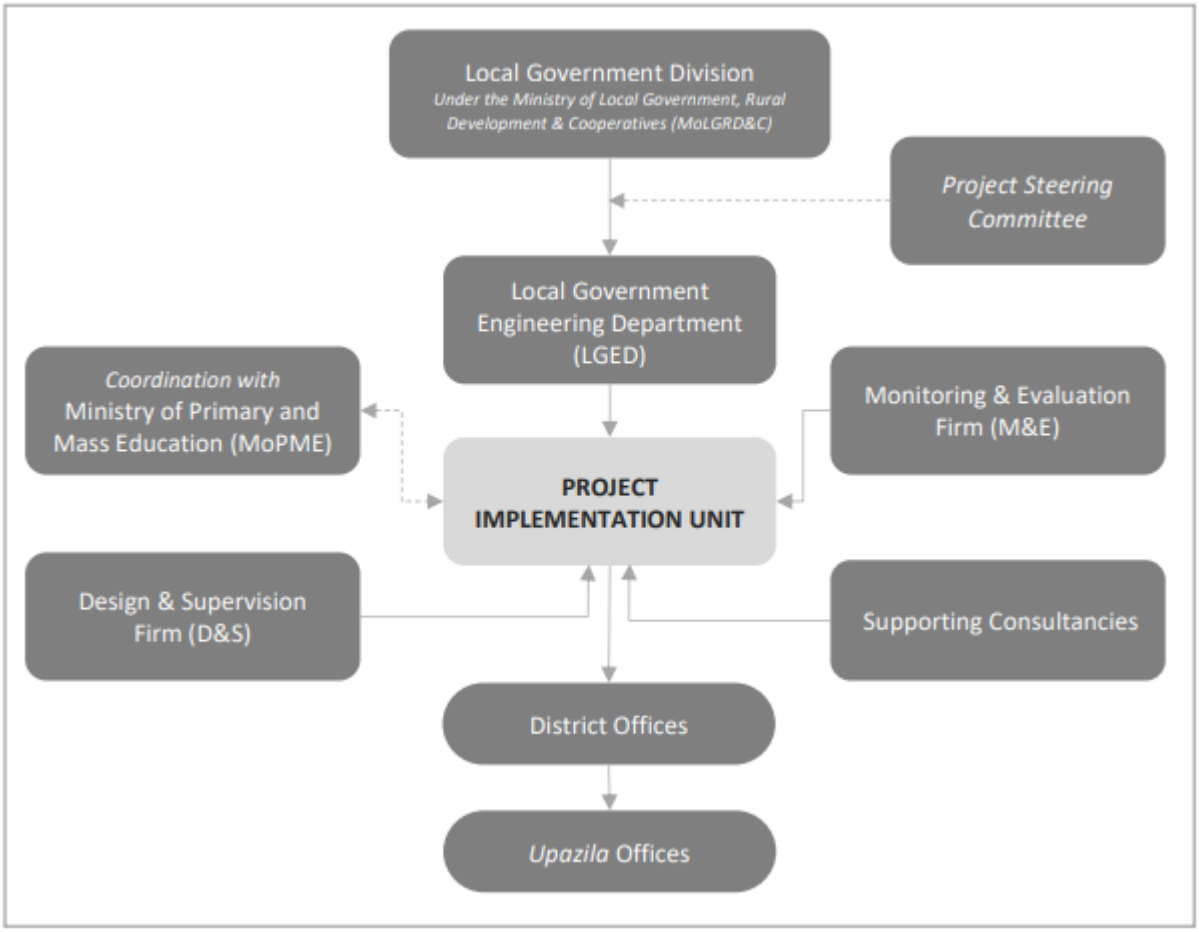


Figure 8.1: Project Implementation Arrangements

Contractors employed during operation & maintenance as well as decommissioning phases have similar roles and responsibilities of social aspects as described above. However, experience suggests that contractors may have little interest in dealing with environmental and social problems in the absence of performance-related criteria. Therefore, the contractor will be required (with the assistance of the PIU) to update the draft site-specific ESMPs prepared by the D&SC during detailed design phase. PIU environment and social specialists will monitor the safeguard related activities including working conditions of the labors on a regular basis and clearances for payments to the contractors will include certification from the D&SC as to the effective implementation of the ESMPs and all other mitigation measures specified in the ESMP. The completion of implementation of mitigation measures will therefore be linked to payment schedules.

Contractors, with active support of the PIU, need to ensure that the Grievance Redress Mechanism is effective so that potential conflicts are avoided and claims by affected people are addressed in a genuine manner.

8.2 Other Relevant Institutions in Implementation Arrangements

The progress in environmental and social due diligence within the project framework goes in parallel with successful running of the project, and therefore couple of other organizations beyond the umbrella of executing agency constitutes the roles of inevitable stakeholders in implementation arrangements, which may continue throughout the various stages of the proposed project activities. In this relation, the key responsible Government institutions are Department of Environment (DoE), Ministry of Primary and Mass Education (MoPME) and Ministry of Planning (MoP) and so on.

The table below presents a summary of key responsibilities of major government institutions who are involved in different capacities for environmental protection and compliance along with project implementation and progress.

Table 8.1: Institutional Responsibilities, Environmental Protection and Compliance

Institution	Responsibilities related to the project implementation and compliance
Planning Commission, and Ministry of Planning and Ministry of Finance	• Project Evaluation Committee (PEC) hosted at Planning Commission evaluates the project DPP and if evaluated positively, the DPP is forward to the ECNEC (Executive Committee of the National Economic Council) under the Chair of Prime Minister for final approval for final approval of the project. • ERD (Economic Relations Division) of Ministry of Finance and IMED (Implementation Monitoring and Evaluation Division) under the Ministry of Planning have a very pivotal role in project approval and progress monitoring and evaluation.
Department of Environment (DoE), Ministry of Environment, Forest and Climate Change	• With the mandate to Conserve environment and improve environmental standards, control, mitigate and prevent environmental pollution, DoE is the sole regulatory entity of Bangladesh Government to enact environmental legislations and relevant instruments against every physical interventions within the territory of the country. • As such, LGED requires to obtain Environmental Clearance Certificate from DoE before any physical intervention is taken place, and this department has the authoritative capacity to deny or void the clearance, make punitive actions, or limit the access to the sites already selected for interventions. • They may conduct inquiries on pollution of the environment and rendering direction, guidance and assistance to LGED or PIU in upholding the EMPs or other requirements delineated in the EMSF/EIA/special instructions by the DoE while ECC is issued.
Ministry of Primary and Mass Education (MoPME)	• LGED will develop approximately 550 school cum flood resilience shelter within the selected school compounds that needs a primary regular coordination between two line ministries, as the Ministry of Primary and Mass Education owns all the primary schools across the country. • The ministry is also responsible for successfully running the facilities embedded into the new shelter infrastructure and extending hands to the local authorities for combating any disaster scenario, whenever the school building is required to refuge shelter to the local vulnerable population.
Local Administration (District/Upazila / Union)	• LGED's district and upazila offices are the key agents for the successful implementation of sub-projects along with attaining the necessary compliance in relation to safeguards implementation, including implementation of ESMPs in the field.

8.3 Monitoring Mechanism for ESMP Implementation

Monitoring, as such, is required to ensure that the mitigation and enhancement measures are being properly implemented and at the same time, to determine whether the benefits of these measures are being realized over time. Monitoring responsibilities lie on all the responsible parties or institutions directly involved with or oversee the construction works.

There will be several tiers in monitoring framework to ensure the proper implementation of ESMP. Contractors, throughout the construction or implementation period, must ensure that environmental and social risks and impacts are minimized effectively while working at sites and adequate health and safety measures are put in place not only for their workers but also for the surrounding communities. Contractors' employed site managers and Environment, Health and Safety Specialist (EHSS or persons with similar responsibilities) shall take all reasonable steps to protect the environment on and off the

Site and to avoid damage or nuisance to persons or to the properties belong to public and private individuals/entities or to different features and establishments, from pollution, noise or other detrimental causes arising as a consequence of different methods of operation and activities. Contractor, is thus, responsible for self-monitoring on the implementation of all E&S works, due to having legal bindings under the contract document with LGED; and EHSS will act on Contractor's behalf to abide by every single E&S clauses under the bidding documents. S/he shall instruct as well as supervise the day-to-day progress of ESMP implementation activities on contractors' behalf. Apart from the ESMP implementation, some specific management plans, e.g., drainage management, traffic management, emergency preparedness and response, etc., whichever required, need to be prepared by the Contractor and strong supervision for the implementation of those plans is also a part of the said employees' responsibilities. As the Contractor's responsibilities lie in complying all the regulatory or binding issues under the ES documents (including ESMP) within the purview of the contract, a monthly compliance report will be sent to the PIU every month from his/her end, which is to be reviewed and cleared by the E&S Specialists at PIU.

Design and supervision consultants shall stand at the first tier of the monitoring mechanism. When the contractors are mobilized in the field, safeguards consultants from D&SC firm and the Resident Engineer will ensure that contractors are adherent with every suggestive measure delineated in ESMP, on top of the best engineering practices at sites including Occupational Health and Safety (OHS). D&SC firm will prepare regular monitoring reports based on the findings of stringent supervision and monitoring on its part.

PIU will have environmental and social specialists who will conduct field visits very frequently (at least twice in a month). Moreover, Executive Engineer's office in respective districts and Upazila Engineer's offices will play a vital role in upholding the proper monitoring and supervision of civil works and associated project activities, including social and environmental safeguards in and around the sub-project sites. Environmental and social specialists of PIU will monitor that all staffs of the contractors and other counterparts who are involved in project implementation receive both initial and ongoing environmental and social safeguard awareness and training sufficient to ensure the best practices in the field. Local Engineers from LGED and PIU safeguards specialists shall ascertain that contractors cleaning and reclamation works after the decommissioning of sites/ end of construction works are perfectly done and will also suggest for punitive measures against the contractors if any negligence or indifference is found in following the ESMP to the fullest effectiveness.

The highest tier in the monitoring system is bestowed upon the respective Ministerial Project Steering Committee (PSC) chaired by the Sr. Secretary/Secretary, LGD, MoLGRD&C. The PIU, in collaboration with the PSC, will also ensure that Environmental and social safeguards training are provided to all Project personnel.

Widespread COVID 19 situations prevailing across the country has put further intense necessity for all concerned parties to scale up their monitoring frequency and activities in line with the prescribed guidelines to be followed in the field, camp site, and project offices. Frequent and abrupt visit to the working sites and labor camps is quite necessary in this crisis period and is strongly suggested.

8.4 Reporting Requirement

Implementation of ESMF/ESMP in the field will be ensured by the Contractors, and D&SC under the direct guidance of PIU will take care of every efforts to get Contractors and other Field staffs/workers implementing the same in the field. The PIU environment and social specialists will carry out ESMF monitoring on behalf of Project Director's Office to ensure that the mitigation plans are being effectively implemented, and will conduct field visits on a regular basis. However, The D&SC will prepare quarterly safeguards progress report to be submitted to the PIU/and World bank. These reports will summarize the following:

- Progress in implementing this ESMF and subsequent ESA, ESMP, RAP/ARAP 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 and/or Social 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.

Additional reporting requirements are summarized in the table below.

Table 8.2: Reporting requirement and responsibilities

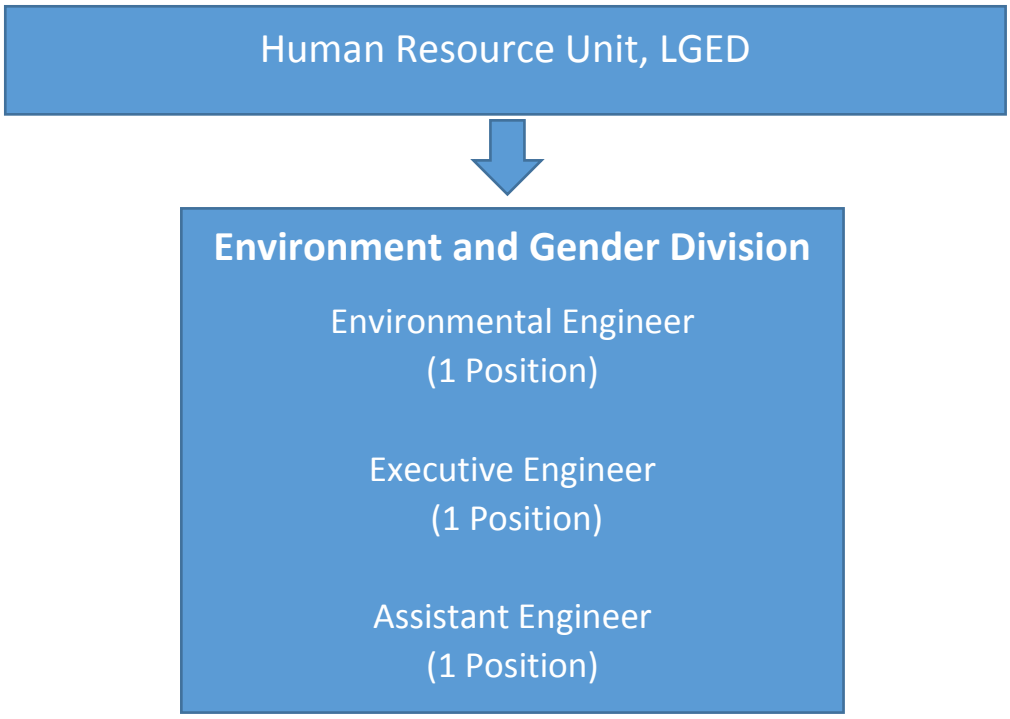
Report/Documents	Description	Prepared By	Submitted To	Timeline
ICT Based Monitoring	Real time monitoring by all field level staffs with worksite photographs and description	All field level staffs and consultants/staffs on field visit	Central Project Server	Daily (during the office hour)
ESHS Reporting	Reports on the Environmental, Social, Health and Safety (ESHS) performance of the project, including implementation of ESCP.	D&SC	Project Director	Quarterly within 2 weeks of a calendar quarter
Compliance Reporting	Compliance monitoring report on ESHS management on each sub-project sites, including with staff/workers management, SEH/SH management, grievance response, traffic management, OHS and CHS management, safety and security breach and training provided to consultants/staff/workers.	Environmental Health and Safety Specialists (of Contractor)	Project Director, through Contractors.	Monthly (by 10th of every following month)
Training Records	Register of all trainings and capacity building activities conducted under the project	Safeguards consultants at PIU	Project Director	Within 3 weeks of any training/capacity building activities
Environmental and Social Screening, Survey and Reporting Status of work packages	Status on environmental and Social Screening and survey of work packages for design phase	M&E Specialist at D&SC, with support from Safeguards consultants	Project Director	Monthly
Stakeholder Meetings/Consultations	Objective, number and mode of consultations as SEP compliance report	Safeguards Consultants from D&SC	Project Director	Monthly during the design period and quarterly during the construction period.
GRM Records	Register of Grievance Received and Actions taken	GRC or Consultants during construction period	Project Director	Monthly
Incidents/Accidents reporting	Prompt notification of any incident or accident related to the Project which has, or is likely to have, a significant	Safeguards Consultants from D&SC; with the help of field level	Project Director	Initially notify within 24 hours of learning of the incident or

	adverse effect on the environment, the affected communities, the public or workers including accidents that could result in fatalities, injuries, and incidents of Gender Based Violence/Sexual Exploitation and Abuse/ Sexual harassment (GBV/SEA/SH), concerns of COVID-19 infections, serious mismanagement in handling waste, security breach, etc.	staffs		accident. A detailed report will be provided within 96 hours including classification of incident.
Specific Management Plans/Instruments	If the project require to prepare any specific assessment/management plans/instruments, under any circumstances, those will be provided.	Safeguards Consultants at PIU, and D&SC Safeguards staffs	Project Director	As Necessary

8.5 Institutional and Project Capacity Development

8.5.1 Capacity Assessment of LGED

LGED has implemented a good number of projects funded by the World Bank, ADB, JICA, and other donors. As per the organogram of LGED, circulated in December 2020, a Section or Division for Environment and Gender is functional under the Human Resource Unit of LGED. Headed by an Environmental Engineer, equivalent to an Executive Engineer (Senior Level), another Executive Engineer for Environmental and Gender and an Assistant Engineer (Environment and Gender) are now running the section. They are the officially responsible for ensuring environmental consideration along with gender mainstreaming in all of the project activities of the LGED. The following organizational chart shows the present manning structure in the central environmental and gender unit at LGED.



Within the purview of LGED works across the country, majority of the development works are being implemented under different projects, either government or donor funded. Being one of the largest government organizations working across every corners of the country, primarily under development projects, the institutional capacity both in governance and project management capacity has improved a lot in last several decades. LGED has its own organizational safeguards documents, training materials, organizational library facilities, quality control and environmental laboratories. It also has a huge pool of Engineers, consultants, management officials, and so on, though within the project structure. On the contrary, the optimum development in staffing structure in Environmental and Social Safeguards is not at expected level, and the organizational instruments are not well updated for combating new challenges in the ES issues; and these are the fields where LGED needs to look upon in a fresh way.

8.5.2 Requirement of additional experts

In addition to that, qualified consultants will be recruited by the RIVER-PIU and Contractors in a temporary basis to provide technical assistance, training and capacity building in the environmental and social issues. In general, the roles and responsibilities of the environmental and social experts should be as follows, but not limited to:

Senior Environmental Specialist and Environmental Specialist in PIU. The PIU will have dedicated Environmental Specialists to ensure implementation of ESMP and other environmental management responsibilities. They will maintain liaison with WB safeguards team, regulatory agencies, and other stakeholders during the Project implementation, and advise the PIU on ES issues, challenges and effective implementation of ESMP. The Specialists will also take active initiatives to establish GRM, update ES documents, review and preparation of other safeguards documents, monitor construction activities to ensure that environmental mitigation measures are properly implemented.

Senior Social Development Specialist in PIU. The PIU will have a dedicated Social 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 take active initiatives to establish GRM, update ES documents, monitor construction activities to ensure that social mitigation measures are properly implemented.

Gender Specialist in PIU. The PIU will have a dedicated Gender Specialist to ensure implementation of gender safeguard responsibilities. S/he will maintain liaison with WB safeguards team, regulatory agencies, and other stakeholders during the Project implementation. The Specialist will also monitor gender aspects associated with construction activities are properly implemented, and take active initiatives to establish GRM and update relevant ES documents.

Consultants at PIU will always be in continuous engagement with stakeholders and make necessary steps to review and update of SEP and LMP, periodically.

