GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH
MINISTRY OF ROAD TRANSPORT AND BRIDGES

ROADS AND HIGHWAYS DEPARTMENT

Environmental and Social Management for Jhenaidah - Jashore Road Section (Phase-1) and Bhomora - Satkhira - Navaron Road Section (Phase-3) for Western Economic Corridor and Regional Enhancement (WeCARE) Program

STRATEGIC ENVIRONMENT AND SOCIAL ASSESSMENT – FINAL (TASK 3)

August 2024

JOINT VENTURE OF

STUP CONSULTANTS PVT. LIMITED (STUP), INDIA

BCL ASSOCIATES LIMITED (BCL), BANGLADESH

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Syed Aslam Naqvi
Team Leader

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Comments and Response Matrix

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	Chapter 7; the ESMS should elaborate on a strategy for mitigating livelihoods, especially how it impacts on the PAPs and the Small Ethnic minorities. Secure livelihood was a major socio-economic concern that was identified in the baseline study. Other key social issues that have been extensively discussed throughout the document were on the risks and impacts of displacement of people due to land acquisition and loss of structures.	Section 7 discusses the social risk arising from land acquisition during the program intervention. Table 7.1 presents the mitigation actions and responsibility matrix (Refer to Sl. # 5,6 and Sl.# 16,17, 18). Table 7.2 presents Environmental and Social Management Strategies for Different Sectors, where Sl. # 12 includes livelihood restoration. Further, Table 7.3 presents Management Action for Addressing the Environmental and Social Risks and Impact at the Regional Level; a strategy is suggested there to address the social risk and impact at the regional level.
	Elaborate on the WB ESF under section 2.4: The SESA aims to make use of the combination of borrower's national legal requirements and the WB's ESF and AIIB's ESS. Thus, para 354. states that *"The preparation of the ESMS involves a meticulous review of the World Bank (WB)/AIIB's environmental and social standards (ESSs)…."* But this is contrary to the analyses of applicable requirements under section 2.4 where the WB's ESF and AIIB's ESS are only listed. Please see comments in track change in the relevant sections in the document and update as appropriate. Also, the revised clarification should also be reflected in the Executive Summary under the legal and administrative framework, and	To prepare the SESA, we have reviewed ESF, ESS 1 through 10, and other bank documents prepared for the project, such as ESCP, ESMF for LGED, RPF, RAP for LGED, etc. As advised, we have included subsection 2.3 addressing the salient points of the Banks' ESF/ESS (1-10) and AIIB (ESS1-3). Further, an analysis is presented in Annex 2.3.
	Environmental and Social Strategy sections. Has the use of Common Approach been discussed and agreed? Para 356 states that ... *It is envisaged that WBs' ESF will be applied throughout the program to assess and manage E&S risks and impacts, irrespective of which section is financed by the AIIB.*	The Concept Environmental and Social Review Summary prepared at the concept stage document presents per the snapshot.

Compliance Matrix dated 28 August 2024		
Sl. #	Comment dated 04 July 20204 on the SESA submitted on 11 June 2024	Compliance report
		III. WORLD BANK ENVIRONMENTAL AND SOCIAL DUE DILIGENCE **A. Is a common approach being considered?** Yes **Financing Partners** The AIIB will support parallel financing of the Bonpara - Hatikumrul section of the corridor and there is risk of non or under-implementation of environmental and social standards in that section. However, it was agreed with AIIB that a common approach will be applied to the whole program/corridor regardless of source of financing. In this case, the World Bank's ESF will be applied and AIIB will rely on the ESF and Bank's due diligence to assess and manage E & S risks and impacts. All preparation assessments and documents would be prepared as per the ESF and the Bank would review the same. Since timelines of board delivery might be different, there is a need to discuss and agree on disclosure arrangements of E & S instruments and plans, which would be defined and documented in the ESCP.
	Stakeholders: Please include in Table 41 the list of stakeholders and the utilities service providers that were consulted, and provide more clarity on how the Focus Groups were constituted. Who were on these groups and how diversified were there to ensure inclusion in the discussions.	Table 4.1 mentions the services; for example, Pali Samiti and REB, municipalities, municipal corporations, and BTCL are listed. The per-advice sections have been modified.
	Effective consultation and inclusion of ethnic minority groups in stakeholder consultations: briefly explain the methods used to engage with the 2 ethnic groups- *Orao* and *Mahatho* that enabled them to be effectively consulted and that their views were taken into consideration in the program design and mitigation strategies (ESMS) that have been proposed in the document.	Information/data on the ethnic minority community was collected through literature and during field visits. The team contacted them over the phone through the local champions and appointed a fixed time for the subsequent site visits. After a brief introduction of the E&S team, which was comprised of a Team Leader, Social Development Expert cum Deputy Team Leader, Resettlement and Rehabilitation Specialist, Stakeholder Specialist, and SESA expert visited the program area between March 2022 and August 2024. The program area and components of the program were discussed. The details are presented in Section 4 and Annex 4.5 through Annex 4.6. Photographs are shown after the Annex 4.6.
	Occupational Health and Safety should incorporate preventative site practice with competent persons and permit to work, in addition to use of PPE.	It has been modified in subsection 7.4.1 (para # 398).
	Border security is mentioned but not elaborated on – please provide some specific measures relating to practices and capacity building, where relevant, to incorporate good practice on use of force and	The border security-related aspects are included in section 7.4.1.