Contractor's Environmental Health and Safety Specialists (EHSS) . The construction contractors should assign a dedicated, adequate qualified and experienced, site-based EHSS at the construction site. The EHSS will be responsible for implementing 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. S/he will also be responsible for implementing SEP, LMP, RPF and ESCP, and conducting environmental and social safeguards training for the construction crew. The EHSS Supervisor needs to be a graduate preferably in environmental science/engineering with at least 3 years' experience in environmental management and health and safety.

8.5.3 Training Requirement

Advanced training on environmental and social management and monitoring would be useful for the engineers of the LGED in successfully implementing environmental and social management. It is also necessary to provide the basic training for key personnel on regulatory requirements, environmental impacts, and environmental assessment and management in home or abroad. They can participate in field based training including the environmental and social impact assessment, screening, scoping, mitigation and monitoring of existing construction, rehabilitation and maintenance projects under the LGED.

The training program for LGED Staff shall be based on their expanded functions and new and additional safeguards areas covered by the World Bank ESF. Hence, a general introduction to the new World Bank ESF should be a priority, followed by Labor and Working Conditions, Community Health and Safety and Stakeholder Engagement.

Table 8.3: Capacity Development Support (Training)

Training to be provided	Targeted Groups	Responsibility	Timeline of Trainings
World Bank's Environmental and Social Framework: Training on ESF and the 10 ESSs including preparation of ESMF, E&S Screening, IEE, and ESMP	Selected LGED staff, PSC, PIU, Contractors	PIU/D&SC	Prior to the start of the Project activities. (To be repeated as needed)
Occupational Health and Safety Personal protection equipment Workplace risk management Prevention of accidents at work sites Health and safety rules Solid and liquid waste management Hazardous waste management e.g., fueling of vehicles Preparedness and response to emergency situations Awareness campaign on HIV/AIDS	Staff from PIU & District & UZ Offices, Contractors' representatives	PIU/D&SC	Prior to the start of the construction activities. (To be repeated as needed)
Stakeholder Engagement Stakeholder identification and mapping, SEP Implementation Plan, Strategy and measures of Stakeholder Engagement, Grievance Mechanism and Reporting, Stakeholder Engagement Reporting.	Project Officials, District Sociologists, D&SC field level engineers and consultants, Contractors.	PIU	Prior to the start of the project activities, and to be repeated once in a year for first 3 years.
Health Safety and Practices under COVID situation COVID Symptoms and Prevention Measures; Construction Worksite management; Labor recruitment and on the job training; Health Safety Practices and personal Cleanliness; Measures and contacts in Emergency Situations.	Project Officials, LGED XENs and UEs in project districts, D&SC engineers and consultants, Contractors.	PIU	Prior to the start of the construction activities. (To be repeated as needed)
Labour and Working Conditions Terms and conditions of employment according to national working laws and regulations Contractor and sub-contractor codes of	Local officials, Contractors Health Safety Officer, Labour Sardars (Leaders)	PIU	Prior to the start of the construction activities. (To be repeated as needed)

conduct Worker's organizations Child labour and minimum age employment rules			
Grievance Redress Mechanism Module, design and production of a training module addressing the following aspects: Registration and processing procedure, Grievance redress procedure, Documenting and processing grievances, Use of the procedure by different stakeholders	Local Government Officials, LGED field office staffs, Civil Society, Local respected persons, and Contractors	PIU/D&SC	Prior to Project effectiveness and thereafter once every six months Each session for 1 day
Construction Waste Management: Information about the risks, along with health and safety advice, the World Bank Group Environmental Health and Safety Guidelines on managing construction waste and the relevant international good practices, Basic knowledge about handling procedures and risk management Using protective and safety equipment Information about the waste sorting process, Safe procedures for managing waste in dumps, Hazardous waste management, Refueling procedure Spillage of soil management	LGED Field level officials, Contractors	PIU /D&SC	Prior to Project effectiveness and thereafter every three months Each session for 1 day
GBV Risk Module Raising awareness and measures to prevent and mitigate GBV risks The topics, activities and targeted groups will be developed in the GBV Action Plan including GBV-specific GRM	LGED officials, Contractors Health Safety Officer, Labour Sardars (Leaders), Local NGOs	PIU/ D&SC	Prior to Project effectiveness and thereafter every six months Each session for 2 days
Ancillary trainings on i) Preparation of RAP and SECDP (if required) ii) GBV/SEA/SH risk in the project and its implementation, need to understand and sign Code of Conduct iii) Environmental and Social compliance monitoring iv) Efficient use of resources and prevention of pollution v) Emergency procedure and response including emergency reporting, Root Cause Analysis (RCA) and Safeguard Corrective Action Plan (SCAP)	Staff from PIU & District & UZ Offices, Contractors' representatives	PIU/D&SC and M&E Specialist	Training of PIU staffs and consultants within 6 months of effectiveness; and prior to the start of the construction activities for others and to be repeated as required.

8.5.4 Capacity Building Action Plan

Capacity building for environmental and social safeguard management will need to be carried out at all tiers of the project. At the construction site, D&SC will take the lead in implementing the capacity building plan, though the contractors will also be responsible to conduct trainings for their own staff and workers.

Training shall be imparted, on a regular interval, to the Project and LGED officials and Staff on Safeguard Issues. There are some other areas, where target inventions are to be made in order to strengthen the capacity of both LGED as an institution and the project as well.

Table 8.4: Action Plan for Project Capacity Development

	Suggested interventions	Rationale
1. Project Staffing	Individual Consultants at PIU within 2 months from signing of legal agreement in the Positions of: (i) Senior Environmental Specialist (ii) Senior Social Development Specialist (iii) Gender Specialist Environmental, Health, and Safety Specialists (EHSS) to be recruited by the contractors within 1 month of the contract award.	As part of the strengthening of the capacity of the project PIU, certain numbers of individual consultants have to be employed to fill the gaps or adjust the monitoring and supervision capacity of the PIU at full swing with superb strength.
2. Training/Workshops	Sated in Training section	
3. Technical and Instrumental Interventions	Consulting services for Awareness building on (i) Adaptation Measures in the event of flood as a disaster, (ii) Sheltering to Flood Shelters and its management, (iii) Community based activities in the event of disasters.	Flood shelters and other community infrastructures to be developed/ implemented under this project require a community based mobilization and awareness campaign as to the interventions, user's protocol and other adaptive (and cooperative) activities. To achieve an expected result, awareness campaign and community mobilization can be adopted through engaging the students of the selected schools under the project and their families would be a great choice at first hand.

List of Annexures:

Annex -A: Sample Checklist for Environmental and Social Screening of Sub-Projects

1. Sub-project Description

Package Name and Number:			
Name of the Sub-project/component:			
Educational Institute ID/ Road ID:			
Estimated total Cost of the sub-project/component (in Taka):			
Estimated Operation and Maintenance Period (Sub-project life time):			
Division:	District:	Upazila:	Union:
Name of the community/ Local area:			
Size of the local population:			
Major profession of local population:			
Distance of the site from Upazila HQ:			
Nearby Major Road:			
Nearby River/ Canal:			
Description of proposed sub-project activities (incl. type of activities, footprint area, natural resources required, etc.):			
Brief description of sub-project site: (e.g. present land use, Important Social and Environmental Features (IEFs) near site, etc.)			
Types of waste to be generated during construction and operation phase:			
Sensitive environmental, cultural, archaeological, religious sites near (within 1km) of site including major water bodies/forests:			

Instructions: Attach completed environmental and social screening forms with this form.

2. Environmental and Social Screening Form

Section A: Sub-project Overview

Description of sub-project/component interventions:
Sub-project Location:
Expected construction period:
Description of project intervention area and project influence area with schematic diagram (where relevant, indicate distance to sensitive social and environmental areas such as archeological/religious/ historical or cultural assets or sites, human settlements, forests, water bodies, etc.):

Section B: Social and Environmental Screening Checklist

Screening Questions	Y	N	Impact Scale[1]				Remarks
			L	M	S	H	
A. Sub-project Sitting/ Location Is the Sub-project area……. ▪ Adjacent to/or within any of the social/environmentally sensitive areas?							
• Cultural heritage site							
• Ethnic minority areas							
• Protected Area							
• Wetland							
• Mangrove							
• Estuarine							
• Buffer zone of protected areas							
• Special area for protecting biodiversity							
• Bay							
▪ Are there any ponds, khals, beels, haors, baors, rivers, etc. in/around the site? Please specify numbers & names for each.							Nos. – Distance – Direction
							Ponds:
							Khals:
							Beels:
							Haors:
							Baors:
							Rivers:
							Other:
▪ Any sensitive sites for river erosion? Where &							

[1] Y = Yes, N = No, L=Low, M=Moderate, S=Substantial, H=High

Screening Questions	Y	N	Impact Scale[1]				Remarks
			L	M	S	H	
Severity?							
B. Baseline at Pre-Construction Stage							
Ancillary Facilities (e.g. status of access road or any other facility required for sub-project to be viable) ?							
Air quality status (apparently/ visibly)?							
Requirement of accommodation or service amenities (toilet, water supply, electricity) to support the workforce during construction?							
Possible location of labor camps?							
Requirement and type of raw materials (e.g. sand, stone, wood, etc.)?							
Identification of access road for transportation?							
Location identification for raw material storage?							
Possible composition and quantities of wastes (Solids wastes, demolition materials, sludge from old latrines, etc.)?							
Mention source of drinking water in dry and wet seasons.							Shallow / Deep Tube well If Deep tube well, mention depth: Feet = If other, Specify: Rainwater harvesting available: onsite / off site / NA
Has the sub-project/component site any seismic risk (historically)?							
Identification of possible stakeholders, esp. vulnerable groups?							Description:
C. Potential Socio-environmental Impacts Will the Sub-Project cause…							
▪ Potential influx of workers to the project location? Whether significant for the local community?							
▪ Possible conflict between workers and local people?							
▪ Resource constraint for the local population (due to the additional burden of incoming workers/staffs)?							

Screening Questions	Y	N	Impact Scale[1]				Remarks
			L	M	S	H	
▪ Possible loss of agricultural land/ crops?							
▪ Involvement of any land acquisition and involuntary resettlement?							
▪ Loss of business or enterprises due to land requisition/acquisition?							
▪ Loss of income sources and means of livelihoods due to land acquisition/ requisition?							
▪ Impacts on any vulnerable (poor, old-aged, female-headed households, ethnic people, etc.) people?							Detail out about the groups and how is impacted.
▪ Loss of access to natural resources, communal facilities and services?							
▪ Impacts on social and economic activities due to the change in land use (if any)?							
▪ Cutting trees for construction works of with more than 3" girth diameters?							Species name & Number of trees:
▪ Impact on pond or fish population or aquatic habitats?							
▪ Any surface water pollution? If yes, Source?							
▪ Any Groundwater pollution? If yes, Source?							Fe---As---Mn---Hard[2] If other, Specify: Contaminant's depth (ft): (Shallow / Deep)
▪ Possible contamination of surface and ground waters due to improper waste disposal:							
▪ The type and quantity of waste generated (e.g. Solids wastes, liquid wastes, etc.):							
▪ Impacts on surrounding environment due to sanitation and solid waste disposal: (Briefly mention the sources and extent of impacts)							Disposal area available? Yes/No If yes, where & how:
▪ Impacts from construction camp?							Camp area available? Yes / No If yes, where? onsite / off site
▪ Disturbance or modification of existing drainage channels (rivers, canals) or surface							Water logged for (days):

[2] Fe=Iron, As = Arsenic, Mn = Manganese, Hard = Hardness

Screening Questions	Y	N	Impact Scale[1]				Remarks
			L	M	S	H	
water bodies (wetlands, marshes)?							Water height:
▪ Destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development?							
▪ Flooding problem in the area? Mention frequency & severity							Year – Height - Days
▪ Traffic disturbances due to construction material transport and wastes?							
▪ Possibility of sub-project induced air / dust pollution? Mention the sources and impacts.							
▪ Noise pollution from construction, industrial, vehicles?							
▪ Risks and vulnerabilities related to occupational health and safety due to hazards during construction and operation phase?							
▪ Negative effects on neighborhood or community (Mention types and scale of impacts)?							
▪ Degradation or disturbance of historically, culturally important site (mosque, graveyards, monuments etc.)?							
▪ Any Impediments to movements of people and livestock during construction period?							
▪ The shelter building need to relocate/ Shift to another place? ▪ If yes, Mention Relocation place name, distance from site, for how long, is rent needed? Show relocation place in the topographical map.							
▪ Disturbance to the student in taking the lesson in the classroom?							
▪ Direct or indirect hazards to student for walking in the school campus by construction activities?							

Screening Questions	Y	N	Impact Scale[1]				Remarks
			L	M	S	H	
▪ Is there any disaster early warning system? If Yes, by Whom?							Yes: Available; UDMC, Miking, TV, TNO, TEO, Red crescent, Mobile phone SMS etc.

Table 3: Important Establishments and boundary village/ river around the Sub-project site

Direction	Important Establishments	Village/ River
North side		
South side		
East side		
West side		

Table 4: Total Trees found inside the school area/ along the road length /surrounding the site, (those need to be removed)

	Nos.	Tree name/ Species
Small		
Medium		
Big		

Table 5: Pond/ Water bodies found inside and adjacent to the sub-project area:

	Nos.	Size (ft x ft)	Depth (ft)	Fish Firming (Yes or No)	Name of Firming Fish	Use of pond (Domestic/ Bathing / other)
North						
South						
East						
West						

Indigenous, brackish water and endangered fish species exist in catchment area of the Sub-project: Yes or No. If yes, Mention Name:

The common local birds found in the catchment area:

Wild animals found in the catchment area:

Endangered faunal species found in the catchment area:

The soils are highly / moderately / not saline at a depth of ft in and around the sub-project areas throughout the year.

Location of borrow/excavated/collection area where from soil are collected for raising land:

Whether Soil collected from any known polluted areas (solid/faecal waste dumping area, polluted industrial area, sediment beneath a polluted water, etc.): *(pls. explain with apparent quality of soil)*

Climate Change Consideration:

Whether the climate change mitigation/adaptation measures have been considered for the subproject (highest flood level consideration, Free board design of road, greenhouse gas emission etc.)

Table 6: Significant features of the Sub-project

Owner of land	:	
Land available	:	Decimal (ft x ft)
Structural Design Option	:	
Tribal people	:	
Connecting Road	: Existing:	;No= ,New road is needed length=
Land acquisition	:	

Social risks/challenges that might affect project or sub-project success:

Conducted (previously) Consultation events with affected communities/people and summary of consultation (including methods):

Issues Raised by the Participants and their Recommendations during FGD (current events):

Table 7: Environmental and Social Screening Summary

Please summarize the results of environmental and social screening conducted above. Mitigation measures need to be proposed in referenced to ESMP Guidelines relevant to the type of the sub-project, proposed in relevant sections of ESMF. This table needs to be completed by both environmental and social specialists. Please add rows to the table as necessary.

Section	Main Environmental and Social Impacts	Impact Significance*	Suggested Mitigation Measures	Person/Institution Responsible	Monitoring Suggestions	
					Indicators	Frequency
1: Sub-Project Location						
2: Pre-construction Phase						
3: Construction Phase						
4: Operational Phase						

* Overall Impact Score: Very High =Likely to cause widespread, long-term and irreversible impacts; High= Likely to cause long-term impacts; Moderate = Likely to cause site-specific temporary impacts; Low = Likely to cause little, short-term impacts

Table 8: Road identification and catchment area (for road sub-project only)

Name of the unions and upazila the road passes through	
Name of the road side villages	
Starting and ending point of the road (with geo-coordinates)	
Year of construction/ Last maintenance	
Highest Flood Level (HFL) of road surrounding areas (feet)	
Major components of the works that included in BOQ (Earthwork, Slope Protection work/ Grass Turfing, WBM work, Dense carpeting, Boundary wall, Retaining walls, Road Safety works, Tree Plantation, Bridge, Box Culvert, Pipe Culvert etc.)	

Table 9: Detailed features along the road length (for Road Sub-projects only)

Chainage (m)	Width (ft)	Left	Right	Socioeconomic and Environmental Features (with distance from the centerline of the road)

Overall risk classification: a) Low; b) Moderate; c) Substantial; d) High Rationale/Due Diligence Note: For Moderate risk ESA/IEE and ESMP will be prepared and for Low-risk project ESMP will be prepared. Recommendation for further environmental and social assessment and/or site specific environmental and social management plan: Yes/No, Substantial and High -risk projects will be excluded from further consideration. **If yes, please specify what assessments/plans wwould be required.*	
Completed by : (Name, designation, mobile number)	(signature, date)
Reviewed by :	

(Name, designation, mobile number)	(signature, date)

Annex -B: Structure of Environmental and Social Assessment

Conducting Sub-project Screening and preparing an Initial Examination (IEE) Report for every sub-projects constitute the procedure of Environmental and Social Assessment (ESA) that describes the process of analysis and planning (used by a World Bank Borrower) to ensure that the environmental and social impacts and risks of a project are identified, avoided, minimized, reduced or mitigated.

The ESA needs to meet the requirements of the World Bank's Environmental and Social Standard (ESS) 1. Based on the requirements of ESS Section B, the recommended structure of the ESA is as follows:

1. Introduction – description of project background and objectives
2. Sub-Project Description – components, locations, cost estimate, implementation plan
3. Summary of Sub-Project's Technical Analyses
4. Description of Sub-Project Area – baseline environmental (physical and biological) and socioeconomic condition
5. Scoping of Potential Environmental and Social Issues – based on project description and baseline conditions, range and extent of potential issues should be described. Initial consultations with key stakeholders can be useful for the scoping exercise.
6. Stakeholder Engagement - consultation with affected people and other interested parties to potentially significant environmental and social risks and impacts are identified
7. Additional Assessment Requirements - Identification of specific assessment tools to carry out the environmental and social assessment and to document the results of such assessment, including the mitigation measures to be implemented. These can include Initial Environmental Examination(IEE) or Environmental and Social Impact Assessment (ESIA), Hazard or Risk Assessment, Cumulative Impact Assessment, Social and Conflict Analyses, Environmental and Social Management Plan (ESMP), Environmental and Social Management Framework (ESMF), Strategic Environmental and Social Assessment (SESA)
8. Institutional Capacity – description of strengths and weaknesses of implementing agency's environmental and social safeguards track record, capacity and training requirements.

Annex -C: Procedures of Environmental and Social Assessments

Environmental and Social Assessment (ESA)/Initial Environmental Examination (IEE)

An IEE, a type of ESA study, is normally carried out at the early stage of project planning and is used to identify and estimate the potential environmental impacts from the project activities. IEE is normally done within a short time duration based on preliminary information that is readily available through environmental reconnaissance. The general objective of an IEE is to examine all environmental parameters that are likely to be affected by the identified project activities, and to determine the degree of the adverse impacts that are likely to affect them (the environmental parameters). IEE is intended to provide first-hand information about the environmental parameters likely to be influenced by the project activities and the magnitude of the adverse impact in order to allow decision makers to ascertain whether a detailed EIA is needed. IEE will not make detailed evaluation of the environmental parameters but instead provide a basis for need to undertake detailed evaluation.

The ESA/IEE study will be conducted under LGED. However, according to the project planning, the activities those need IEE will be implemented at different periods and hence, multiple IEEs will be required clustering the similar activities prior to the actual intervention starts. The purpose of the conducting an IEE is three folds:

(i) to obtain Clearance from DoE and obtaining decision from DoE whether the particular project activities need further assessment such as detail ESIA or not;
(ii) provide/finalize the ToR for the ESIA study, if required; and
(iii) continue consultations with project stakeholders.

The Process of IEE is briefly outlined below:

Analysis of the Project Components: All the components of each sub-project, like construction and rehabilitation works, will be examined thoroughly, which will in fact guide the development of checklist for reconnaissance survey.

Preparation of Checklist: A comprehensive checklist of potential environmental components likely to be impacted need to be prepared based on the guidelines of different agencies such as DoE and World Bank.

Initial Screening/ Survey: Not all the parameters selected in previous step may be significant for the sub-project; hence the first activity will be to shorten this list to concentrate on significant effects. Data should be collected from all possible secondary sources, if available, and conduct an environmental reconnaissance with the relevant checklist in hand to identify and delineate the significant effects of the sub-project and eliminate the others from further considerations. Public consultation will play an important role in initial screening.

Analysis of alternatives: Alternative site and technological design should be analyzed for the proposed project interventions considering environmental, social, and technological criteria.

Identification and Scaling of Impacts: All the potential short and long term environmental impacts should be identified. The impacts can be graded qualitatively (e.g. high, substantial, moderate, and low) in order to identify major impacts and relevant components. In addition, cumulative and residual impacts of the project interventions need to be clearly addressed.

Identification of Enhancement and Mitigating Measures: From literature survey and applying expert judgment and based on assessed impacts, a list of possible enhancement and mitigating measures for beneficial and adverse effects respectively should be prepared.

Preparation Environmental Management and Monitoring Plan: Environmental and Management Plan for the proposed project should be prepared mentioning the impact mitigation/ enhancement

measures with institutional responsibilities. Also, environmental monitoring plan should be prepared that will include monitoring parameters, frequency, method and responsible agencies.

Recommendations on the need of ESA study: The IEE study should recommend the activities and sub-projects as to whether a full-scale ESA study (ESIA/EIA) is needed or not.

A tentative IEE report structure is suggested as follows:

Table: Table of Contents of an IEE Report

Chapter	Sub-chapters required in IEE report
Chapter-1	Introduction
Chapter-2	Description of the project
Chapter-3	Description of the existing background environment in and around the sub-project site (Generally this should cover an area of 1 km. Radius)
Chapter-4	Potential significant impacts (During Pre-construction, Construction and Operation Phases)
Chapter-5	Mitigative, abatement and enhancement Measures
Chapter-6	Residual impacts if any (these may have to be studied at the detailed Assessment stage)
Chapter-7	Monitoring Project
Chapter-8	Summary and Conclusions

Source: EIA guidelines for industries, 1997, DoE, Bangladesh

Annex -D: Sample Mitigation/Enhancement measures during different Phases of a Sub-project

Guidance on possible environmental and social mitigation and enhancement measures for different phases of a sub-project is given below, which will be adopted in congruence with the site-specific situation, available technologies, resources and institutional capacity of a project.

Issues/ Activities	Potential Environmental and Social Impacts	Proposed Mitigation Measures	Responsibility	
			Implementation	Supervision
Pre-Construction Phase				
Land Acquisition/ Requisition	• Encroachment of agricultural land, cultural sites, fish habitat etc. • Loss of agricultural production, fish resources; • Loss of income and livelihoods; • Social conflict.	– Avoid all types of acquisition or requisition of land for any types of sub-projects; if any land required for temporary use of the sub-project (esp. for labor shed, construction material yard, site office, or so on), contractor must rent the suitable land under a proper tenancy agreement which will be endorsed by Social Development Specialist of PIU. – Avoid agricultural land, social/religious institutes, fish habitat during finalization of the alignment of the connecting road and location of any other types of sub-projects; – Adequate compensation should be given for standing crops, if damaged by contractor for any use or actions, under the reconciliation in presence of district XEN, Upazila Engineer, Social Development Specialist, and the affected person. – Avoid agricultural land, in all cases; – Create job opportunities for the PAPs.	PIU	D&SC/PIU
Loss of vegetation/ tree	• Accident risk during removal of trees/vegetation's in the project sites; • Birds and others species can migrate from the trees/vegetation's; • Impacts on the local climatic condition.	– Prior to start construction, all vegetation should be removed from the proposed construction sites with the consultation of the local relevant authorities; – Avoid disturbance and careful during construction vehicle and equipment movement; – Proper H&S measures (use of appropriate PPE such as hand gloves, safety shoes and helmet) for the workers should be taken during removal of trees, bushes & crops; – To mitigate the ecological impact, tree plantation plan can be considered in the design & accordingly tree plantation will be done in an appropriate location to be determined by the D&SC after consultation with the concerned authority;	Contractor	D&SC/PIU

		– The engineer shall approve such felling; only when the proponent secures receive a "clearance" for such felling from the PIU, as applicable; – Tree felling, if unavoidable, shall be done only after compensatory plantation of at least three saplings for every tree cut is done; – Tree plantation at the suitable locations after completion of the construction activities.		
Removal of Utilities	• Vulnerable for workers health and safety; • During movement of heavy Construction machineries equipment's can damage the utility services if not previously removed; • Due to carelessness or incautiousness death from sudden electric shocks may occur.	– Prior to start construction, the utility services (electrical cables, telephone line, water supply pipeline, gas supply pipeline and internet line) should be shifted with the consultation of the relevant organizations; – Inform the local community before starting removal or demolishing work; – Carefully remove the utilities that are connected to any structures; – Proper Health and safety measures for the workers should be taken during shifting of these lines to avoid any incidents.	Contractor	D&SC/PIU
Dismantling	• Dust pollution in the construction site; • Health hazard for the workers and community during dismantling works; • Noise level increase; • Vibration effects on the structures on the surrounding of the project area; • Surface water contamination, blockage of navigation and	– Notify the adjacent community before starting the demolishing work; – During the removal or demolition of existing structures if required will be fully removed by the contractor; – Spraying of water in the dry land or from where there is a possibility to generate dust; – Banned fishing, swimming, boat movement activities in the construction sites, if applicable; – Proper H&S measures for the workers such as using of appropriate PPE (helmet, Earplug, musk, safety shoes, hand gloves etc.) should be taken to avoid any accidents; – Construct noise barrier around the dismantling site; – Stop the engine when it is not required; – Monitor Noise level as per DoE guidelines; – Impact wise mitigation measures are given.	Contractor	D&SC/PIU

	drainage, impacts on aquatic animal;			
Archaeological/ Historical/ Social/ Cultural/ Religious Sites	• Encroachment of Archaeological/ Historical/ Social/ Cultural/ Religious sites • Air and dust pollution; • Noise level may create uncomforting for the local community; • Vibration can effect on social/ cultural/ religious site.	– Follow best management practice at Archaeological/Historical/Social/Cultural/ Religious sites during the safety improvement works; – Spraying water on the dry surface to reduce dust pollution; – Vehicles transporting construction material to be covered; – Create noise barrier around the construction sites; – Limit the speed of vehicles; – Stop the construction work for short time like prayer time.	Contractor	D&SC/PIU
Labour management	• If labour management plan is not prepared /followed then working environment will degrade	– Labour management plan (LMP) is required to be developed for the project/sub-project – Confirm that implementation of LMP is specifically incorporated into the contract documents either as clause or by appending the LMP along with the ESMP to the contract documents.	Contractor/ D&SC	PIU
Setting up labour camps	• Land encroachment; • Solid and liquid waste from the labour camp	– Labour camp should be constructed at a distance from the water bodies; – Avoid productive land and away from the settlement during the selection of land for the setup of labour camp; – No solid and liquid waste discharge into the water bodies; – Instruct workers to maintain clean environment in the camps.	Contractor	D&SC/PIU
Construction Phase				
Air Pollution	• Construction vehicular traffic: Air quality can be affected by vehicle exhaust emissions and combustion of fuels • Construction equipment: Air quality can be adversely affected by emissions from construction machineries and	– Fit vehicles with appropriate exhaust systems and emission control devices; – Maintain vehicles and construction equipment in good working condition including regular servicing; – Operate the vehicles in a fuel-efficient manner; – Impose speed limits at 30 km/hour on vehicle movement at the worksite to reduce dust emissions; – Control the movement of construction traffic in the access road; – Focus special attention on containing the emissions from generators; – Construction equipment causing excess pollution (e.g., visible smoke)	Contractor	D&SC/PIU

	combustion of fuels; • Construction activities: Dust generation from earth excavation, earth & sand stockpiles during dry period.	will be banned from construction sites immediately prior to usage; - Water spray to the dry earth/material stockpiles, access roads and bare soils as and when required to minimize the potential for environmental nuisance due to dust; - Increase the watering frequency during periods of high risk (e.g., high winds); - Stored materials such as: excavated earth, dredged soil, gravel and sand shall be covered and confined to avoid their wind drifted; - Restore disturbed areas as soon as possible by vegetation; - Establish adequate locations for storage, mixing and loading of construction materials, in a way that dust dispersion is prevented because of such operations; - Use temporary barriers to control dust around the construction sites near the populous residential areas - The Air quality monitoring should be carried out by the contractor following the National Air Quality Standard (Schedule-2: Standards for Air Quality, ECR, 1997 and Amendment in 2005).		
Noise Pollution	• Construction vehicular traffic: Vibration and Noise quality will be deteriorated due to vehicular traffic. • Construction equipment: Noise and vibration will have an impact on adjacent surrounding residents. • Construction activity: Noise will have an impact on adjacent residents.	- Strict measures for noise pollution control need to be undertaken during construction activities; - Create noise barrier and consider the minimum noise levels at sensitive receptor sites (e.g., dense residential area, schools, mosques, health centers etc.); - Stone breaking machine should be confined within a temporary shed so that noise pollution could be kept minimum; - Protection devices (ear plugs or ear muffs) shall be provided to the workers operating in the vicinity of high noise generating machines during construction; - Construction equipment and vehicles shall be fitted with silencers and maintained properly; - Instruction to the drivers to avoid unnecessary horn; - The Noise level monitoring should be carried out by the contractor following the National Noise Quality Standard (Schedule-4: Standards for Sound, ECR, 1997 and Noise Pollution (control) rules 2006). - Vibration monitoring should be carried	Contractor	D&SC/PIU

		out by the contractor. - The contractor shall be responsible for repairing any damage caused as a result of vibrations generated from or by the use of his equipment, plant.		
Groundwater Pollution	• Contamination of groundwater due to Pollution lack of septic tanks or mobile toilets; • Accidental spillage of hazardous liquid from the construction camps.	- The contractor will make arrangement for water required for construction in such a way that the water availability and supply to nearby communities remain unaffected; - Handling and storage of the potential contaminants has to be organized under strict condition to avoid water pollution during construction; - Handling of hazardous liquid should be done carefully by the designated experienced person; - Handling and storage of the potential contaminants should be done by the experienced workers. Proper monitoring should be done by the experienced person; - The groundwater quality monitoring should be carried out by the contractor following the National Water Quality Standard (Schedule-3: Standards for Water, ECR, 1997).	Contractor	D&SC/PIU
Surface Water Pollution	• Construction & general wastes from the construction sites; • Oil spill from the construction vehicles and construction camp can effect on fishes and aquatic wildlife (such as snakes, frogs etc.)	- Contractor should prepare Waste Management Plan and follow it properly during the construction period; - Any wastes should not be throwing into the river/khal/canal other than dump into the designated waste dumping area; - Store the oil and petroleum product in a separate location cover by a concrete structure; - Handling of hazardous liquid should be done carefully by the designated experienced person; - Monitor the surface water by testing in designated laboratory should be done by the Contractor following the National Water Quality Standard (Schedule-3: Standards for Water, ECR, 1997).	Contractor	D&SC/PIU
Land/ Soil Pollution	• Decrease the production capacity of agricultural land; • Land or soil erosion from water or wind; • Sediment pollution and increase the turbidity;	- Avoid the productive land, agricultural land, archaeological sites, protected area, forest area, natural habitat etc.; - Land/soil quality should be ensured by the contractor to fill the abutment area and approach road; - Re-vegetation the exposed area as early as possible to reduce the soil erosion; - Create barrier for reducing the sedimentation into the water bodies;	Contractor	D&SC/PIU

	• Reduction the microorganism.	– The Land or soil quality test should be carried out by the contractor.		
Waste (Solid, Liquid and Hazardous) Pollution **Organic waste: remaining foods, leafs, papers, straw, fruit cover etc.** **Inorganic waste: Polythene, Glasses, Synthetic paper, plastic etc.** **Hazardous waste: Paint, fuel, chemicals, oil, petroleum products, bitumen etc.**	• Improper storage and handling of construction & general liquid waste such as fuels, lubricants, chemicals and hazardous liquid onsite, and potential spills from these liquid materials may harm the environment and health of construction workers. • Improper storage and handling of construction & general solid wastes.	– The contractor will minimize the generation of sediment, oil and grease, excess nutrients, organic matter, litter, debris and any form of waste (particularly petroleum and chemical wastes); – Any wastes should not be throwing into the river/khal/canal other than dump in to the designated waste dumping area; – Handling of hazardous liquid should be done carefully by the designated experienced person; – Organic waste should be managed by composting method. A concrete chamber with 3 rooms is needed to be provided. In one room organic waste should be dumped and another room inorganic waste will be dumped. When the room will be filled then covered by earth. Then dump to the third room. After 6-month organic waste will be converted into fertilizer and will be used by the farmers; – Inorganic waste should be given to the authorized vendor for free of cost for recycling; – Accidental spillage of hazardous waste should be managed by spreading wood powder on the surface of the oil and this powder mixed with oil must store in a designated concrete room; – Provide appropriate PPE to the construction personnel for handle construction materials; – Make sure all containers, drums and tanks that are used for storage are in good condition; – Take all precautionary measures when handling and storing fuels and lubricants, avoiding environmental pollution; – Waste water monitoring should be carried out by the contractor, following the national standard (Schedule-10: Standard for waste from Industrial units or Projects waste).	Contractor	D&SC/PIU
Drainage Congestion	• Stockpiling of construction materials in the river/khal/canal also create drainage congestion.	– Immediately remove all the construction debris from the construction site as well as from the water bodies in a planned way; – Duration of stockpiling should be minimized as much as possible; – Avoid the encroachment of the water bodies; – Protect water bodies from sediment	Contractor	D&SC/PIU

		loads by silt screen or bubble curtains or another barrier; - Regularly inspect and maintain all drainage channels to assess and alleviated any drainage channels to assess and alleviate any drainage congestion problem - Construction activity should be recommended during the dry season; - Construction workers shall be instructed to protect water resources;		
Road Traffic and Accidents	• Increased traffic use of narrow access road by construction vehicle will affect the movement of normal road traffics and the safety of the road users specially the students	- Proper Traffic Management Plan (TMP) should be prepared by the contractor during starting of construction & follow it strictly; - In this TMP, the road safety measures such as speed breakers, visible warning signs/lights in Bangla and English, road safety signs, flagman etc. should be included to ensure uninterrupted traffic; - Movement specially at nearby the educational (Schools, colleges, Madrasha etc.), community infrastructure (mosques, graveyards, Prayer Ground etc.) and health complex; - In addition, BRTA traffic rules and regulations should be strictly followed; - Divert traffic to follow alternative routes to avoid traffic jams; - Avoid talking with mobile during driving.	Contractor	D&SC/PIU
Landscape and Aesthetics	• Presence of construction camps, equipment and their activities; • Movement of construction vehicles on the existing road network and temporary haul roads;	- Parking of construction vehicles and stockpiling of construction materials/excavated earth should be done in systematic way to avoid the damaging of aesthetics of the site; - Duration of stockpiling should be minimized as much as possible; - Vegetation plantation after complete of the construction work; - Completely remove the construction camp facilities, equipment's and their activities; - Limit the speed of the vehicles and cover the vehicles during the movement or transportation of materials on the existing road network and temporary haul road; - Plantation of trees at the construction site after completion of the construction activities immediately.	Contractor	D&SC/PIU
Occupational Health and Safety	• Campsites for construction workers and Safety are the important	- Construction workers camp shall be located at least 500 m away from the nearest habitation; - Consider the location of construction camps away from communities in	Contractor	D&SC/PIU

	locations that have significant impacts such as health and safety hazards on local resources and infrastructure of nearby communities.	order to avoid social conflicts; - Create awareness among the camp users on health and safety requirements to be maintained and code of conduct; - Implement OHS measures as per LMP and inspect regularly as per the guideline given in Annex H.		
	• Lack of proper infrastructure facilities, such as housing, water supply and sanitation facilities will increase pressure on the local services and generate substandard living standards and health hazards	- Adequate housing for all workers should be provided avoiding over crowing; - Safe and reliable water supply; - Hygienic sanitary facilities and sewerage system; - Implement OHS measures as per LMP and inspect regularly.	Contractor	D&SC/PIU
	• Management of wastes is crucial to minimize impacts on the environment.	- Ensure proper collection and disposal of solid wastes within the construction camps; - Insist waste separation by source; organic wastes in one container and inorganic wastes in another container at sources; - Dispose organic wastes in a designated safe place on daily basis; - The organic wastes should be always covered with a thin layer of sand so that flies, mosquitoes, dogs, cats, rats, etc. are not attracted; - Locate the garbage pit/waste disposal site minimum 500m away from the resident area so that people are not disturbed with the odor likely to be produced from anaerobic decomposition of wastes at the waste dumping places.	Contractor	D&SC/PIU
	• There will be a potential for diseases to be transmitted including malaria, exacerbated by inadequate health and safety practices. • There will be an	- Provide adequate health care and sanitation facilities within the construction sites; - Train all construction workers in basic sanitation and health care issues and safety matters and on the specific hazards of their work; - Provide HIV awareness project ming, including STI (sexually transmitted infections) and HIV information, education and communication for all	Contractor	D&SC/PIU