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	human rights such as those reflected on the UN Voluntary Principles (https://www.voluntaryprinciples.org/wp-content/uploads/2019/12/TheVoluntaryPrinciples.pdf)	
	Editorial:	
	Please check all the maps and ensure there are legible, otherwise delete. E.g., Figure 11. Road Map of Bangladesh is not legible and should be reviewed for clarity or deleted; and Figure 12. Map of WECARE Program.	Since the figure was larger and clumsier, Figure 1.1 (the Road Map of the previous submission) has been removed. Other figures are adjusted per suggestion.
	Please, fix all missing information/cross references in areas marked "Error bookmark…" notices throughout the document.	Missing information and cross-references are included.
	Notes	Other comments in the documents have also been addressed suitably.

Compliance Matrix dated 11 June, 2024			
Sl.#	**New Comment on Second submission to the bank**	**Response to the new comments**	**Compliance Report**
1	Objectives need to be revised to make the purpose of the SESA clear i.e., to identify the key environmental and social issues in the program area, identify the impacts of the program activities on the key ES issues, and support effective design of the future phase of the program for ensuring sustainable development.	The objective was modified according to the comments received in May 2023 on our first submission, which was on March 30, 2023. We will still improve in line with the comments given.	This has been incorporated in the section 1: introduction at page # 8 (1.3)
2	The Table of contents may be revised as appended below: a. Introduction b. Approach and Methodology c. ES baseline and Key ES issues in the area. d. Air and water quality modeling e. Program Activities and Alternative Options f. ES impact on the Key ES issues for each Program Alternatives g. Scenario Development h. impact of each scenario on Key ES issues under various project alternatives. i. Cumulative Impact of High Growth Scenario j. Strategic ES Management Plan (SEMP) k. Recommendations and Conclusion	Request to refer to the TOC of our Contract in the pre-text of the SESA report, and the same is reproduced for easy reference. • Executive Summary Chapter 1: Description of the Program Chapter 2: Legal and Institutional Framework Chapter 3: Description of Region's Environment and Social Baseline Data Chapter 4: Stakeholder Engagement and Public Consultations Chapter 5: Potential Environmental and Social Risks and Impacts Chapter 6: Environmental and Social Management Strategy (ESMS) Chapter 7: Analysis of Alternatives Chapter 8: Institutional Arrangement Chapter 9: Conclusions and Recommendations Please note that we have followed the exact titles of the chapters except chapters 1 and 5, which are titled Introduction and Analysis of Scenarios. Also, an Executive Summary was prepared and shared on The details are given below for your reference. • Chapter 1: Introduction	The consultant has adopted the TOC as described in the Scope of Work. As discussed, Chapter 2 discusses the existing legal and institutional framework (Refer to TOR). Secton 8 is included in the report immediately after elaborating ESMS. This section 8 discusses the institutional arrangement for implementing the ESMS proposed in the SESA. The TOC is as follows Executive Summary Chapter 1: Description of the Program Chapter 2: Legal and Institutional Framework Chapter 3: Description of Region's Environment and Social Baseline Data Chapter 4: Stakeholder Engagement and Public Consultations Chapter 5: Potential Environmental and Social Risks and Impacts Chapter 6: Environmental and Social Management Strategy (ESMS) Chapter 7: Analysis of Alternatives and Development of Scenarios Chapter 8: Institutional Arrangement Chapter 9: Conclusions and Recommendations 1. Please note that the Air Quality model for the program area is included in section 6,

Compliance Matrix dated 11 June, 2024			
Sl.#	**New Comment on Second submission to the bank**	**Response to the new comments**	**Compliance Report**
		• Chapter 2: Legal and Institutional Framework • Chapter 3: Description of Region's Environment and Social baseline data • Chapter 4: Stakeholder Engagement and Public Consultation • Chapter 5: Analysis of Scenarios • Chapter 6: Environmental and Social Impacts, Risks • Chapter 7: Environmental and Social Management Strategy (ESMS) • Chapter 8: Conclusion and Recommendation **Please note if we have to change the entire report accordingly, it will be considered as additional scope of work which would require Additional time and Fees. EOT is approved till August for complete the balance work including the Variation order. We request WB to provide the in principle approval so that the COS proposal along with financial implication may be submitted to RHD** Few of the points are given below: • Air Quality Model results are covered in the impact chapter already. However, there is no provision of water quality model in the scope of work.	and noise quality modeling is included in the study. Water quality modeling results from the recently completed SEA report are included.
3	Program Activities and Alternative Options Development: Please clearly mention the program activities and proposed alternatives. The following can be an example.	In the first draft, program activities were studied as Chapter 7, considering program activities as *"The SESA shall systematically compare feasible alternatives to the proposed program site/alignments, routing/corridor options, 2-lane versus 4-lane, technology, design, and operation - including the "without project' situation in terms of*	Per the observations and subsequent discussion with the WB representatives, Sector 5.
3.1	Three alternative options (Give details of each)		
3.1.1	Program with current Activities		
3.1.2	Program with proposed changed activities		