	increased risk of work crews spreading sexually transmitted infections and HIV/ AIDS.	workers on regular basis; - Regular mosquito repellant spraying during monsoon periods.		
	• Construction work may pose health and safety risks to the construction workers and site visitors leading to severe injuries and deaths.	- Provide the workers a safe and healthy work environment; - Provide appropriate PPE for workers, such as safety boots, helmets, masks, gloves, protective clothing, goggles, full-face eye shields and ear protection; - Maintain the PPE properly by cleaning dirty ones and replacing them with the damaged ones; - Appoint an environment, health and safety manager to look after the health and safety of the workers; - Inform the local authorities responsible for health, religious and security before commencement of civil works and establishment of construction camps so as to maintain effective surveillance over public health, social and security matters.	Contractor	D&SC/PIU
	Lack of first aid facilities and health care facilities in the immediate vicinity will aggravate the health conditions of the victim.	- Provide health care facilities and first aid facilities are readily available; - Document and report occupational accidents, diseases, and incidents and actions taken; - Identify potential hazards to workers, particularly those that may be life threatening and provide necessary preventive and protective measures; - Provide awareness to the construction drivers to strictly follow the driving rules; - Provide adequate lighting in the construction area and along the roads in the construction site.	Contractor	D&SC/PIU
Community Health and Safety	• Accidents on the approach road and construction site; • Noise and dust pollution; • Communicable diseases can spread among the local community.	- Prior to start the construction activities contractor will be informed the local community; - Instruct the drivers and limit the speed of the vehicles; - Regular health checkup of the workers and awareness training about the communicable diseases; - Ban all swimming and fishing activities in the construction site, in case of a bridge site; - Proper lighting at the project site	Contractor	D&SC/PIU

		during the night time; - Avoid unnecessary noise pollution; - Spraying water in the dry surface to reduce the dust pollution - Provide proper access control to the project site and unauthorized entry to the project site will be controlled by deploying security personnel.		
Impacts on Archaeological/ Historical/ Social/ Cultural/ Religious Sites	• Air and dust pollution; • Noise level may create uncomforted; • Vibration can effect social/ cultural/ religious sites.	- Create temporary barrier around the project site; - Regular spraying of water in the construction site and approach road to reduce the dust emission; - Control the speed limit about 30 km/hour in the construction site and approach road; - Construction activities should be continued during day time only; - Religious norms of the respective sites should be maintained - Carefully handling of construction machineries and equipment's near the sensitive receptors near the project site.	Contractor	D&SC/PIU
Housing and Commercial Structures	• Air and dust pollution; • Noise level may create uncomforted; • Mental stress; • Vibration can effect on structures.	- Spraying water on the dry surface to reduce dust pollution; - Create noise barrier around the construction sites; - Limit the speed of vehicles in the construction site; - Prior notice to the local inhabitants for resettlement issues if required; - Compensation should be given to the PAPs in-time according to RAP; - Realignment of approach road if required; - Job opportunities for the PAPS and priority should be given; - Plantation of trees in an appropriate location will be determined by the D&SC after consultation with the concern authority (Forest Department).	Contractor	D&SC/PIU
Flora and Fauna	• Dust will be generated during earthwork and deposited on the leaves of nearby trees; this will abduct the growth of trees. • Noise generation from the construction vehicles and equipment's can create	- Proper construction management plan should be introduced in the Contractor construction sites; - Regular water spraying in the dry area from where there is a possibility to dust pollution; - Proper management plan for the waste management in the construction sites; - Construction work should be preferred during dry season; - No disturbance for aquatic animal and keep provision for the fish movement; - Diversion road should be removed properly as soon as possible;	Contractor	D&SC/PIU

	disturbance for the birds and wildlife;	– Construction activities should be continued during day time only; – Create noise barrier and avoid unnecessary machineries and equipment's operation; – Vegetation plantation after compilation of the construction work; – Construction workers shall be instructed to protect natural resources, flora and fauna, including wild animals and aquatic life, hunting and unauthorized fishing are prohibited; – Natural river/khal/canal will be reinstated after completion of construction works;		
Disturbance to Wildlife Movement	• Noise from construction machineries and vehicles, movement of workers likely to be disturb the movement of wildlife; • Permanent migration may occur from the area; • Increase of mortality due to collision with vehicles;	– Instruct workers and contractors to avoid harassment and disturbance of wildlife; – Schedule activities to avoid disturbance of wildlife during critical periods of the day (e.g., night) or year (e.g., periods of breeding, nesting); – Turn off all unnecessary lighting at night; – Maintain noise-reduction devices (e.g., mufflers) in good working order on vehicles and construction equipment; – Temporary fencing around the construction site during construction period; – Educate workers regarding the occurrence of important resources in the area and the importance of their protection, including the appropriate regulatory requirements; – Regular monitoring of the death and disturbance of wildlife in the construction site.	Contractor	D&SC/PIU
Fisheries and other Aquatic Animals	• Increase turbidity and siltation can spawning beds for fish; • Noise from pile driving activities, aquatic animals including fishes will be affected; • Turbid water can reduce the infiltration of sunlight into deep water.	– Construction activities is preferred during the dry season; – Careful handling of construction waste in the construction site; – Introduction of land/soil erosion and dust control practices in the construction site; – Provide adequate space for movement and safe passage of fishes and other aquatic animals; – Schedule activities to avoid disturbance of fish and aquatic anima during critical periods of the day (e.g., night) or year (e.g., periods of breeding); – Turn off all unnecessary lighting at night to avoid attracting and disturbance of fishes; – Maintain noise-reduction devices (e.g.,	Contractor	D&SC/PIU

		mufflers) in good working order on vehicles and construction equipment; - Regular monitoring the fish death and disturbance of fish and aquatic animals in the construction site; - Fingerling (fish) can be released to the river/khal near the bridge site to boost up the fish resources		
Influx of construction workers	• Availability on the resources like food, housing, water resources; • Communicable diseases may also spread; • Social Conflict.	- Contractor should be ensured the availability of water for the construction activities; - Provision of clean drinking water in the construction camp in accordance with Schedule 3(b) of ECR, 1997; - Trained the workers by providing health and safety training on communicable diseases; - Educating project personnel, and area residents on risks, prevention, and available treatment for vector-borne diseases; - No child and/or forced labour will be employed by the contractor (labor has to provide National ID before any engagement to work); - Working conditions and terms of employment will be fully compliant to the Bangladesh labour laws.	Contractor	D&SC/PIU
Operation Phase				
Air Pollution	• Dust emission from the increasing number of vehicles in the site area; • Vehicular emission from burning fuels.	- Establish the speed breaker to limit the speed of the vehicle near the site; - Strictly follow the BRTA rules and regulations; - Increase number of plantations by adding new species of trees on the appropriate locations after consultation with the concern authority.	LGED	LGED
Surface Water Pollution	• Remaining construction materials may be washed by the rainfall into the water sources and lead to sedimentation and increase turbidity; • Hazardous materials spilled by accidents; • Soil erosion during rainy season can contaminate nearby surface water.	- Remaining construction materials will be completely removed from the proposed project site after completing of the construction activities; - Cover the bare surface by plantation of trees/vegetation to reduce the surface soil erosion; - Speed control measures close to the site to reduce the occurrence of accidents; - Avoid rainy season for continuing any development activities. - Drainage and collection structures on the road project, particularly in areas near the river and irrigation canals, shall be designed such that spills of hazardous materials shall not result to contamination of these water courses.	LGED	LGED

Groundwater Pollution	• Accidental spillage of hazardous chemicals and materials.	− Speed control measures close to the site to reduce the occurrence of accidents; − Inform to the concern authority to take necessary action to reduce the contamination of groundwater.	LGED	LGED
Noise Pollution	• Faulty engine and hydraulic horn may increase the noise level.	− Necessary instruction for the drivers; − Establishment of signboard near the sensitive receptors like mosques, schools, temple, bazar etc.	LGED	LGED
Flora and Fauna	• Dust will hinder vegetation growth; • Increase number of deaths of wildlife and collision with the vehicles; • Avifauna will be affected by the movement of vehicles; • Fish and other aquatic animals will be affected.	− Re-plantation of various suitable local trees can be done on the slopes of the roads or the suitable locations around the project site; − Establishment of speed breaker or signboard indicating the movement route of the wildlife; − No disturbance for aquatic animal and keep provision for the fish and other aquatic animals' movement; − Diversion road should be removed properly as soon as possible; − Construction workers shall be instructed to protect natural resources, flora and fauna, including wild animals; − Natural river/khal/canal will be reinstated after completion of construction works; − Fingerling (fish) can be released to the river/khal/canal near the bridge site to boost up the fish resources.	LGED	LGED
Landscape and Aesthetics	• Land use of the proposed project area will be changed; • Improper removal of construction camp facilities and other construction waste will affect landscape and aesthetics.	− Tree/vegetation plantation at the suitable site; − Proper removal of construction camp facilities and construction wastes from the site after completion of the works; − Excavated borrow pit area will be properly managed by the contractor, it will be preferred to use dredging materials after quality testing.	LGED	LGED
Road Traffic and Accidents	• Number of vehicles movement will be increased in the area; • Encourage drivers to higher the vehicle speed and road accidents may increase.	− Enforce speed limits and impose penalties on the traffic violators − Establish road safety sign and appropriate traffic signs; − A proper traffic management plan can be introduced and strictly follow the BRTA rules; − Keep provision of adequate lighting facilities at the site; − Avoid using mobile phone during driving.	LGED	LGED

Annex -E: Sample for the Preparation of Environmental & Social Management Monitoring Plan

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Responsible for Execution	Responsible for Monitoring	Monitoring Suggestions	
						Indicators	Frequency
1. Sub-project Interventions	**Construction** of a climate resilient multi-purpose Resilient Flood shelter cum primary school (degradation of air, water and soil quality, and local hydrology)	Under the sub-project intervention the overall score is low	• Limiting earthworks. • Watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary. • The earthwork sites where exposed land surface is vulnerable to runoff shall be consolidated and/or covered. • The material stockpile sites shall be far away from surface water bodies and areas prone to surface run-off. Loose materials shall be bagged and covered. • Channels, earth bunds, netting, tarpaulin and or sand bag barriers shall be used on site to manage surface water runoff and minimize erosion. • The overall slope of the work areas and stack yards shall be kept to a minimum to reduce the erosive potential of surface water flows elsewhere. • All precautions to store chemicals/oil/fuel properly so that no chance of spill. • Workers must specify waste dump locations to avoid littering which in turn	Contractor	Environmental and Social Development Specialists of PIU and D&SC	Visual monitoring result of air quality condition, Results of water test parameters, blockage of water flow with soil, debris or stack materials at site.	Throughout the time during the construction period.

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Responsible for Execution	Responsible for Monitoring	Monitoring Suggestions	
						Indicators	Frequency
			might negatively affect surface and ground water. • Monitor water quality according to the environmental management plan.				
2.Pre-construction Phase	**Site planning** (i.e. Labor camp, construction of material storage area etc.)	Under the sub-project intervention the overall score is low.	• The construction area is on a plain land. The entire construction area within the school boundary needs to be well fenced so that school children, teachers and others could be protected from any accidental events/injuries. Construction camp and material storage area should be located at the site & approved by the Environmental Specialist of D&SC.	Contractor	Environmental and Social Development Specialists of PIU and D&SC	Location of stockpiles and labor shed	Prior to the start of Construction works.
	Material storage area for construction (Creating dust/ air pollution, Spillage of liquid/ hazardous substances i.e. oil, paint, chemicals, bitumen etc., Risk of crime, Access of students, children, animals, etc.)	Under the sub-project intervention the overall score is low.	• The contractor shall submit a method statement and plans for the storage of hazardous materials (fuels, oils, and chemicals) and emergency procedures. • Proper procedure for stockpiling/ storage of construction materials at the site will be proposed by the contractor & approved by the Environmental Specialist of D&SC. • Proper covering of dust producing materials with polythene sheet, • Proper fencing around the storage area in order to be secure, to minimize the risk of crime and to be safe from access by	Contractor	Environmental and Social Development Specialists of PIU and D&SC	List of selected sites; Identified sources and storage places of materials.	Weekly visit during Design Stage

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Responsible for Execution	Responsible for Monitoring	Monitoring Suggestions	
						Indicators	Frequency
			students, children, animals, etc. • Spills/ hazardous substances should be disposed off at the site proposed by the contractor & approved by the Environmental Specialist of D&SC to avoid soil/ water contamination.				
	Demolishing of existing structure	Under the sub-project intervention the overall score is Moderate	• Water spraying at the demolition site • Fencing / Installing barriers should be shield from dust and aggregates • Avoid usage of machines/equipment with extra noise; • Do not accumulate and burn waste at the site • Carry out demolition activities in phases, give adequate notices and information of activities to the adjoining stakeholders • Identify proper location to dispose solid waste from demolition and other activities in consultation with respective bodies • Make mandatory the use of safety gears (helmets, safety belts, masks, gloves and boot) by workers depending on nature of work. • In addition, Contractor will prepare demolition plan beforehand and get approval from PIU.	Contractor	Field Resident Engineer, Environmental and Social Development Specialists of PIU and D&SC	List of selected sites; Identified sources of materials.	Daily visit during demolition

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Responsible for Execution	Responsible for Monitoring	Monitoring Suggestions	
						Indicators	Frequency
	Setting up of labor camp (Generation of sewage waste; solid Waste; Water, soil, air & dust pollution/ environmental pollution; health hazard of workers due to poor quality drinking water)	Under the sub-project intervention the overall score is low.	• Construction camp should be located at a site favorable for the workers and proposed by the contractor & approved by the Environmental Specialist of D&SC. • No trees, shrubs will be removed or vegetation stripped without the prior permission of the Environmental Specialist. • Under no circumstances may open areas or the surrounding bushes be used as a toilet facility. • Construction of sanitary latrine with septic tank for both male and female workers and staffs. • Construction of the first tube well for drinking water and providing water filters for further ensuring access to the safe drinking water. • Provision of waste bins/ cans, where appropriate, • Litter is to be collected daily. • Bins and/ or skips should be emptied regularly and waste/ debris should be disposed off at waste disposal areas and/ or at the site pre-approved by Environmental Specialist of D&SC. • Camp and working areas are to be kept clean and tidy at all times.	Contractor	Environmental and Social Development Specialists of PIU and D&SC	Complaints from community; Regular inspection of waste management activity; Waste disposal record.	Bi-weekly; Prior to the start of Construction works

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Responsible for Execution	Responsible for Monitoring	Monitoring Suggestions	
						Indicators	Frequency
	Accidents	Under the sub-project intervention the overall score is low.	• Provision of standard safety protocol. • Providing training on Environmental health and safety to the labors and associated field staffs is the responsibility of Upazila Engineer & Contractors. • Training should be scheduled twice, once before starting the construction & another in the middle of construction period. • Safety & protection gears, first aid box etc. should be available in the site during construction period.	Contractor	Environmental and Social Development Specialists of PIU and D&SC	Complaints from community and workers; update in Accident registry; Regular inspection of materials transport vehicles.	Daily; Before and during construction phase
3. Construction Phase	**Noise Impacts**	Under the sub-project intervention the overall score is low.	• Avoid high noise making activities during active school hours. One very effective method is to discuss with the school authority and settle for a time for heavy machinery usage. • Involve the community in planning the work program so that any particularly noisy or otherwise invasive activities can be scheduled to avoid sensitive times. • Avoid using of construction equipment producing excessive noise at school time & at night. • Ear protection devices for the workers & site staffs should be available in site during construction period.	Contractor	Environmental and Social Development Specialists of PIU and D&SC	Number of complaints from stakeholders, Use of silencers in noise producing equipment and sound barriers, Noise Level following decibel meter (dB)	Weekly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Responsible for Execution	Responsible for Monitoring	Monitoring Suggestions	
						Indicators	Frequency
	Air Quality Conducting works at dry season and moving large quantity of materials may create dusts and increase in concentration of vehicle related pollutants which will affect people who live and work near the sites. The impacts are negative but short-term, site-specific within a relatively small area and reversible by mitigation measures.	Under the sub-project intervention the overall score is low.	• Damp down exposed soil and any sand stockpiled on site by spraying with water during dry weather. • Use tarpaulins to cover soils, sand and other loose material when transported by trucks. • Unpaved surfaces used for haulage of materials within settlements shall be maintained dust-free. • Arrangements to control dust through provision of water sprinklers and dust extraction systems shall be provided at all stone crushers (if these establishments are being setup exclusively for the subproject). • Limiting speed of construction vehicles in work sites to maximum of 20 km/h. • Regular monitoring of air quality.	Contractor	Environmental and Social Development Specialists of PIU and D&SC	Location of stockpiles, Covering of trucks, Records of air quality inspection, Numbers of complaints from sensitive receptors, Heavy equipment and pollution control devices, Maintain records	Monthly
	Biodiversity (There are no protected areas in or around subproject sites,	Under the sub-project intervention the overall score is low.	• Prohibit employees from cutting of trees for firewood. • If during detailed design cutting of trees is required, compensatory plantation for trees lost at a rate of 3 trees for every tree	Contractor	Environmental and Social Development Specialists of PIU	If tree cutting required, to be determined during Design stage, Numbers of	Monthly

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Responsible for Execution	Responsible for Monitoring	Monitoring Suggestions	
						Indicators	Frequency
	and no known areas of ecological interest.)		cut. • Prevent workers or any other person from removing and damaging any flora (plant/vegetation) and fauna.		and D&SC	complaints from sensitive receptors	
	Worker's health and safety	Under the sub-project intervention the overall score is low.	• Prevent excessive noise. • Construction staff are to make use of the facilities provided for them (e.g. fires for cooking). • No fires permitted on site except if needed for the construction works. • Staff must be trained up for operating equipment. • Availability and access to first-aid equipment and medical supplies. • Ensure the presence and use of safety gear at site: Ear protection devices, Goggles, Illuminating jackets, Masks, Gloves, Helmets, Uniforms etc., • Ensure adequate supply of drinking water. • Sanitation facilities for male & female workers separately.	Contractor	Environmental and Social Development Specialists of PIU and D&SC	Numbers of complaints from sensitive receptors; Number of walkways signage, and metal sheets placed at project location;	Monthly
4. Post-Construction Phase	**Construction clean-up** (Damage due to debris, spoils, excess construction	Under the sub-project intervention the overall score is low.	• Remove all spoils wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required. • All affected structures	Contractor	Environmental and Social Development Specialists of PIU	Worksite is restored to original conditions; worksite cleanup	After the completion of Works

Section	Main Environmental Impacts	Impact Significance*	Suggested Mitigation Measures	Responsible for Execution	Responsible for Monitoring	Monitoring Suggestions	
						Indicators	Frequency
	materials).		rehabilitated/compensated. • The area that previously housed the construction camp is to be checked for spills of substances such as oil, paint, etc. and these shall be cleaned up. • All imported materials are to be removed and the area shall be re-vegetated as per specification that forms part of this document. • The contractor must arrange the cancellation of all temporary services.		and D&SC	is satisfactory; camp is restored to pre project conditions.	
	Vegetation	Under the issue the overall score is low.	• After construction work, all structures need to be removed and the area shall be top soiled and re-grassed using the guidelines set out in the re-vegetation specification that forms part of the bidding document.	Contractor	Consultant of D&SC and PIU	Worksite is restored to original conditions.	Over the completion of Works

* Overall Impact Score: Very High =Likely to cause widespread, long-term and irreversible impacts; High= Likely to cause long-term impacts; Moderate = Likely to cause site-specific temporary impacts; Low = Likely to cause little, short-term impacts;

**Post-construction phase denotes the time period contractor use to clear and clean up the sites after the construction work is ended, perform tree plantation, grass turfing, and minor rectification till the official handing over the site to LGED, or owner of the site.

Annex -F: Guideline for Preparing Environment and Social Management Plan (ESMP)

The Consultant is required to develop an Environmental and Social Management Plan (ESMP) consisting of a set of feasible and cost-effective mitigation measures and monitoring and institutional plan to prevent or reduce significant negative impacts to acceptable levels. This will include measures for emergency response to accidental events (e.g., fires, explosions), as appropriate. The Consultant will provide an estimation of the impacts and costs of the mitigation measures, and of the institutional and training requirements to implement them. In particular, this would include:

- **Environmental and Social Mitigation & Enhancement Measures:** Recommend feasible and cost-effective measures to prevent or reduce significant negative impacts to acceptable levels. Apart from mitigation of the potential adverse impacts on the environmental components, the ESMP shall identify opportunities that exist for the enhancement of the environmental quality along the surrounding area. Residual impacts from the environmental measures shall also be clearly identified. The ESMP shall include detailed specification, bill of quantities, execution drawings and contracting procedures for execution of the environmental mitigation and enhancement measures suggested, separate for pre-construction, construction and operation periods. In addition, the ESMP shall include good practice guides related to construction and upkeep of plant and machinery. Responsibilities for execution and supervision of each of the mitigation and enhancement measures shall be specified in the ESMP. Meaningful consultation with potential stakeholders including vulnerable groups will be conducted before finalizing the design and EMSPs, as per SEP and Section 7.2.4 in the main report. A plan for continued consultation to be conducted during implementation stage of the project shall also be appended.

- **Institutional Arrangements, Capacity Building and Trainings:** The ESMPs shall describe the implementation arrangement needed for the project, implementation of ESMP, especially the capacity building proposals including the staffing of the environment unit (as and when recommended) adequate to implement the environmental mitigation and enhancement measures. For each staff position recommended to be created, detailed job responsibilities shall be defined. Equipment and resources required for the environment unit shall be specified, and bill of quantities prepared. A training plan and schedule shall be prepared specifying the target groups for individual training project, the content and mode of training. Training plans shall normally be made for the client agency (including the environmental unit), the supervision consultants and the contractors.

- **Supervision and Monitoring:** Environmental monitoring plan will be an integral part of the ESMP, which outlines the specific information to be collected for ensuring the environmental quality at different stages of project implementation. The parameters and their frequency of monitoring should be provided along with cost of the monitoring plan and institutional arrangements for conducting monitoring and supervision. Reporting formats should be provided along with a clear arrangement for reporting and talk corrective action. The ESMP shall list all mandatory government clearance conditions, and the status of procuring clearances.

- **Reporting:** The ESMP will specify the documentation and reporting requirements, specifically, complete record will be maintained for monitoring, trainings, grievances, accidents, incidents, resource usage, and waste disposal quantities.

- **Grievance Redress Mechanism:** The ESMP will describe the grievance redress mechanism (GRM) to address the project-related grievances and complaints particularly from the local communities.

- **ESMP implementation cost:** The ESMP will also include the cost of its implementation including personnel costs, costs on trainings, effects monitoring, additional studies, and others.

Annex -G: Details of the Environmental and Social Code of Practices (ESCoPs)

The objective of preparation of the Environmental and Social Code of Practices (ESCoPs) is to address less significant environmental and social impacts and all general construction related impacts of the proposed project implementation. The ESCoPs will provide guidelines for the best operating practices and environmental management and social guidelines to be followed by the contractors for sustainable management of all environmental issues, irrespective of site conditions and surrounding environment.

ESCoP 1: Waste Management

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
General Waste	Soil and water pollution from the improper management of wastes and excess materials from the construction sites.	The Contractor shall • Develop waste management plan for various specific waste streams (e.g., reusable waste, flammable waste, construction debris, food waste etc.) prior to commencing of construction and submit to for approval. • Organize disposal of all wastes generated during construction in an environmentally acceptable manner. This will include consideration of the nature and location of disposal site, so as to cause less environmental impact. • Minimize the production of waste materials by 3R (Reduce, Recycle and Reuse) approach. • Segregate and reuse or recycle all the wastes, wherever practical. • Prohibit burning of solid waste • Collect and transport non-hazardous wastes to all the approved disposal sites. Vehicles transporting solid waste shall be covered with tarps or nets to prevent spilling waste along the route • Train and instruct all personnel in waste management practices and procedures as a component of the environmental induction process. • Provide refuse containers at each worksite. • Request suppliers to minimize packaging where practicable. • Place a high emphasis on good housekeeping practices. • Maintain all construction sites in a cleaner, tidy and safe condition and provide and maintain appropriate facilities as temporary storage of all wastes before transportation and final disposal.
Hazardous Waste	Health hazards and environmental impacts due to improper waste management practices	The Contractor shall • Collect chemical wastes in 200 liter drums (or similar sealed container), appropriately labeled for safe transport to an approved chemical waste depot. • Store, transport and handle all chemicals avoiding potential environmental pollution. • Store all hazardous wastes appropriately in bunded areas away from water courses. • Make available Material Safety Data Sheets (MSDS)

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
		for hazardous materials on-site during construction. • Collect hydrocarbon wastes, including lube oils, for safe transport off-site for reuse, recycling, treatment or disposal at approved locations. • Construct concrete or other impermeable flooring to prevent seepage in case of spills.

ESCoP 2: Fuels and Hazardous Substances Management

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
Fuels and hazardous goods	Materials used in construction have a potential to be a source of contamination. Improper storage and handling of fuels, lubricants, chemicals and hazardous goods/materials on-site, and potential spills from these goods may harm the environment or health of construction workers.	The Contractor shall • Prepare spill control procedures and submit the plan for approval. • Train the relevant construction personnel in handling of fuels and spill control procedures. • Store dangerous goods in bunded areas on a top of a sealed plastic sheet away from watercourses. • Refueling shall occur only within bunded areas. • Make available MSDS for chemicals and dangerous goods on-site. • Transport waste of dangerous goods, which cannot be recycled, to a designated disposal site approved by DoE. • Provide absorbent and containment material (e.g., absorbent matting) where hazardous material are used and stored and personnel trained in the correct use. • Provide protective clothing, safety boots, helmets, masks, gloves, goggles, to the construction personnel, appropriate to materials in use. • Make sure all containers, drums, and tanks that are used for storage are in good condition and are labeled with expiry date. Any container, drum, or tank that is dented, cracked, or rusted might eventually leak. Check for leakage regularly to identify potential problems before they occur. • Store hazardous materials above flood plain level. • Put containers and drums in temporary storages in clearly marked areas, where they will not be run over by vehicles or heavy machinery. The area shall preferably slope or drain to a safe collection area in the event of a spill. • Put containers and drums in permanent storage areas on an impermeable floor that slopes to a safe collection area in the event of a spill or leak. • Take all precautionary measures when handling and storing fuels and lubricants, avoiding environmental

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
		pollution. • Avoid the use of material with greater potential for contamination by substituting them with more environmentally friendly materials. • Return the gas cylinders to the supplier. However, if they are not empty prior to their return, they must be labeled with the name of the material they contained or contain, information on the supplier, cylinder serial number, pressure, their last hydrostatic test date, and any additional identification marking that may be considered necessary.

ESCoP 3: Water Resources Management

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
Hazardous Material and Waste	Water pollution from the storage, handling and disposal of hazardous materials and general construction waste, and accidental spillage.	The Contractor shall • Follow the management guidelines proposed in EC0Ps 1 and 2. • Minimize the generation of sediment, oil and grease, organic matter, litter, debris and any form of waste (particularly petroleum and chemical wastes). These substances must not enter waterways, storm water systems or underground water tables.
Discharge from Construction sites	During construction both surface and groundwater quality may be deteriorated due to construction activities in the river, sewerages from construction sites and work camps. The construction works will modify groundcover and topography changing the surface water drainage patterns of the area including infiltration and storage of storm water. These changes in hydrological regime lead to increased rate of runoff, increase in sediment and contaminant loading, increased flooding, groundwater contamination, and effect habitat of fish and other aquatic biology.	The Contractor shall • Install temporary drainage works (channels and bunds) in areas required for sediment and erosion control and around storage areas for construction materials • Install temporary sediment basins, where appropriate, to capture sediment-laden run-off from site • Divert runoff from undisturbed areas around the construction site • Stockpile materials away from drainage lines • Prevent all solid and liquid wastes entering waterways by collecting solid waste, oils, chemicals, bitumen spray waste and wastewaters from brick, concrete and asphalt cutting where possible and transport to an approved waste disposal site or recycling depot • Wash out ready-mix concrete agitators and concrete handling equipment at washing facilities off site or into approved bunded areas on site. Ensure that tires of construction vehicles are cleaned in the washing bay (constructed at the entrance of the construction site) to remove the mud from the wheels. This shall be done in every exit of each construction vehicle to ensure the local roads are kept clean.

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
Soil Erosion and siltation	Soil erosion and dust from the material stockpiles will increase the sediment and contaminant loading of surface water bodies.	The Contractor shall • Stabilize the cleared areas not used for construction activities with vegetation or appropriate surface water treatments as soon as practicable following earthwork to minimize erosion • Ensure that roads used by construction vehicles are swept regularly to remove sediment • Water the material stockpiles, access roads and bare soils on an as required basis to minimize dust. Increase the watering frequency during periods of high risk (e.g. high winds)
Construction activities in water bodies	Construction works in the water bodies will increase sediment and contaminant loading, and effect habitat of fish and other aquatic biology.	The Contractor shall • Dewater sites by pumping water to a sediment basin prior to release off site – do not pump directly off site • Monitor the water quality in the runoff from the site or areas affected by dredge plumes, and improve work practices as necessary • Protect water bodies from sediment loads by silt screen or bubble curtains or other barriers • Minimize the generation of sediment, oil and grease, organic matter, litter, debris and any form of waste (particularly petroleum and chemical wastes). These substances must not enter waterways, storm water systems or underground water tables. • Use environment friendly and nontoxic slurry during construction of piles to discharge into the river. • Reduce infiltration of contaminated drainage through storm water management design • Do not discharge cement and water curing used for cement concrete directly into water courses and drainage inlets.
Drinking water	Groundwater at shallow depths is contaminated with arsenic and hence not suitable for drinking purposes.	The Contractor shall • Pumping of groundwater shall be from deep aquifers of more than 300 m to supply arsenic free water. Safe and sustainable discharges are to be ascertained prior to selection of pumps. • Tube wells will be installed with due regard for the surface environment, protection of groundwater from surface contaminants, and protection of aquifer cross contamination • All tube wells, test holes, monitoring wells that are no longer in use or needed shall be properly decommissioned.
	Depletion and pollution of groundwater resources	• Install monitoring wells both upstream and downstream areas near construction yards and construction camps to regularly monitor the water quality and water levels. • Protect groundwater supplies of adjacent lands

ESCoP 4: Drainage Management

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
Excavation and earth works, and construction yards	Lack of proper drainage for rainwater/liquid waste or wastewater owing to the construction activities harms environment in terms of water and soil contamination, and mosquito growth.	The Contractor shall • Prepare a project for prevent/avoid standing waters, which will verify in advance and confirm during implementation • Provide alternative drainage for rainwater if the construction works/earth-fillings cut the established drainage line • Establish local drainage line with appropriate silt collector and silt screen for rainwater or wastewater connecting to the existing established drainage lines already there • Rehabilitate road drainage structures immediately if damaged by contractors' road transports. • Build new drainage lines as appropriate and required for wastewater from construction yards connecting to the available nearby recipient water bodies. Ensure wastewater quality conforms to the relevant standards provided by DoE, before it being discharged into the recipient water bodies. • Ensure the internal roads/hard surfaces in the construction yards/construction camps that generate has storm water drainage to accommodate high runoff during downpour and that there is no stagnant water in the area at the end of the downpour. • Construct wide drains instead of deep drains to avoid sand deposition in the drains that require frequent cleaning. • Provide appropriate silt collector and silt screen at the inlet and manholes and periodically clean the drainage system to avoid drainage congestion. • Protect natural slopes of drainage channels to ensure adequate storm water drains. • Regularly inspect and maintain all drainage channels to assess and alleviate any drainage congestion problem. • Reduce infiltration of contaminated drainage through storm water management design.
Ponding of water	Health hazards due to mosquito breeding	The Contractor shall • Do not allow ponding/storage of water especially near the waste storage areas and construction camps • Discard all the storage containers that are capable of storing of water, after use or store them in inverted position.

ESCoP 5: Soil Quality Management

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
Filling of Sites with dredge spoils	Soil contamination will occur from drainage of dredged spoils	The Contractor shall • Ensure that dredged sand used for land filling shall be free of pollutants. Prior to filling, sand quality shall be tested to confirm whether soil is pollution free. Sediments shall be properly compacted. Top layer shall be the 0.5 m thick clay on the surface and boundary slopes along with grass. Side Slope of Filled Land of 1:2 shall be constructed by suitable soils with proper compaction as per design. Slope surface shall be covered by top soils/ cladding materials (0.5m thick) and grass turfing with suitable grass. • Leaching from the sediments shall be contained to seep into the subsoil or shall be discharged into settling lagoons before final disposal. • No sediment laden water in the adjacent lands near the construction sites, and/or wastewater of suspended materials excessive of 200mg/l from dredge spoil storage/use area in the adjacent agricultural lands.
Storage of hazardous and toxic chemicals	Spillage of hazardous and toxic chemicals will contaminate the soils	The Contractor shall • Strictly manage the wastes management plans proposed in ECP1 and storage of materials in ECP2 • Construct appropriate spill contaminant facilities for all fuel storage areas • Establish and maintain a hazardous materials register detailing the location and quantities of hazardous substances including the storage, use of disposals • Train personnel and implement safe work practices for minimizing the risk of spillage • Identify the cause of contamination, if it is reported, and contain the area of contamination. The impact may be contained by isolating the source or implementing controls around the affected site • Remediate the contaminated land using the most appropriate available method to achieve required commercial/industrial guideline validation results.
Construction material stock piles	Erosion from construction material stockpiles may contaminate the soils	The Contractor shall • Protect the toe of all stockpiles, where erosion is likely to occur, with silt fences, straw bales or bunds.

ESCoP 6: Erosion and Sediment Control

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
Clearing of construction sites	Cleared areas and slopes are susceptible for erosion of top soils that affects the growth of vegetation	The Contractor shall • Reinstate and protect cleared areas as soon as possible. • Mulch to protect batter slopes before planting

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
	which causes ecological imbalance	• Cover unused area of disturbed or exposed surfaces immediately with mulch/grass turfing/tree plantations.
Construction activities and material stockpiles	The impact of soil erosion is (i) Increased run off and sedimentation causing a greater flood hazard to the downstream, (ii) destruction of aquatic environment in nearby lakes, streams, and reservoirs caused by erosion and/or deposition of sediment damaging the spawning grounds of fish, and (iii) destruction of vegetation by burying or gullying.	The Contractor shall • Locate stockpiles away from drainage lines • Protect the toe of all stockpiles, where erosion is likely to occur, with silt fences, straw bales or bunds • Remove debris from drainage paths and sediment control structures • Cover the loose sediments and water them if required • Divert natural runoff around construction areas prior to any site disturbance • Install protective measures on site prior to construction, for example, sediment traps • Control drainage through a site in protected channels or slope drains • Install 'cut off drains' on large cut/fill batter slopes to control water runoff speed and hence erosion • Observe the performance of drainage structures and erosion controls during rain and modify as required.

ESCoP 7: Top Soil Management

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
Land clearing and earth works	Earthworks will impact the fertile top soils that are enriched with nutrients required for plant growth or agricultural development	The Contractor shall • Strip the top soil to a depth of 15 cm and store in stock piles of height not exceeding 2m. • Remove unwanted materials from top soil like grass, roots of trees and similar others. • The stockpiles will be done in slopes of 2:1 to reduce surface runoff and enhance percolation through the mass of stored soil. • Locate topsoil stockpiles in areas outside drainage lines and protect from erosion. • Construct diversion channels and silt fences around the topsoil stockpiles to prevent erosion and loss of topsoil. • Spread the topsoil to maintain the physico-chemical and biological activity of the soil. The stored top soil will be utilized for covering all disturbed area and along the proposed plantation sites • Prior to the re-spreading of topsoil, the ground surface will be ripped to assist the bunding of the soil layers, water penetration and revegetation.
Transport	Vehicular movement outside ROW or temporary access roads will affect the	The Contractor shall • Limit equipment and vehicular movements to within the approved construction zone

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
	soil fertility of the agricultural lands	• Construct temporary access tracks to cross concentrated water flow lines at right angles • Plan construction access to make use, if possible, of the final road alignment • Use vehicle-cleaning devices, for example, ramps or wash down areas.

ESCoP 8: Topography and Landscaping

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
Land clearing and earth works	Flood plains of the existing Project area will be affected by the construction of various project activities. Construction activities especially earthworks will change topography and disturb the natural rainwater/flood water drainage as well as will change the local landscape.	The Contractor shall • Ensure the topography of the final surface of all raised lands (construction yards, approach roads, access roads, bridge end facilities, etc.) are conducive to enhance natural draining of rainwater/flood water; • Keep the final or finished surface of all the raised lands free from any kind of depression that insists water logging • Undertake mitigation measures for erosion control/prevention by grass-turfing and tree plantation, where there is a possibility of rain-cut that will change the shape of topography. • Cover immediately the uncovered open surface that has no use of construction activities with grass-cover and tree plantation to prevent soil erosion and bring improved landscaping.