Compliance Matrix dated 11 June, 2024			
Sl.#	**New Comment on Second submission to the bank**	**Response to the new comments**	**Compliance Report**
3.1.3	No program Alternatives	*their potential positive and negative E&S impacts. It shall also assess the alternatives' feasibility of mitigating the environmental and social impacts, including the capital and recurrent cost of alternative measures and their suitability under local conditions, and the institutional, training, and monitoring requirements for the alternative mitigation measures- with recommendations on the option that optimizes project E&S benefits."* During the conversation with the Bank, it was decided that we would give an analysis of the Scenario that we are developing as per the TOR. Accordingly we submitted it in Chapter 5 in the recently submitted report.	
4	Key ES issues and Selected VCs: In the baseline chapter, clearly identify the key ES issues in the program area (e.g., the region's salinity, Water logging, Ecology and Biodiversity, Vehicle emission, Road Safety, Water Resources, Groundwater, Land Use Pattern, Land Degradation, Air and Noise Pollution, Waste Management, OHS Issues, CHS issues, etc.).	All these issues have been covered in the latest submission as per the first submission of the report on March 30, 2023. Comments received on May 30, 2023. As a good practice, we defined our study area of SESA and prepared land use and other natural, biological and socio-economic parameter. Accordingly the baseline chapter has been updated. The details have discussed in this chapter 3.	Chapter 3 includes further findings on baseline and social conditions and valued environmental and social components (Section 3.6.).
5	Assess the impact of the Program activities and alternatives on the key ES issues of concern	During the discussion with the Bank, it was decided that we would give an analysis of the Scenario that we have developed as per the TOR. Accordingly, the same was submitted in Chapter 5 of the draft report, which was submitted in the month of March 2023. Please note that program impacts for medium- and high-growth scenarios have already been assessed, and the same was used to calculate cumulative impacts. Inadvertently it was missed, and we will submit the details ASAP.	Per the observations and subsequent discussion with the WB representatives, Sector 5. Please refer to Table 5.3.
5.1	ES impact of Alternative-1		
5.2	ES impact of Alternative-2		
5.3	ES impact of Alternative-3		

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			This data has been complient in Table 5.5.
	6. Determine ES impact of various Alternatives in different scenarios (provide Description Program Alternatives / ES parameters / Scenario-1 / Scenario-2 / Scenerioa-2 Alternative-1: ES1, ES2, ES3, ES4, ES5, ES6, ES..... Alternative-2: ES1, ES2, ES5, ES4, ES5, ES6		Since the Alternative Program with activities is feasible and selected for the program, Table 5.9 discusses these three scenarios (low, medium, and high) for different environmental and social attributes..
	The Chapter on Policy/Regulation should be shifted towards the end and needs to be modified. It should offer recommendations for strengthening the regulatory framework, additional capacity building support required by different institutions, special measures required for vulnerable groups/ communities present in the region so that the distributional impacts of the program is spread equitably throughout.	As per the description of the chapters in the scope of work, we have presented the existing legal and administrative setup in **Chapter 2**. Institutional strengthening measures were presented in **Chapter 7** of Environmental and Social Management. The strategy of the recently submitted. **The content of Chapter 2 and ESMS has been revised considering the comments the bank gave on 30 May 2023 on our submission in March 2023.** Further to mention that Different institutions require additional capacity-building support, and special measures are required for vulnerable groups/ communities in the region so that the program's distributional impacts are spread equitably throughout. This will be included in the Chapter 8 of the report.	Please note that Chapter 2 discusses the existing legal and institutional framework (Refer to TOR). Section 8 is included in the report immediately after elaborating on ESMS and discusses the **institutional arrangement** for implementing the ESMS proposed in the SESA.

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	Include a chapter on the Strategic ES Management Plan	It is to be noted that we have titled Chapter 7 as Environmental and Social Management Strategy per the Scope of the Work. In this chapter, we have discussed the following. 7.1.1 Findings of Strategic Environmental and Social Assessment ..... 78 7.2 Implementation of ESMS ..... 80 7.2.1 Recommendations for Augmentation of Environmental and Social Capabilities at the Implementing Agency Level ..... 80 7.3 monitoring and evaluation plan and formation of environmental and social management cell..... 83 7.3.1 Reporting..... 84 7.4 Environmental and Social Management Cell at Project Level..... 84 7.4.1 Environmental and Social Management Plan 84 7.4.2 Resettlement Action Plan ..... 85 7.5 Training of ESMC and RHD/LGED ..... 85 We will review it further and If there is any short-comings in content, we will address. The Screenshot of the Contents are given below for reference	Chapter 8 discusses the environmental and social management strategies, mitigation plans, and institution responsibilities.
	The conclusion chapter should propose based on assessment in the western region, prioritization of investments from E&S impacts and risks point of view. The conclusion chapter should cover how to maximize the positive E&S impacts and minimize adverse impacts in future phases. Also it should highlight locational issues that are identified and what measures should be taken if the investments are prosed in those locations. The conclusion chapter should also describe how the concerns raised in the consultations and needs including those of vulnerable and disadvantaged will be incorporated in the project design and E&S mitigation plans in future phases.	In **Chapter 8** we have presented the future studies or projects which are essential to reduce the E&S impacts, mitigation measures are suggested. However, we will modify this chapter in view of new world banks comments.	In **Chapter 9** we have presented the scope for carrying out future studies or projects which are essential to reduce the E&S impacts, mitigation measures are suggested.

List of Abbreviations

AC Land Assistant Commissioner Land
ADB Asian Development Bank
AIDS Acquired Immunodeficiency Syndrome
AIIB Asian Infrastructure Investment Bank
AP Affected Person
APD Additional Project Director
ARIPA, 2017 Acquisition and Requisition of Immovable Property Act, 2017
BWDB Bangladesh Water Development Board
BR Bangladesh Railway
BBS 2011 Bangladesh Bureau of Statistics 2011
BDT Bangladesh Taka
BG Business Grant
BFD Bangladesh Forest Department
BIN Business Identification Number
BMP Biodiversity Management Plan
CCL Cash Compensation under Law
CMP Current Market Price
CMIS Computerized Management Information System
CMVs Current Market Values
CoC Code of Conduct
COD Cut-off-Date
COVID-19 Coronavirus Disease 2019
CoI Corridor of Impact
CPR Community Property Resource
CSC Construction Supervision Consultants
CRO Chief Resettlement Officer
DAE Department of Agricultural Extension
DAM Department of Agricultural Marketing
DC Deputy Commissioner
DF Department of Forest
DPs Displaced Persons
DoE Department of Environment
DPD Deputy Project Director
DPM Deputy Project Manager
DSM Design Supervision & Management Consultant
EA Executing Agency
E&SC Environmental & Social Consultant
E&SSC Environmental and Social Safeguard Consultant
EHSG Environmental and Health Safety Guidelines
EM Entitlement Matrix
EPs Entitled Persons
ESF Environmental and Social Framework
ESIA Environmental and Social Impact Assessment
ESMP Environmental and Social Management Plan
ESS Environmental and Social Strategy
FGD Focus Group Discussion
FOB Foot Over-bridge
FOs Field Officers
GBV Gender Based Violence
GIIP Good International and Industry Practices
GoB Government of Bangladesh
GRC Grievance Redress Committee
GRM Grievance Redress Mechanism
GRS Grievance Redress Services
HIV Human Immunodeficiency Virus
HHs Households
IBAS Integrated Budget and Accounting. System
INGO Implementing NGO
IOL Inventory of Losses
IPF Investment Project Financing
IGA Income Generating Activities
ILRP Income and Livelihood Restoration Program
IR Involuntary Resettlement
ITS Intelligent Traffic System
J-J R Jhenaidah-Jashore Road
JVC Joint Verification Committee
KIIs Key Informant Interviews
Km Kilometer
Km2 Square Kilometer
LA Land Acquisition
LAO Land Acquisition Officer
LAPs Land Acquisition Plans
LAR Land Acquisition and Resettlement
LCS Labor Contracting Society
LDT Land Development Tax
LGED Local Government Engineering Department
LGI Local Government Institutions
LHS Labor Health and Safety
LO Land Owner
MIS Management Information System
MPR Monthly Progress Report
M&E Monitoring & Evaluation
MP Member of Parliament
MoL Ministry of Land
MoRTB Ministry of Road Transport and Bridges
NWDP National Women Development Policy
NTHHs Non-Title Holder Households
OCC One-Stop Crisis Cell
OSD Occupational Skill Development
OFC Optical Fibre Cable
OHS Occupational Health and Safety
PAPs Project Affected Persons
PAEs Project Affected Entities
PAHs Project Affected Households
PEA Project Execution Agency
PD Project Director
PDCPR Project Displace Community Property Resources
PDPs Project Displaced Persons
PDB Project Displaced Business
PDEs Project Displaced Entities
PDHs Project Displaced Households
PDOEs Project Displaced Other Entities
PIC Project Implementation Committee
PIU Project Implementation Unit
PMs Project Managers
PMO Project Management Office
POPs Pedestrian Overpasses
PRAC Physical Relocation Assistance Committee
PSC Project Steering Committee
PVC Property Valuation Survey
PWD Public Works Department
RP Resettlement Plan
RAP Resettlement Action Plan
RAVC Resettlement Assessment and Valuation Committee
RC Replacement Cost
RCC Reinforced Cement Concrete
RG Reconstruction Grant
RHD Roads and Highways Department
RMFD Road Maintenance Fund Board Act
ROs Resettlement Officers
RoR Records of Rights
RoW Right of Way
RPF Resettlement Policy Framework
RS Revisionary Survey
RTSICP Road Transport Sector Integration and Coordination Platform
RV Replacement Value
SA State Acquisition
SESA Strategic Environmental and Social Assessment
SCDP Safe Corridor Demonstration Program
SCMs Stakeholder Consultation Meetings
SBD Standard Bidding Documents
SEA Sexual Exploitation and Abuse
SEID Stakeholder Engagement and Information Disclosure
SEP Stakeholder Engagement Plan
SES Socioeconomic Survey
SH Sexual Harassment
SMVT Slow Moving Vehicle Traffic
SMP Social Management Plan
SMR Social Monitoring Report
THHs Title Holder Households
TGBs Target Group Beneficiaries
TMP Traffic Management Plan
TNA Training Needs Assessment
ToR Terms of Reference
UNO Upazila Nirbahi Officer
VOPs Vehicular Overpasses
WeCARE Western Economic Corridor & Regional Enhancement