ESCoP 9: Borrow Areas Management

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
Sand/ Soil extraction by excavation	Sand/soil extraction can potentially impact the aquatic habitat, water quality, and key aquatic species and their food availability, and the soil quality Top soil extraction may further lead to soil exposure to strong wind and sunlight, eventually causing top soil blowing away (dust pollution).	The Contractor shall • not extract sand from the river bed in long continuous stretches; alternate patches of river bed will be left undisturbed to minimize the potentially negative impacts on the aquatic habitat. • not collect large quantities of sand/soil from any single location • not excavate deeper than 3 m at any single location. • not carry out sand extraction near chars that have sensitive Habitats • not carry out top soil extraction from any agricultural land • not carry out sand extraction during the night particularly near the chars • obtain approval from before starting sand/soil extraction from any location.

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
		• carry out sand extraction from sand bars to the extent possible. • carry out soil extraction after first 15 cm of topsoil from any unproductive land, and replacing the top soil after removing the soil underneath. • make soil extraction evenly distributed in an area, up to a certain depth. • maintain record of all sand/soil extraction (quantities, location shown on map, timing, any sighting of key species) • provide silt fences, sediment barriers or other devices around the extraction areas to prevent migration of sediment rich water in to the river channels. • properly collect, treat and dispose the bilge water from of barges, and boats. • properly cover the will: • carry out survey of the area prior to sand/soil extraction • identify any sensitive receptors/habitats (eg, turtle nesting area, bird colony) at or near the proposed sand/soil extraction locations. • determine 'no-go' areas for sand/soil extraction, based upon the above survey, • monitor the activity to ensure that the contractor complies with the conditions described earlier. • survey the area after sand/soil extraction to identify any leftover impacts.

ESCoP 10: Air Quality Management

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
Construction vehicular traffic	Air quality can be adversely affected by vehicle exhaust emissions and combustion of fuels.	The Contractor shall • Fit vehicles with appropriate exhaust systems and emission control devices. Maintain these devices in good working condition. • Operate the vehicles in a fuel-efficient manner • Cover haul vehicles carrying dusty materials moving outside the construction site Impose speed limits on all vehicle movement at the worksite to reduce dust emissions • Control the movement of construction traffic • Water construction materials prior to loading and transport • Service all vehicles regularly to minimize emissions • Limit the idling time of vehicles not more than 2 minutes.
Construction	Air quality can be	The Contractor shall

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
machinery	adversely affected by emissions from machinery and combustion of fuels.	• Fit machinery with appropriate exhaust systems and emission control devices. Maintain these devices in good working condition in accordance with the specifications defined by their manufacturers to maximize combustion efficiency and minimize the contaminant emissions. Proof or maintenance register shall be required by the equipment suppliers and contractors/subcontractors • Focus special attention on containing the emissions from generators • Machinery causing excess pollution (e.g. visible smoke) will be banned from construction sites • Service all equipment regularly to minimize emissions • Provide filtering systems, duct collectors or humidification or other techniques (as applicable) to the concrete batching and mixing plant to control the particle emissions in all its stages, including unloading, collection, aggregate handling, cement dumping, circulation of trucks and machinery inside the installations
Construction activities	Dust generation from construction sites, material stockpiles and access roads is a nuisance in the environment and can be a health hazard.	The Contractor shall • Water the material stockpiles, access roads and bare soils on an as required basis to minimize the potential for environmental nuisance due to dust. Increase the watering frequency during periods of high risk (e.g. high winds). Stored materials such as gravel and sand shall be covered and confined to avoid their being wind-drifted • Minimize the extent and period of exposure of the bare surfaces • Reschedule earthwork activities or vegetation clearing activities, where practical, if necessary to avoid during periods of high wind and if visible dust is blowing off-site • Restore disturbed areas as soon as practicable by vegetation/grass-turfing • Store the cement in silos and minimize the emissions from silos by equipping them with filters. • Establish adequate locations for storage, mixing and loading of construction materials, in a way that dust dispersion is prevented because of such operations • Crushing of rocky and aggregate materials shall be wet-crushed, or performed with particle emission control systems.

ESCoP 11: Noise and Vibration Management

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
Construction vehicular traffic	Noise quality will be deteriorated due to vehicular traffic	The Contractor shall • Maintain all vehicles in order to keep it in good working order in accordance with manufactures maintenance procedures • Make sure all drivers will comply with the traffic codes concerning maximum speed limit, driving hours, etc. • Organize the loading and unloading of trucks, and handling operations for the purpose of minimizing construction noise on the work site
Construction machinery	Noise and vibration may have an impact on people, property, fauna, livestock and the natural environment.	The Contractor shall • Appropriately site all noise generating activities to avoid noise pollution to local residents • Use the quietest available plant and equipment • Modify equipment to reduce noise (for example, noise control kits, lining of truck trays or pipelines) • Maintain all equipment in order to keep it in good working order in accordance with manufactures maintenance procedures. Equipment suppliers and contractors shall present proof of maintenance register of their equipment. • Install acoustic enclosures around generators to reduce noise levels. • Fit high efficiency mufflers to appropriate construction equipment • Avoid the unnecessary use of alarms, horns and sirens.
Construction activities	Noise and vibration may have an impact on people, property, fauna, livestock and the natural environment.	The Contractor shall • Notify adjacent landholders prior any typical noise events outside of daylight hours • Educate the operators of construction equipment on potential noise problems and the techniques to minimize noise emissions • Employ best available work practices on-site to minimize occupational noise levels • Install temporary noise control barriers where appropriate • Notify affected people if major noisy activities will be undertaken, e.g. pile driving • Plan activities on site and deliveries to and from site to minimize impact • Monitor and analyze noise and vibration results and adjust construction practices as required. • Avoid undertaking the noisiest activities, where possible, when working at night near the residential areas.

ESCoP 12: Protection of Biota

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
Vegetation clearance	Local flora is important to provide shelters for the birds, offer fruits and/or timber/fire wood, protect soil erosion and overall keep the environment very friendly to human living. As such damage to flora has wide range of adverse environmental impacts. Clearance of vegetation may impact shelter, feeding and/or breeding and/or physical destruction and severing of habitat areas	The Contractor shall • Reduce disturbance to surrounding vegetation • Use appropriate type and minimum size of machine to avoid disturbance to adjacent vegetation. • Get approval from supervision consultant for clearance of vegetation. • Make selective and careful pruning of trees where possible to reduce need of tree removal. • Control noxious weeds by disposing of at designated dump site or burn on site. • Clear only the vegetation that needs to be cleared in accordance with the plans. These measures are applicable to both the construction areas as well as to any associated activities such as sites for stockpiles, disposal of fill and construction of diversion roads, etc. • Retain tree hollows on site, or relocate hollows, where appropriate • Leave dead trees where possible as habitat for fauna • Fell the hollow bearing trees in a manner which reduces the potential for fauna mortality. Felled trees will be inspected after felling for fauna and if identified and readily accessible will be removed and relocated or rendered assistance if injured. After felling, hollow bearing trees will remain unmoved overnight to allow animals to move of their own volition. • Do not burn off cleared vegetation – where feasible, chip or mulch and reuse it for the rehabilitation of affected areas, temporary access tracks or landscaping. Mulch provides a seed source, can limit embankment erosion, retains soil moisture and nutrients, and encourages regrowth and protection from weeds. • Return topsoil and mulched vegetation (in areas of native vegetation) to approximately the same area of the roadside it came from. • Avoid work within the drip-line of trees to prevent damage to the tree roots and compacting the soil. • Minimize the length of time the ground is exposed or excavation left open by clearing and re-vegetate the area at the earliest practically possible. • Ensure excavation works occur progressively and re-vegetation done at the earliest • Provide adequate knowledge to the workers regarding nature protection and the need of avoid felling trees during construction • Supply appropriate fuel in the work caps to prevent

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
		fuel wood collection
Construction activities	The location of construction activities can result in the loss of wild life habitat and habitat quality.	The Contractor shall • Limit the construction works within the designated sites allocated to the contractors • Check the site for animals trapped in, or in danger from site works and use a qualified person to relocate the animal.
	Impact on migratory birds, its habitat and its active nests	The Contractor shall • Not be permitted to destruct active nests or eggs of migratory birds • Minimize the tree removal during the bird breeding season. If works must be continued during the bird breeding season, a nest survey will be conducted by a qualified biologist prior to commence of works to identify and located active nests • Minimize the release of oil, oil wastes or any other substances harmful to migratory birds to any waters or any areas frequented by migratory birds.
Construction camps	Illegal poaching	The Contractor shall • Provide adequate knowledge to the workers regarding protection of flora and fauna, and relevant government regulations and punishments for illegal poaching.
Construction activities in River and Floodplain Water	The main potential impacts to fisheries are hydrocarbon spills and leaks from riverine transport and disposal of wastes into the river and floodplain water	The Contractor shall • Ensure the riverine transports, vessels and ships are well maintained and do not have oil leakage to contaminate river water. • Contain oil immediately on river in case of accidental spillage from vessels and ships and in this regard, make an emergency oil spill containment plan to be supported with enough equipment, materials and human resources • Do not dump wastes, be it hazardous or non-hazardous into the nearby water bodies or in the river.
	The main potential impacts to aquatic flora and fauna River are increased suspended solids from earthworks erosion, sanitary discharge from work camps, and hydrocarbon spills	The Contractor shall • follow mitigation measures proposed in ESCoP 3 : Water Resources Management and EC4: Drainage Management
Construction activities on the land	Filling of ponds for site preparation will impact the fishes	The Contractor shall • Inspect any area of a water body containing fish that is temporarily isolated for the presence of fish, and all fish shall be captured and released unharmed in adjacent fish habitat • Install and maintain fish screens etc. on any water intake with drawing water from any water body that contain fish.

ESCoP 13: Road Transport and Road Traffic Management

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
Construction vehicular traffic	Increased traffic use of road by construction vehicles will affect the movement of normal road traffics and the safety of the road-users.	The Contractor shall • Prepare and submit a traffic management plan to the for his approval at least 30 days before commencing work on any project component involved in traffic diversion and management. • Include in the traffic management plan to ensure uninterrupted traffic movement during construction: detailed drawings of traffic arrangements showing all detours, temporary road, temporary bridges temporary diversions, necessary barricades, warning signs / lights, and road signs. • Provide signs at strategic locations of the roads complying with the schedules of signs contained in the Bangladesh Traffic Regulations. • Install and maintain a display board at each important road intersection on the roads to be used during construction, which shall clearly show the following information in Bangla: ○ Location: Village name ○ Duration of construction period ○ Period of proposed detour / alternative route ○ Suggested detour route map ○ Name and contact address/telephone number of the concerned personnel ○ Name and contact address / telephone number of the Contractor ○ Inconvenience is sincerely regretted.
	Accidents and spillage of fuels and chemicals	The Contractor shall • Restrict truck deliveries, where practicable, to day time working hours. • Restrict the transport of oversize loads. • Operate road traffics/transport vehicles, if possible, to nonpeak periods to minimize traffic disruptions. • Enforce on-site speed limit

ESCoP 14: River/Canal Transport management

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
Construction activities in River/Canal	The presence of construction activities in the river/canal can cause hindrance and risks to the traffic.	The Contractor shall • Not obstruct other normal riverine/canal transport while doing transport and works • Identify the channel to be followed clearly • using navigation aids such as buoys, beacons, and lighting • Keep regular and close contacts with Bangladesh Inland Water Transport Authority (BIWTA) regarding their needs during construction of the project

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
		• Provide signage for traffic conforming to the BIWTA requirements
	Accidents	The Contractor shall • Prepare an emergency plan for dealing with accidents causing any human casualties or loss of resources. • Ensure sufficient equipment and staffs available to execute the emergency plans • Provide appropriate lighting and safety protocols in construction areas

ESCoP 15: Construction Camp Management

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
Siting and Location of construction camps	Campsites for construction workers are the important locations that have significant impacts such as health and safety hazards on local resources and infrastructure of nearby communities.	The Contractor shall • Locate the construction camps at areas which are acceptable from environmental, cultural or social point of view. • Consider the location of construction camps away from communities in order to avoid social conflict in using the natural resources such as water or to avoid the possible adverse impacts of the construction camps on the surrounding communities. • Submit to the for approval a detailed layout plan for the development of the construction camp showing the relative locations of all temporary buildings and facilities that are to be constructed together with the location of site roads, fuel storage areas (for use in power supply generators), solid waste management and dumping locations, and drainage facilities, prior to the development of the construction camps. • Local authorities responsible for health, religious and security shall be duly informed on the set up of camp facilities so as to maintain effective surveillance over public health, social and security matters
Construction Camp Facilities	Lack of proper infrastructure facilities, such as housing, water supply and sanitation facilities will increase pressure on the local services and generate substandard living standards and health hazards.	The Contractor shall provide the following facilities in the campsites: • Adequate housing for all workers • Safe and reliable water supply. Water supply from deep tube wells of 300 m depth that meets the national standards • Hygienic sanitary facilities and sewerage system. The toilets and domestic waste water will be collected through a common sewerage. Provide separate latrines and bathing places for males and females with total isolation by wall or by location. The minimum number of toilet facilities required is one

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
		toilet for every ten persons. • Treatment facilities for sewerage of toilet and domestic wastes • Storm water drainage facilities. Both sides of roads are to be provided with shallow v drains to drain off storm water to a silt retention pond which shall be sized to provide a minimum of 20 minutes retention of storm water flow from the whole site. Channel all discharge from the silt retention pond to natural drainage via a grassed swale at least 20 meters in length with suitable longitudinal gradient. • Paved internal roads. Ensure with grass/vegetation coverage to be made of the use of top soil that there is no dust generation from the loose/exposed sandy surface. Pave the internal roads of at least haring-bond bricks to suppress dusts and to work against possible muddy surface during monsoon. • Provide child crèches for women working construction site. The crèche shall have facilities for dormitory, kitchen, indoor and outdoor play area. Schools shall be attached to these crèches so that children are not deprived of education whose mothers are construction workers • Provide in-house community/common entertainment facilities dependence of local entertainment outlets by the construction camps to be discouraged/prohibited to the extent possible.
Disposal of waste	Management of wastes is crucial to minimize impacts on the environment	The Contractor shall • Ensure proper collection and disposal of solid wastes within the construction camps • Insist waste separation by source; organic wastes in one pot and inorganic wastes in another pot at household level. • Store inorganic wastes in a safe place within the household and clear organic wastes on daily basis to waste collector. Establish waste collection, transportation and disposal systems with the manpower and equipment/vehicles needed. • Dispose organic wastes in a designated safe place on daily basis. At the end of the day cover the organic wastes with a thin layer of sand so that flies, mosquitoes, dogs, cats, rats, are not attracted. One may dig a large hole to put organic wastes in it; take care to protect groundwater from contamination by leachate formed due to decomposition of wastes. Cover the bed of the pit with impervious layer of materials (clayey or thin concrete) to protect groundwater from contamination. • Locate the garbage pit/waste disposal site min 500 m away from the residence so that peoples are not

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
		disturbed with the odor likely to be produced from anaerobic decomposition of wastes at the waste dumping places. Encompass the waste dumping place by fencing and tree plantation to prevent children to enter and play with. • Do not establish site specific landfill sites. All solid waste will be collected and removed from the work camps and disposed in approval waste disposal sites.
Fuel supplies for cooking purposes	Illegal sourcing of fuel wood by construction workers will impact the natural flora and fauna	The Contractor shall • Provide fuel to the construction camps for their domestic purpose, in order to discourage them to use fuel wood or other biomass. • Made available alternative fuels like natural gas or kerosene on ration to the workforce to prevent them using biomass for cooking. • Conduct awareness campaigns to educate workers on preserving the protecting the biodiversity and wildlife of the project area, and relevant government regulations and punishments on wildlife protection.
Health and Hygiene	There will be a potential for diseases to be transmitted including malaria, exacerbated by inadequate health and safety practices. There will be an increased risk of work crews spreading sexually transmitted infections and HIV/AIDS.	The Contractor shall • Provide adequate health care facilities within construction sites. • Provide first aid facility round the clock. Maintain stock of medicines in the facility and appoint fulltime designated first aider or nurse. • Provide ambulance facility for the laborers during emergency to be transported to nearest hospitals. • Initial health screening of the laborers coming from outside areas • Train all construction workers in basic sanitation and health care issues and safety matters, and on the specific hazards of their work • Provide HIV awareness project ming, including STI (sexually transmitted infections) and HIV information, education and communication for all workers on regular basis • Complement educational interventions with easy access to condoms at campsites as well as voluntary counseling and testing • Provide adequate drainage facilities throughout the camps to ensure that disease vectors such as stagnant water bodies and puddles do not form. Regular mosquito repellant sprays during monsoon. • Carryout short training sessions on best hygiene practices to be mandatorily participated by all workers. Place display boards at strategic locations within the camps containing messages on best hygienic practices
Safety	In adequate safety facilities to the	The Contractor shall • Provide appropriate security personnel (police /

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
	construction camps may create security problems and fire hazards	home guard or private security guards) and enclosures to prevent unauthorized entry in to the camp area. • Maintain register to keep a track on a head count of persons present in the camp at any given time. • Encourage use of flameproof material for the construction of labor housing / site office. Also, ensure that these houses/rooms are of sound construction and capable of withstanding wind storms/cyclones. • Provide appropriate type of firefighting equipment suitable for the construction camps • Display emergency contact numbers clearly and prominently at strategic places in camps. • Communicate the roles and responsibilities of laborers in case of emergency in the monthly meetings with contractors
Site Restoration	Restoration of the construction camps to original condition requires demolition of construction camps.	The Contractor shall • Dismantle and remove from the site all facilities established within the construction camp including the perimeter fence and lockable gates at the completion of the construction work. • Dismantle camps in phases and as the work gets decreased and not wait for the entire work to be completed • Give prior notice to the laborers before demolishing their camps/units • Maintain the noise levels within the national standards during demolition activities • Different contractors shall be hired to demolish different structures to promote recycling or reuse of demolished material. • Reuse the demolition debris to a maximum extent. Dispose remaining debris at the designated waste disposal site. • Handover the construction camps with all built facilities as it is if agreement between both parties (contactor and land-owner) has been made so. • Restore the site to its condition prior to commencement of the works or to an agreed condition with the landowner. • Not make false promises to the laborers for future employment in O&M of the project.