WB World BanK

EXECUTIVE SUMMARY

Introduction

i. Bangladesh's road network requires considerable investments to upgrade and maintain the current primary road network, which will cater to rapidly increasing future traffic demand and meet the government's goals to become a high-income country by 2041, as set out in the Perspective Plan.

ii. WeCARE is a 10-year initiative initiated by the government to improve a 260 km-long national highway named the Western Corridor – (Corridor) from Hatikumrul to Bhomra with the assistance of multilateral funding agencies – the World Bank (Bank) and the Asian Infrastructure Improvement Bank (AIIB). The proposed program is being implemented through the Roads and Highway Department (RHD) under the Ministry of Roads, Transport and Bridges and the Local Government Engineering Department (LGED) under the Ministry of Local Government, Rural Development & Cooperatives.

iii. In addition to improving the National Highway, this program will also support the improvement of digital connectivity and developing complementary infrastructures and services, including the local economic infrastructures in ten (10) districts falling along the corridor, with the Banks' assistance.

iv. Since the program is spread over ten districts along the corridor and is to be implemented in phases with different timelines, a Strategic Environmental and Social Assessment (SESA) has been included in the scope of work as Task 3 to study the environmental and social (E&S) impacts and risks arising from the program at the macro level. The study is slightly delayed but alongside the Environmental and Social Impact assessment study for Phase -1. So, it will help all program activities that are to be undertaken in Phase-2/3/4 through its recommendations.

v. The program will be developed using the Multiphase Programmatic Approach (MPA) in four (4) phases by the Bank. These phases are as follows:

- Phase 1: Upgrading the Jashore—Jhenaidah road section as a smart, resilient, safe highway and improving local economic infrastructure.
- Phase 2: Road Maintenance Financing and Strengthening Road Sector Management & Institutional Capacity
- Phase 3: Upgrading the Bhomra - Satkhira- Navaron road section as a smart, resilient, safe highway and local economic infrastructure.
- Phase 4: Upgrading of Local Economic Infrastructure.

vi. The AIIB component covers the 150km stretch of the corridor, starting at Hatikumrul and ending at Jhenaidah. It is being developed in two phases. The places accessible through this road are the district towns of Natore, Pabna, Kushtia, Magura, Faridpur, and Jhenaidah. This road connects Kushtia with Dhaka. The Ruppur Nuclear Power Plant, Ishwardi and Bheramara Combined Cycle Power Plant Development Project, and Islamic University Kushtia are other important places connected to this road network.

vii. LGED[8] aims to improve the high volume of Upazila and Union Roads, which are predominantly used by commercial vehicles, and connect them to the main transport arteries. Rural infrastructure, such as rural markets, will also be improved to promote inclusive growth by expanding economic opportunities to poorer rural communities.

viii. Out of the total LGED roads, about 600km of rural roads and 32 growth centers are proposed in phase 1 with WB funding. The number, type, and locations of the LGED sub-interventions of the program will be decided in the due course of time of implementation[1]. Improvement and modernizing of potential Growth centers, Markets, and Ghats in the Program districts (Jashore, Jhenaidah, Satkhira, Magura, Chuadanga, Kushtia, Pabna, Meherpur, Natore, and Sirajganj)

ix. The objective of SESA is to identify the key environmental and social risks and impacts in the program area, identify the impacts of the program activities on the key ES issues, and support the effective design of the future phase of the program to ensure sustainable development.

Legal and Administrative Framework

[1] Feasibility Study Report on Western Economic Corridor & Regional Enhancement Program (WeCARE) Phase-I: Rural Connectivity, Market and Logistic Infrastructure Improvement Project (RCMLIIP), 2

x. The legal and administrative framework of the country is studied in Section 2 of the report. The Department of Environment is responsible for conserving/protecting/managing the environmental aspects of the country. After various amendments to previous Environmental Conservation Rules (ECR), 1997, the government has promulgated ECR 2023 to ensure sustainable development in the country. It will help regulate[2] The rules apply to projects/programs that potentially negatively impact the natural environment, human health, etc. They establish the procedures for obtaining environmental and location clearance certificates and their validity. They also set out criteria and guidelines for Environmental Impact Assessments (EIA) studies for different projects/programs. Another major rule in the country, the Acquisition and Requisition of Immovable Property Act (ARIPA), 2017, deals with the impacts and risks of land acquisition for the project/program intervention.

xi. However, the administrative framework of implementing agencies is well-developed to handle the technical issues, as discussed in the section of the study report. However, there is a requirement to strengthen the technical team/wing with subject matter experts at the headquarters level of RHD and LGED, both implementing agencies. In the case of LGED, there is a requirement to strengthen the technical team at the district level to handle the E&S impacts and risks arising from the implementation of programs in rural areas in Phase 3 and Phase 4.

xii. As mentioned in point # ii, the program interventions are being implemented through WB and AIIB funding. AIIB is implementing a stretch of the western corridor between Hatikumrul and Jhenaidah, and the rest of the 110km of this corridor, plus the development of LGED roads and growth centers in the program area, are proposed to be developed through WB funding. These funding agencies are committed to supporting sustainable development. Since 2018, all WB-funded Investment Project Financing (IPF) shall follow the Environmental and Social Framework (ESF), which supports green, resilient, and inclusive development by strengthening protections for people and the environment and making important advances in areas such as labor, inclusion, and non-discrimination, gender, climate change, biodiversity, community health and safety, and stakeholder engagement. The ESF comprises ten (10) Environment and Social Standards (ESSs). These ESS deal with different environmental and social safeguard issues, such as Assessment and Management of Environmental and Social Risks and Impacts (ESS1), Labor and Working Conditions (ESS2), Resource Efficiency and Pollution Prevention and Management (ESS3), Community Safety and Health (ESS4), Land Acquisition, Restrictions on Land Use and Involuntary Resettlement (ESS5), Biodiversity Conservation and Sustainable Management of Living Natural Resources (ESS6), Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities (ESS7), Cultural Heritage (ESS9), Financial Intermediaries (ESS9), Stakeholder Engagement and Information Disclosure (ESS10). Except for ESS9, all other ESS applies to program interventions. This section of the report discusses the AIIB's ESF and Annex 2.1 summarises a review of WB, AIIB, and national rules/regulations. This SESA has been prepared as per ESF1 of the WB for the entire Program Corridor during the implementation of the project to assess the long-term and cumulative risks and impacts of all completed, ongoing, and future development in the Program Corridor, inform the ESIAs of roads in the succeeding phases, and assist in developing and implementing a management plan that takes into account environmental and social risks and impacts.[3].

Description of Region's Environment and Social Baseline Data

xiii. The program interventions are in the Western Region of the country. The study area of the program interventions comprises the North-western districts, namely, Sirajganj, Pabna, and Natore; the Western Districts, namely, Mehrpur, Chuandaga, Jhenanidah, and Kushtia and Magura; and the South-western Districts, namely, Jhesore and Satkhira. It lies between coordinates (24°48'8.262"N, 88°33'9.78"E, 24°46'59.173"N, 89°51'19.08"E, 22°11'4.819"N, 89°44'17.869"E, and 22°14'12.154"N, 88°29'31.564"E). The total area is 19258.543 sq. km, and the terrain is flat. The dominant land use pattern is agricultural, built-up, water bodies, road, and rail networks.

xiv. The program area runs through the Lower Ganges River Plain (Pabna), the High Ganges Floodplain (Jashore, Jhenaidah, Kushtia), the Ganges tidal Plain (Satkhira), and the Lower Atrai basin (Sirajgonj) physiographic units[4].

xv. A tropical wet and dry climate characterizes the climate, and the region experiences hot & humid summers and dry winters. The monthly average temperature during the monsoon is around 29.5°C. The cool and dry winter season begins in November. The coldest month is January, with an average minimum temperature of 10.6°C. The rain is due to the

[2] https://leap.unep.org/en/countries/bd/national-legislation/environment-conservation-rules-2023-sro-no-53
[3] Environmental and Social Risk Classification, WB
[4] EIA - Bonpara-Jhenaidah Road, RHD

southern monsoon between May and September; over 85% of total rainfall falls. The maximum average relative humidity for the project area is 93.9% in August, whereas the minimum is 55.4% in March. The south-westerly monsoon begins in the middle of March and ends around the end of September. Monsoon winds blow from the south with sustained force from March to October, whereas winds blow from the north/northeast in January.

xvi. A review of literature and data collected during previous ESIA studies indicates that there are no rare, endangered, or endemic species in this region, and common species such as rain trees, Mahagoni, babul, neem, mango jackfruit, debdaru, deoa, dumur, gamari, ipilipil, jalpai, jam, kanthal, and khejure.