ESCoP 16: Cultural and Religious Issues

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
Construction activities near	Disturbance from construction works to the	The Contractor shall • Communicate to the public through community

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
religious and cultural sites	cultural and religious sites, and contractors lack of knowledge on cultural issues cause social disturbances.	consultation and newspaper announcements regarding the scope and schedule of construction, as well as certain construction activities causing disruptions or access restriction. • Do not block access to cultural and religious sites, wherever possible • Restrict all construction activities within the foot prints of the construction sites. • Stop construction works that produce noise (particularly during prayer time) shall there be any mosque/religious/educational institutions close to the construction sites and users make objections. • Take special care and use appropriate equipment when working next to a cultural/religious institution. • Stop work immediately and notify the site manager if, during construction, an archaeological or burial site is discovered. It is an offence to recommence work in the vicinity of the site until approval to continue is given by the D&SC/PIU. Provide separate prayer facilities to the construction workers. • Show appropriate behavior with all construction workers especially women and elderly people • Allow the workers to participate in praying during construction time • Resolve cultural issues in consultation with local leaders and supervision consultants • Establish a mechanism that allows local people to raise grievances arising from the construction process. • Inform the local authorities responsible for health, religious and security duly informed before commencement of civil works so as to maintain effective surveillance over public health, social and security matters

ESCoP 17: Workers' Health and Safety

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
Best practices	Construction works may pose health and safety risks to the construction workers and site visitors leading to severe injuries and deaths. The population in the proximity of the construction site and the construction workers will be exposed to a number	The Contractor shall • Implement suitable safety standards for all workers and site visitors which shall not be less than those laid down on the international standards (e.g., International Labor Office guideline on 'Safety and Health in Construction; World Bank Group's 'Environmental Health and Safety Guidelines') and contractor's own national standards or statutory regulations, in addition to complying with the national standards of the Government of Bangladesh (e.g. `The Bangladesh Labor Code, 2006') • Provide the workers with a safe and healthy work

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
	of (i) biophysical health risk factors, (e.g. noise, dust, chemicals, construction material, solid waste, waste water, vector transmitted diseases etc), (ii) risk factors resulting from human behavior (e.g. STD, HIV etc) and (iii) road accidents from construction traffic.	environment, taking into account inherent risks in its particular construction activity and specific classes of hazards in the work areas, • Provide personal protection equipment (PPE) for workers, such as safety boots, helmets, masks, gloves, protective clothing, goggles, full-face eye shields, and ear protection. Maintain the PPE properly by cleaning dirty ones and replacing them with the damaged ones. • Safety procedures include provision of information, training and protective clothing to workers involved in hazardous operations and proper performance of their job • Appoint an environment, health and safety manager to look after the health and safety of the workers • Inform the local authorities responsible for health, religious and security duly informed before commencement of civil works and establishment of construction camps so as to maintain effective surveillance over public health, social and security matters.
	Child and pregnant labor	The Contractor shall • not hire children of less than 14 years of age and pregnant women or women who delivered a child within 8 preceding weeks, in accordance with the Bangladesh Labor Code, 2006
Accidents	Lack of first aid facilities and health care facilities in the immediate vicinity will aggravate the health conditions of the victims	• Provide health care facilities and first aid facilities are readily available. Appropriately equipped first-aid stations shall be easily accessible throughout the place of work • Document and report occupational accidents, diseases, and incidents. • Prevent accidents, injury, and disease arising from, associated with, or occurring in the course of work by minimizing, so far as reasonably practicable, the causes of hazards. In a manner consistent with good international industry practice. • Identify potential hazards to workers, particularly those that may be life-threatening and provide necessary preventive and protective measures. • Provide awareness to the construction drivers to strictly follow the driving rules • Provide adequate lighting in the construction area and along the roads
Construction Camps	Lack of proper infrastructure facilities, such as housing, water supply and sanitation facilities will increase pressure on the local services and generate	• The Contractor shall provide the following facilities in the campsites to improve health and hygienic conditions as mentioned in ESCoP 15 Construction Camp Management • Adequate ventilation facilities • Safe and reliable water supply. Water supply from deep tube wells that meets the national standards

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
	substandard living standards and health hazards.	• Hygienic sanitary facilities and sewerage system. The toilets and domestic waste water will be collected through a common sewerage. • Treatment facilities for sewerage of toilet and domestic wastes • Storm water drainage facilities. • Recreational and social facilities • Safe storage facilities for petroleum and other chemicals in accordance with ESCoP 2 • Solid waste collection and disposal system in accordance with ESCoP 1. • Arrangement for trainings • Paved internal roads. • Security fence at least 2 m height. • Sick bay and first aid facilities
Water and sanitation facilities at the construction sites	Lack of Water sanitation facilities at construction sites cause inconvenience to the construction workers and affect their personal hygiene.	• The contractor shall provide portable toilets at the construction sites, if about 25 people are working the whole day for a month. Location of portable facilities shall be at least 6 m away from storm drain system and surface waters. These portable toilets shall be cleaned once a day and all the sewerage shall be pumped from the collection tank once a day and shall be brought to the common septic tank for further treatment. • Contractor shall provide bottled drinking water facilities to the construction workers at all the construction sites.
Other ESCoPs	Potential risks on health and hygiene of construction workers and general public	The Contractor shall follow the following ESCoPs to reduce health risks to the construction workers and nearby community • ESCoP 2: Fuels and Hazardous Goods Management • ESCoP 4: Drainage Management • ESCoP 10: Air Quality Management • ESCoP 11: Noise and Vibration Management • ESCoP13: Road Transport and Road Traffic Management • ESCoP 14: River/Canal Transport management
Trainings	Lack of awareness and basic knowledge in health care among the construction workforce, make them susceptible to potential diseases.	The Contractor shall • Train all construction workers in basic sanitation and health care issues (e.g., how to avoid malaria and transmission of sexually transmitted infections (STI) HIV/AIDS. • Train all construction workers in general health and safety matters, and on the specific hazards of their work Training shall consist of basic hazard awareness, site specific hazards, safe work practices, and emergency procedures for fire, evacuation, and natural disaster, as appropriate. • Commence the malaria, HIV/AIDS and STI education campaign before the start of the construction phase and complement it with by a strong condom marketing, increased access to condoms in the area as well as to

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
		voluntary counseling and testing. • Implement malaria, HIV/AIDS and STI education campaign targeting all workers hired, international and national, female and male, skilled, semi- and unskilled occupations, at the time of recruitment and thereafter pursued throughout the construction phase on ongoing and regular basis. This shall be complemented by easy access to condoms at the workplace as well as to voluntary counseling and testing.

ESCoP 18: Stakeholder Consultation

Project Activity/ Impact Source	Impacts	Mitigation Measures/ Management Guidelines
Selection of Sub-projects, Working, storage and labor camp Sites, making design, and implementation arrangements and handing over to proper Authority.	Without proper or inadequate consultation with the appropriate stakeholders, there might have serious difficulties in implementing project ESMF/ESMP and eventually to reach the goal set by the project.	The Contractor shall • Identify potential stakeholders before starting the construction works, and devise the mechanism to consult effectively with them • Communicate to the public through community consultation and other means of communication, as appropriate, regarding the scope and schedule of construction, as well as environmental and social risk that may arise and project's mitigation measures. • Make regular efforts to keep stakeholders informed on project implementation. • Make available all the project documents (including design, drawing, site specific ESMP, construction quality test results, etc.) at site office for all interested stakeholders. • Notify and consult through relevant staffs, with the surrounding community people, disadvantaged or vulnerable groups, and workers, other parties as necessary, about the presence and working procedure of project grievance system. These could be done in conducting FGDs. • Consult with the vulnerable individuals or groups including ethnic communities to have their full consent in construction works following a free prior informed consent (FPIC) attaining process. • Prepare and install project signboard (containing items of works, budget, schedule, GRC contact point, etc.) and posters on different safety rules and services associated with the site management. • Respond and address grievances in a timely manner, forward unresolved grievances to the next level at earliest.

Annex-H: Sample GRM Form

Grievance Form : LGED			
Grievance reference number (to be completed by Project):			
Contact details (may be submitted anonymously)	Name (s):		
	Address:		
	Telephone:		
	Email:		
How would you prefer to be contacted (check one)	By mail/post: ☐	By phone: ☐	By email ☐
Preferred language	☐ Bangla	☐ English	
Provide details of your grievance. Please describe the problem, who it happened to, when and where it happened, how many times, etc. Describe in as much detail as possible.			
What is your suggested resolution for the grievance, if you have one? Is there something you would like LGED or another party/person to do to solve the problem?			
How have you submitted this form to the project?	Website ☐	Email ☐	By hand ☐
	In person ☐	By telephone ☐	Other (specify) ☐
Who filled out this form (If not the person named above)?	Name and contact details:		
Signature			
Name of LGED official assigned responsibility			
Resolved or referred to GRC1?	☐ Resolved	☐ Referred	If referred, date:
Resolved referred to GRC2?	☐ Resolved	☐ Referred	If referred, date:
Completion			
Final resolution (briefly)			
	Short description	Accepted? (Y/N)	Acknowledgement signature
1st proposed solution			
2nd proposed solution			
3rd proposed solution			

Annex-I: Photographs showing different consultation events at target districts

District: Gopalganj

Photo-1: **Community meeting (with ensuring women's participation),** Tuthamandra Govt. Primary School ,10 No Shahapur Union Parishad, Goalganj Sadar, Gopalgonj, Date: 16/11/2021

Photo-2: **Vulnerable women group** meeting, Tuthamandra GPS ,10 No Shahapur Union Parishad, Gopalganj Sadar, Gopalgonj, Date: 16/11/2021

Photo-3: KII meeting, Upazila Education officer, Sadar, Gopalgonj, Date: 15/11/2021

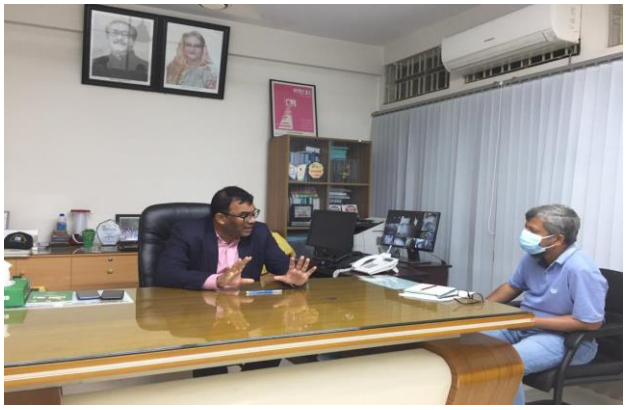


Photo-4: KII meeting, Executive Engineer, LGED, Gopalgonj, Date: 17/11/2021

Photo-5: KII meeting, Sub-Divisional Engineer, WDB, Gopalgonj, Date: 17/11/2021

District: Sunamganj

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<tr><td> 
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<tr><td colspan="2">Photo-6: Community meeting (with ensuring women’s participation), 120 No. Shekhergaon Government Primary School, Kurban Nagar, Union,Sadar, Sunamgonj, Date: 16/11/2021</td></tr>
<tr><td> 
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<tr><td>Photo-7: Women group meeting (FGD), 120 No. Shekhergaon GPS, Kurban Nagar Union,Sadar, Sunamgonj, Date: 18/11/2021</td><td>Photo-8: KII meeting, Executive Engineer, LGED, Sunamgonj, Date: 18/11/2021</td></tr>
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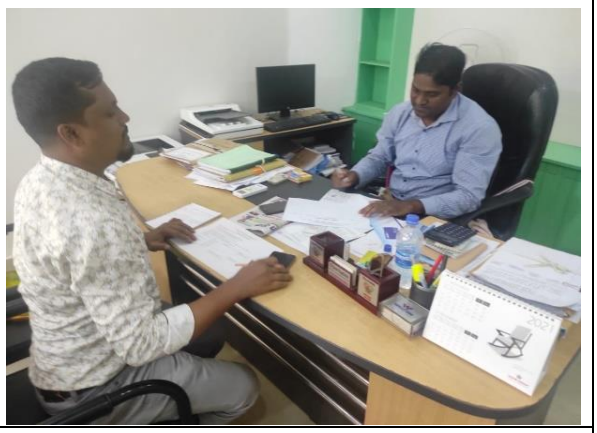
</td><td>  </td></tr>
<tr><td>Photo-9: KII meeting, UNO, Sadar,Sunamgonj, Date:18/11/21</td><td>Photo-10: KII meeting, UE,Sadar,Sunamgonj, Date: 18/11/21</td></tr>
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Photo-11: KII , Upazila Education Officer, Sadar, Sunamganj, Date: 18/11/2021	**Photo-12: KII, Assistant Engineer, WDB, Sunamganj,** Date: 18/11/2021
	
Photo-13: KII, Assistant Engineer, DPHE, sadar, Sunamganj, Date: 18/11/2021	**Photo-14: KII ,** DLO & ULO, Sadar, Sunamganj, Date: 18/11/2021
	
Photo-15: KII, PIO, Sadar, Sunamganj, Date: 18/11/2021	**Photo-16: KII,** Unit Manager, BRAC, Sunamgonj, Date: 18/11/2021

	
Photo-17: KII, General Editor, Daily Sunamkontho & District Council Member, Sunamganj, Date: 18/11/2021	**Photo-18: KII,** President, Sunamganj District Constructor Association, Sunamganj. Date: 18/11/2021

District: Kurigram

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<tr><td> 
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<tr><td>Photo-1: Public consultation: Notan Para GPS, Rowmari, Kurigram , Date: 16/11/2021</td><td>Photo-2: FGD with school teachers: Notan Para GPS, Rowmari, Kurigram, Date: 16/11/2021</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>Photo-3:FGD for local women: Nomodas para, Rowmari, Kurigram, Date: 16/11/2021</td><td>Photo-4: FGD with adolescent girls: Sobujpara, Rowmari, Kurigram, Date: 16/11/2021</td></tr>
<tr><td>  </td><td> 
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<tr><td>Photo-5: FGD with vulnerable group: Sobujpara, Rowmari, Kurigram, Date: 16/11/21</td><td>Photo-6: KII, District Education Officer, Department of Education, Kurigram, Date: 16/11/21</td></tr>
</table>

	
Photo-7: KII, Executive Engineer, BWD, Kurigram, Date: 16/11/21	**Photo-8**: KII, Staff Corresponded, Jamuna Television, Member, Kurigram Press club, Date: 16/11/21
	
Photo-9: KII, Dainik songbad, Roumari press club, Rowmari, Kurigram, Date: 16/11/21	**Photo-10: KII,** Principle officer, Grameen Bank, Rowmari, Kurigram, Date: 16/11/21

District: Sirajganj

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<tr><td> 
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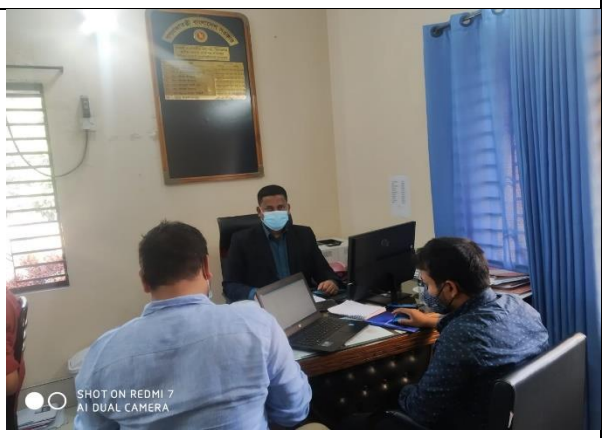
<tr><td>Photo-1: Public Consultation, K R Kowkor GPS, Ullapara, Sirajgonj, Date: 18/11/2021</td><td>Photo-2: FGD, K. R. Noukoir GOVT. Primary School, Date:16/11/2021</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>Photo-3: FGD, Noukoit, West para, Date: 16/11/2021</td><td>Photo-4: FGD Noukoir (Halder para). Date: 16/11/2021</td></tr>
<tr><td>  </td><td> 
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<tr><td>Photo-5: Noukoit, West para. Date: 16/11/21</td><td>Photo-6:Sr.AE LGED,Sirajganj, Date:16/11/21</td></tr>
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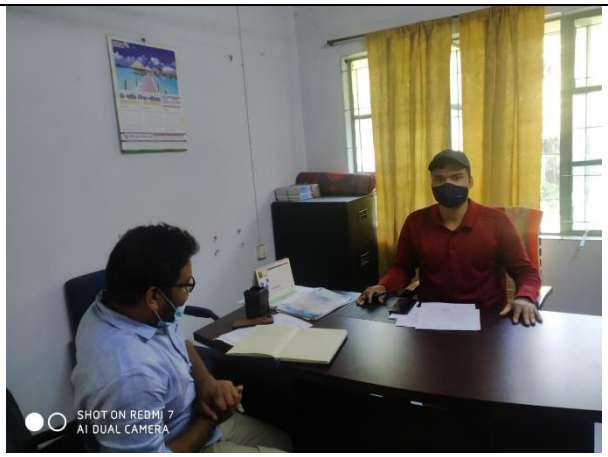	
Photo-7: Assistant Inspection , Directorate of Secendary and Higher education, Sirajganj, Date:16/11/21	**Photo-8**: District Education Officer, Directorate of primary education , Sirajganj**,** Date:16/11/21
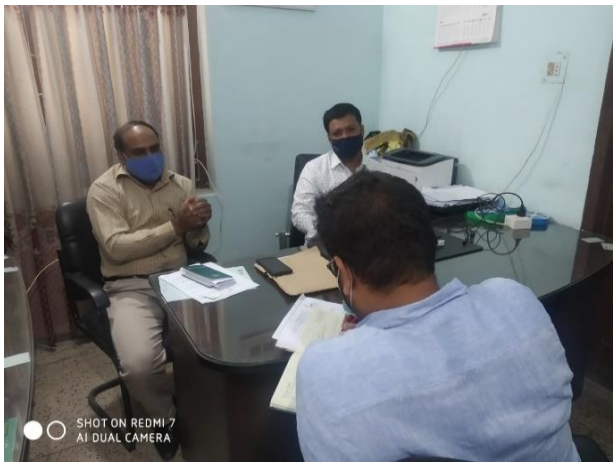	
Photo-9: BRAC, District Coordinator, Sirajganj, Date:16/11/21	**Photo- 10**: Editor , Ajker Sirajganj, Secretary, Sirajganj Press Club, Sirajgonj, Date:16/11/21

Annex-J: Terms of Reference (ToR) for M&E Consulting Firm

A. Introduction

The Government of Bangladesh has made significant progress in reducing casualties from extreme events or disasters in last couple of decades, with support from development partners. Policy improvement and investments in multi-purpose disaster shelters, Early Warning Systems (EWSs), and government capacity to mitigate the risks and impacts of extreme natural events have been proved to be effective in reducing losses to lives and assets. There is a need to further develop and extend these investments in infrastructure and capacity enhancement to encompass a wider range of geographies and hazards, particularly riverine and flash floods in non-coastal areas in Bangladesh as climate change increases the risks and impacts. Hence, the GoB, thorough its implementing agency- Local Government Engineering Department (LGED) with financial assistance from the World Bank is preparing a project under the title 'Resilient Infrastructure for Adaptation and Vulnerability Reduction (RIVER)' with an aim to reduce the vulnerability of people in targeted communities to riverine and flash floods, improve the country's capacity in disaster preparedness and response, and respond promptly in the event of any crisis or emergency.