xvii. The population of the program area, which comprises ten (10) districts, is 20,520,18, approximately 12% of the country's total population. Further, the distribution of the population data indicates that about 68.49% of the rural population and 31.51% of the urban population are covered in the study area of the program. The male-to-female ratio in the study area is 97.6%. The average population density is 928.89 persons per sq. km. Sirajganj is a densely populated district, followed by Kushtia, Pabna, Jashore, etc. The average household size in the study area is 3.86.

xviii. The total ethnic minority population in the country is approximately 1% of the total population. It is reported that the ethnic minority, including tribal people, lives in eastern frontier regions near Myanmar and Assam (India) and hilly regions of Sylhet, Mymenshingh, Rangmati, Khagrachari, and Bandarban[5]. There are about 12 significant tribes living in the Chittagong Hill Tracks[47]. The total ethnic minority in the study area is 0.29% of the total population in the study area. The highest (0.83%) and the lowest (0.02%) percentages of ethnic minority populations were found in Magura and Meherpur districts, respectively. The ethnic minority groups found during the site visits are Bede, Mahto, Santhals, Urai, etc.

xix. The economy is predominantly agricultural. Of the total 591 thousand holdings of the district, 63.38% are farms that produce local and HYV paddy, wheat, jute, vegetables, spices, pulses, oilseeds, sugarcane, and others. Various fruits like mango, banana, Jackfruit, guava, coconut betel nut, etc., are grown.

xx. Non-agricultural activities include fish cultivation, poultry farms, handicrafts, small-scale manufacturing (both domestic and non-domestic), construction, repair, transportation, and community services also play an essential role in the economy of the study area.

xxi. The government has recognized the necessity of the country's infrastructure development, significantly improving the road transport network. The road network includes National Highways, Regional Roads, Zilla Roads, Upazilla Roads, Village Roads A, and Village Roads-B

xxii. Under this program, the combination of national highways, regional roads, and Zilla road is being developed through the World Bank as a western corridor of 260 km length by connecting Jessore – Jhenaidah – Jessore – Bonpara - Hatikumrul and Bhomra – Navaron – Satkhira corridors, respectively. Of the total 150km, the Jhenaidah -Bonpara - Kushtia - Hatikumrul road is financed in parallel by AIIB. It is to be noted that the section of 26km between Jessore and Benapole Highway has been proposed to be undertaken in another program. However, the Chachra intersection has been included as Phase 1 with additional funding.

xxiii. Growth Center Markets are pivotal in rural and urban linkages in the country and play an important role in rural economic, social, and cultural activities. These GCMs are focal points in rural areas or villages for these activities. The agricultural produce reaches growth centers, and from there onwards, it goes to urban retailers through wholesalers or farmer sellers.

xxiv. The study area contains about 566 growth centers, well connected to the Katcha/Pucca roads belonging to Union, Upazila, or village. In phase 1, 32 villages GC and about 600km of LGED roads are proposed to be developed. The details are discussed in Section 3.

xxv. This section summarizes key issues, risks, and valued environmental and social components based on the review of the baseline environmental and social conditions. For example, there are Baors in the program area. These boars are oxbow-shaped and between 500m and a few km long. These baor supports the local economy through fishing and is used for irrigation purposes during summer to grow rice. Marjat Baor in the Jhenaidah district is famous for local tourism. Chalon Beel in Sirajganj, Natore, and Pabna districts is along the Hatikumrul to Kushtia and LGED roads. It is a substantial inland depression and marshy. Forty-seven rivers and other waterways flow into the Chalan Beel. These places attract the migratory birds. Shilaidah Kuthibari is a tourist destination located seven (7) Kilometres north of Kushtia on the banks

[5] Minorities in Bangladesh: Biharis, Mru, Tribal People and An Insurgency that Began with a Dam | Facts and Details

of Padma in Kumarkhali Upazila of Kushtia District. This Kuthibari is related to the famous laureate Rabindranath Tagore. Besides this, there are several mosques, temples, etc.

xxvi. Notable folk songs, festivals, games, and sports are valuable social components. Cultural elements such as folk songs, festivals, games, and sports are important social aspects that enhance Bangladesh's cultural identity and social cohesion. They are vital in maintaining the country's diverse legacy customs and social harmony. Orao and Mahto are the small ethnic groups found in the project area. The Bede community is in Phase 1.