The project area covers the most severely affected flood-prone districts in the Teesta-Brahmaputra-Jamuna (Nilpamari, Lalmonirhat, Kurigram, Rangpur, Gaibandha, Bogura, Pabna, Sirajganj), Padma (Rajbari, Faridpur, Gopalganj, Madaripur), and Surma-Meghna river systems in the North East (Sunamganj, Habiganj). Each of these areas, although similar, have important geographical and demographic differences.

There are four distinct components under the project: (i) Resilient flood shelters and community infrastructure: This component will finance land raising and construction of climate-resilient flood shelters in targeted flood-prone villages in non-coastal districts, installation of lightning protection systems, repair and/or rehabilitation of associated climate resilient shelter connecting and community roads, and resilient infrastructure as identified by the community including small scale climate resilient culverts and bridges, repair, rehabilitation of rural markets, repair and rehabilitation of landing stages (river jetties), and installation of solar powered street lights; (ii) Strengthening capacity for disaster preparedness and response and technical assistance: Finance will be provided for good and services to increase the capacity of LGED and communities to plan, manage, and recovery from floods, and strategic studies to increase long-term disaster and climate resilience; (iii) Project Management, Design and Supervision, Monitoring and Evaluation: This component will support the government in implementing the project, and in coordinating all project related activities, monitoring, technical assistance, and training; (iv) Contingency Emergency Response: This component will furnish unforeseen emergency needs, for which funds will be channelized to this component through re-allocation upon the Government's request to support response and reconstruction.

The LGED intends to hire a local consulting firm to assist the PIUs in monitoring and evaluating all aspect of the RIVER project, and its components. It will be financed by World Bank and duration of the assignment is for 5 (five) years.

B. Objectives of the assignment

(a) The overall objective of this assignment is to hire services of a competent Monitoring and Evaluation (M&E) consultancy firm for four primary purposes; (i) carry out M&E of project progress, inputs, outputs, processes, outcomes and impacts in relation to the various project

components carried out by the project implementing agency, including the PIU; (ii) carry out monitoring of project specific operational risks and mitigation measures; (iii) provide and regular feedback to CE, and the Project Director (PD), LGED on its evaluations of the above as well as on any other specific issue as directed by the CE; and (iv) provide assistance to the PIU in monitoring and evaluating; (a) project physical and financial progress and performance, project inputs, outputs, outcomes and impacts; and

(b) environmental and social development and safeguard management aspects with respect to all project components of the project. The M&E Consultant will be directly accountable to the Chief Engineer (CE), LGED, and the PIU of the project will be responsible for its contract management and supervision. In particular, the tasks of the consultants would include:

- Create a comprehensive monitoring and evaluation framework for the RIVER;
- Develop baselines for the key project indicators for tracking project inputs, outputs, outcomes, and operational risks;
- Track key indicators (input, output and outcome) during project implementation,
- Carry out process monitoring and evaluation;
- Carry out monitoring and evaluation of governance risks of the project;
- Recommend appropriate corrective actions and recommendations;
- Supervise the implementation and compliance of the Environmental and Social Management Framework (ESMF) and Social / Resettlement Policy Framework(RPF) along with other ES documents;
- Provide concurrent report to CE and World Bank;
- Preparation of Mid Term Review (MTR) report;
- Preparation of Implementation Completion Report (ICR) and
- Strengthen the capacity of the project implementing agencies, including the PIU, to monitor project impacts.

C. Outline of the tasks / responsibilities of the consultants

Key Activities: The key activities under this assignment include:

Task 1: Create a comprehensive monitoring and evaluation framework for the Project

3. It includes the outcome indicators for monitoring Project Development Objective, intermediate output indicators for all project components, and tentative baseline conditions for each indicator, year wise achievement of targets against each outcome/output indicator. The Consultant is expected to use this as the base document for the development of project specific M&E framework, if necessary, by adjusting and fine-tuning the indicators and targets.
4. The M&E framework should also include indicators to monitor and evaluate project specific operational risks and risk mitigation measures. The major objective of this dimension of monitoring is to ensure governance aspects of the project and minimize risks of misappropriation of project resources. However, more operational indicators need to be developed and systems, procedures and record keeping arrangements have to be established on ground to monitor compliance with the proposed broader remedial measures; These measures need to be maintained efficiently to identify fraud and corruption risks of the project in respect

of each project component and to monitor and evaluate the levels of risk, compliance with and impact of the designed risk mitigation measures in the project. The Consultant is expected to develop, establish, and monitor a sound and transparent system of record keeping at community level, related with the transfer and delivery of capital assets and consumable items and related financial transactions.

5. The Consultant is expected to finalize the M&E framework covering those dimensions as early as possible after its mobilization, preferably through a consultative workshop with the participation of relevant officials from different stakeholder agencies. The Consultant is expected to present final M&E framework, inter-alia, as one of the main outputs in the Inception Report of the Consultant.

Task 2: Develop baselines for the key project indicators for tracking project Inputs, outputs and outcomes.

6. The Consultant is responsible for the establishment of baseline status against all project indicators of the final M&E framework to be able to monitor outcomes and impacts. Accurate establishment of the generic baseline situation is particularly vital. As early as possible after the mobilization, Consultant is expected to design a baseline survey methodology in the project areas in consultation with the PIU.
7. The Consultant is expected to start the baseline surveys including the environmental parameters (physical, chemical and biological environment) and establish the baseline status immediately after the mobilizations and present the methodology for and progress of compiling generic baseline status for each indicator as one of the outputs of Inception Report. Consultant is expected to suggest its proposed methodology for baseline surveys in their proposal which will be used as one of the criterion for proposal evaluation.

Task 3: Track key indicators (input, output, outcome, and operational risks) during project implementation

8. Consultant is expected to develop appropriate methods, surveys, tools, data collection formats, and analytical procedures to track and monitor project inputs, evaluate outputs and outcomes generated due to project interventions throughout project implementation. The M&E may include periodic as well as generated regular field surveys, Interviews/Focus Group Discussions, Participatory monitoring, and social and technical auditing. Consultant is expected to suggest its proposed methodologies for tracking and M&E of inputs, outputs and outcomes in their proposal to the PIU which will be used as one of the criterion for proposal evaluation.

Task 4: Carry out process monitoring of the Project

9. Consultant is expected to carry out process monitoring of the project using specialized techniques and tools. The process monitoring is very important because the project implementation is designed on the principles of a community-based approach in all phases from need identification, targeting and selecting beneficiaries, and training, and monitoring the inputs. The Consultant is expected to design, establish and carry out a sound process monitoring system for this purpose. Consultant is expected to report on its evaluation of the process in addition to the regular reporting of project progress, inputs, outputs, and outcomes to the PIU

and the World Bank task team. The process monitoring system may also be linked to M&E of operation risks and governance aspects as outlined under Task 3 above of this TOR

Task 5: Recommend appropriate corrective actions and recommendations

10. Consultant is expected to play a continuing role in analyzing the findings and results of M&E and make recommendations to the CE and Implementing agency to be able to take timely corrective actions on implementation strategies and practices. Consultant will provide regular feedback to the implementing agency to ensure and maintain satisfactory implementation progress and disbursements as against the targets and work plans. Based on the M&E of outcomes, Consultant will provide feedback to the CE and to implementing agency on the effectiveness of the implementation processes and approaches. Based on the M&E findings, recommend necessary changes in the project scope, interventions and implementation processes etc., to ensure timely and satisfactory achievement of the expected outcomes of all project components and the overall development objective of the project; If necessary, Consultant will recommend necessary changes in the project scope, interventions and implementation processes etc., for consideration of the CE and implementing agency to ensure timely and satisfactory achievement of the expected outcomes of all project components and the overall development objective of the project.

Task 6: Supervise the implementation and compliance of the Environmental and Social Management Framework (ESMF) and Resettlement Policy Frame-work.

11. To ensure overall environmental and social sustainability of the Project, an Environmental and Social Management Framework (ESMF) and Resettlement Policy Framework (RPF) is being prepared. The Frameworks will serve as a tool to separately assess the environment and social impacts of the components and will serve as a set of guidelines to be used for projects where the precise nature and scale of sub-projects are little known or unknown in advance. These guidelines will also serve as a tool to select the optimal project intervention from social and environmental perspectives, prepare preliminary designs, and to ensure complete integration of social and environmental concerns and mitigation measures in the design for the activities to be undertaken by project implementing agencies. The Consultant will have access to draft framework at the time of preparing the proposals for this Consultancy. The consultant will do the following tasks:

Inception Stage (to be included in the Inception Report)

(i) Review the ESMF and the environmental and social impacts;

(ii) List the monitoring parameters and present in the Inception Report along with the measurement timeline;

(iii) Collect/measure the baseline information from the primary and secondary data and will include in the Inception Report;

(iv) Prepare the outline of the safeguard monitoring report and cleared with the World Bank;

Implementation Stage (To be included in Safeguard Section of Quarterly/Annual Progress/ MTR/ICR)

(i) Ensure that all tasks have met country regulatory requirement and update the information in the monitoring report;

(ii) Measure the activity specific monitoring parameters;

(iii) Report on the status of GRM;

(iv) Monitor the status of quality of overall safeguard compliance;

(v) Monitor the status of training, consultation with stakeholders and include the training and consultation plan for the next quarter;

(vi) Report on the lessons learned from the previous quarter and the area of improvement to ensure better safeguard compliance;

(vii) Report on the status of the application of area of improvement proposal

(viii) Ensure the lab report and relevant pictures are in place;

(ix)Monitor the adequacy of documentation;

12. Separate design and supervision consultants will be hired by the project to assist LGED and the in the designs and supervision of interventions. The responsibility of the M&E Consultant will be, if necessary, to provide recommendations for the revision and updating of the ESMF, RPF, SEP, LMP, and ESCP, during the project implementation based on actual needs and implementation experience; to verify adequacy of assessment and clearance of sub-project specific Environmental and Social Assessments (ESAs), Environmental and Social Management Plans (ESMPs), and Resettlement Action Plans (RAPs) for all sub-projects under the components and of their implementation status and compliance and to analyze the causes of major accidents/injuries (including near misses) and grievances from the stakeholders. Consultant is also responsible to guide project implementing agencies and ensuring that satisfactory institutional arrangements and staffing/skills are available for the above tasks and outcomes.

Task 7: Prepare and submit consolidated quarterly and annual progress reports to the CE, LGED.

13. Consultant will develop appropriate reporting formats in consultation with the CE, PIU and the implementing agencies and guide and provide training to the officials and staff of the implementing agencies for timely preparation of the quarterly and annual work plans, budgets and progress reports. The Consultant will guide officials and staff of the project implementing agencies on the timely preparation of those reports, prepare and submit consolidated reports required by the PIU and the World Bank on agreed dates. In addition, Consultant will provide concurrent reporting to World Bank and PIU on project status and

lessons learned during implementation (including data, analysis, surveys, interviews, photographs, description, and easy-to-read visuals) to enable better adaptive management.

Task 8: Prepare Mid Term Review Report (MTRR) :

14. The GOB and the World Bank will carry out a comprehensive Mid Term Evaluation around December 2024. The purpose of the Mid Term Evaluation is to assess project progress and outcomes and to make mid-course corrections and adjustments to the project design and implementation arrangements based on implementation experience, lessons learned and outcome by the time of the evaluation. Consultant will therefore be responsible for systematic analysis and recording of implementation issues, experience and lessons from the inception of the project. Consultant is also expected to assist the PIU in the preparation of the GOB's Mid Term Review Report (MTRR). The

MTRR should include a comprehensive assessment of the lessons, issues and outcomes and recommendations for mid-course adjustments to project design, budget and implementation arrangements etc. to be served as a guide to the GOB-Bank MTR teams.

Task 9: Prepare Implementation Completion Report (ICR)

15. The GOB and the World Bank will carry out a comprehensive Implementation Completion Review after project completion or any date determined at the MTR leading to the preparation of an Implementation Completion Report by the World Bank. The World Bank will mobilize its own resources to prepare the ICR based on analytical data and information provided by the GOB. Consultant may be expected to carry out some analytical work for this purpose but it is premature to provide information on the nature of the analytical work required.

D. Data, Services & Facilities to be provided by the Client

16. The consultant will be provided with the following data, services and facilities by the PIU for executing and supporting the activities:

- All necessary secondary level data required by the M&E consultant for undertaking the project activities;
- The M&E unit officials of the implementing agencies will also be directly involved in data collection along with the consultants. Additional officials and staff needed for this purpose will be provided by the LGED.

E. Outputs of the consultants / reporting requirements

Deliverable	**Description**	**Schedule (months after signing)**
Inception Report	- Outline of overall methodology to be used - Work plan - Deployment schedule of key officials and staff - Monitoring and Evaluation strategy - Initial list of key indicators to develop baselines - Methodologies for surveys - Formats for Reporting	2 months
Detailed M&E Strategy	- Identification of Indicators and Surveys required	3 months

Report	- M&E Methodologies	
Baseline Survey Report	- Detailed Baseline Status for each indicator	4 months
Regular Reports (monthly, quarterly, annual reports)	- Summary of work completed in last six month and cumulative since inception - Work expected in next six months - Key issues for attention of PSC/World Bank - Process monitoring. - Presentations/Documentation/Video.	As indicated starting from inception report stage
Mid-term Evaluation report	- Assessment and analysis of project outcomes - Benchmarking - Online surveys - Organized monitoring database	1 month before scheduled Mid Term Review
Mid-Term final Report	- Report on progress up to mid-term review - Work expected in remainder of project - Key issues for attention of PCMU/World Bank/PSC (including any suggestions for restructuring related to this Consultancy)	1 month after scheduled Mid Term Review
Draft Final Impact Evaluation Report/ Draft Implementation Completion Report	Project implementation experiences Suggestions for improvement, sustainability and exit strategy Impact assessment of project activities	54 months
Final Report/Implementation Completion Report	After incorporating suggestions on the Draft Final Report	56 months
Deliverables	Description	Schedule (Months after signing)

The consultant will submit 5 copies of the final Impact Evaluation Report and 2 copies of the other reports. All data and reports will also be submitted electronically (as 10 copies of CD-ROMs) in commonly used software formats.

F. Review procedure to monitor consultant's work

17. The consultant shall submit the details of work plan together with their proposal. This work plan should include the details of activities and their schedule. This schedule will be used to monitor and evaluate the progress of activities of the consultant's work. Some other aspects include:

- Timely completion of the activities that include inception report, baseline survey reports etc.
- Content of the reports.
- Methods of data analysis and presentation.

18. The PIU, LGED will be responsible for supervising the consultant's work.

G. Staffing Requirements

19. The consultants should propose a comprehensive team composition with task assignments for each key staff along with sufficient support staffs to meet the objectives and scope of the services. The

estimated staff month for key professional staff is 232 and those of non-key staffs is 236. These staff-months are indicative and the consultants are free to propose their estimate supported by methodology proposed for the implementation of the service.

20. Key professional experts to be evaluated during technical evaluation process for the assignment is given below. The consultant must propose suitable individuals as experts in these key positions; and submit their own estimate of the required number of person-months against each of these key positions to carry out the assignment in conformity with the scope of services.

Key Experts

Sl. No.	Positions
1.	Team Leader- 1 no.
2.	Senior Monitoring and Evaluation Specialist- 1 no.
3.	Senior Environmental Specialist- 1 no.
4.	Senior Social Development Specialist- 1no.

Non-key experts/ Support staff

Sl. No.	Positions
1.	Monitoring Specialist - 1 no.
2.	Office Manager cum Accountant - 1 no.
3.	Computer Operator- 1 no.
4.	MLSS- 1no.

Qualification requirements for the Key staffs are provided below

Position	Educational Qualification	Desirable years of professional experience	Specific experience	Indicative no. of position
Team Leader	Bachelor in civil/water Engineering /Science/ Social Science/other relevant field	8 years	a) 2 years' experience as Team Leader in similar project Or 3 years' experience as Deputy Team Leader in similar project. b) Experience in World Bank or similar Institution funding project.	1
Senior Monitoring and Evaluation Specialist	Bachelor in Civil/Irrigation/Water Engineering/other relevant field	5 years	a) 3 years of experience in monitoring & evaluation of project preferably construction project. b) Experience in World Bank or similar institution funding project.	1
Senior Environmental	Graduation in Environmental	5 years	(a) 3 years of experience in environmental screening,	1

Specialist	Engineering/Environmental science		site-specific impact assessments, mitigation measures and oversee the compliance of environmental management Plan and preferably their monitoring & evaluation activities. (b)Experience in World Bank or similar institution funding project.	
Senior Social Development Specialist	Graduation in Social Science	5 years	(a) 3 years of similar experience in social screening, preparation and implementation of Social Action Plan/Resettlement Action Plan and preferably their monitoring & evaluation activities. (b)Experience in World Bank or similar institution funding project.	1

H. Consultant Selection

21. Consultants will be selected by QCBS method as per World Bank Procurement Regulation for IPF for Borrowers for Goods, Works, Non-Consulting and Consulting Services revised in November 2020.

I. Responsibilities of LGED

22. The consultant shall work under the direct supervision of the Project Director, RIVER (LGED), Dhaka. In case of any unforeseen events, be it in terms of physical or social obstacles at field levels; the LGED concerned field offices will take initiatives to solve them and ensure good working environment.

Technical and project management issues shall be discussed in tri-partite meeting between LGED, PD-RIVER and the consultants. Any unresolved issue, technical or otherwise, would be taken up with LGED through the Project Director and LGED, Dhaka.

The Project Director, RIVER (LGED) shall assist the consultant, as far as possible, in collection of the following data, services and facilities:

- Available hydrological, sub-soil investigation, current rate schedules, related information etc.
- Available maps such as planning map, project index maps, contour maps, mouza maps etc.
- Available studies carried out by different study partners in relation to this study for generation of secondary information and future plans.
- Physical monitoring data collected and preserved by LGED