Stakeholders' Engagement and Public Consultations

xxvii. Several stakeholder engagement consultations (SEC) have been organized along the project area between March 2022 and December 2023. The tools applied during the study included Key Informant Interviews, Stakeholder Engagement Consultations, Focus Group Discussions, etc. A wide spectrum of stakeholders has been covered during the study. The spectrum comprises government and non-government organizations, affected persons, management committee members of common property resources (CPR), small ethnic community members or representatives, etc.

xxviii. During the consultation process, the objectives of SESA and its program intervention were explained to them. Issues pertinent to different program interventions and their objectives and benefits were discussed, such as the land acquisition requirement and resettlement process, shifting of utilities and common property resources, gender-based violence, skill development requirement, labor influx, tree removal, pedestrian safety, pollution arising during the construction phase, prevalent diseases, public health, and safety, etc.

xxix. People showed keen interest and welcomed the program since it will allow them to grow faster due to good access and connectivity to the market, health centers, higher education institutes, etc. However, they also raised concerns about safety measures such as adequate crossing provisions for pedestrians and their vehicles, especially in the rural areas falling along the proposed western corridor.

xxx. Rural areas of Phase 3 and Phase 4 showed concern about waterlogging problems. They discussed one past incidence of level rise on the upstream side in the Chalon Beel area during monsoon season in the absence of cross-drainage structures, and locals had to cut the road to pass the water to the downstream side. They further stressed that while developing the rural infrastructure in the program, special care should be given to cross-drainage structures to prevent any such situation in the future.

xxxi. Some small ethnic minority groups showed concerns about alternative livelihood measures during the construction period of the growth centers because they are mainly landless and daily wage earners. However, they expressed willingness to participate as skilled and unskilled workers in the program interventions. It is the apprehension of the team of consultants from the discussion with the Urai/Mahto/Santhal community representatives that their education level is better, and they are focused on getting well-educated since they are mainly landless.

xxxii. Nevertheless, their chances of being directly impacted are insignificant, but they suggested that the contractor facilities be away from their locality. The team consultant explained to them that adequate mitigation measures are normally suggested in the environmental and social management plan (ESMP) while preparing the project-specific environmental and social impact assessment (ESIA) and that ESMP becomes a part of the contract agreement for prospective contractors.

xxxiii. The details of SECs are discussed in Section 4 of the report.

Analysis of Alternatives and Development of Scenarios:

xxxiv. The proposed program's environmental and social risks and impacts have been studied, considering Alternative 1: Program with Activities and Alternative 2: Program without Activities.

xxxv. Alternative 1 evaluates the environmental and social risks and impacts due to the proposed activities and development to be included in the program. It covers the proposed development of the Western Corridor and its main design features, e.g., a 4-lane highway with service road, junction improvement, drains, bypass, elevated road sections, and single/intermediate/2-Lane/4-lane roads.

xxxvi. Alternative 2 evaluates the merits and demerits of covering environmental and social risks and impacts of the program undertaken without any activities. The analysis of this alternative shows that it is not the best-suited alternative because of its inability to cater to the need for the vehicle-carrying capacity of the national and rural roads, especially after the operation of the Padma bridge, and rural roads/areas will remain unconnected or without proper Agro-logistics development. It will pose further environmental and social risks and impacts in the area.

xxxvii. Thus, alternative 1, Program with Activities is best suited to attenuate the intensity of the environmental and social risks and impacts.

xxxviii. This section also discusses pessimistic to optimistic scenarios, considering the E&S parameters, other drivers, and Alternatives-1. To synchronize this analysis with the government's perspective plan, pessimistic to optimistic scenarios are termed low-, medium-, and high-growth scenarios. The E&S risks and impacts are studied for the programs completed up to the year 2023 in the low-growth scenario; the ongoing/to-be-completed programs by 2030 are considered in the medium-term scenarios; and future programs between 2031 and 2041 have been considered in high-growth scenarios.

xxxix. The E&S risks and impacts have been compared to unmitigated and mitigated situations. The comparison shows that low-growth scenarios will have more E&S risks and impacts. Thus, medium—and high-growth scenarios score higher than unmitigated E&S risks and impacts in the future, and feasible options are to be considered to meet the GOB's perspective plan to become high-income countries. Thus, the benefits of this program will start from the medium-growth scenario when the phase 1 and phase 3 program interventions are likely to be completed. Section 5 of the report shall be referred to for details.

Potential Environmental and Social Risks and Impacts

xl. This SESA has carried out an exercise to assess the potential environmental and social risks and impacts associated with different programs in the study area. The completed projects have been considered baseline conditions to assess the impacts and risks of the envisaged programs in the medium-growth (2023-2030) and high-growth scenarios (2031-2041).

xli. Cumulative environmental and social risks and impacts are carried out for the medium—and high-growth scenarios. Several potential negative environmental and social risks and impacts are associated with the program between 2023 and 2041. However, the program's economic benefits outweigh these impacts since it is a trade-off between growth and stress on natural and social resources. The potential identified impacts are as follows:

xlii. Among the attributes studied for assessing the environmental impacts, the land use pattern will be severely impacted, followed by waste generation, a major source of environmental impacts in the study area. The change of land-use patterns to development works such as paved roads, industrial buildings, townships, or economic zones will impact the topsoil due to its loss. Other environmental will be moderate to low; some are as follows.

- Air Quality: Due to increased vehicular movement and industrial activities, air quality will be moderately impacted because the cumulative concentrations will remain within the yardstick of DOE-prescribed limits.
- Sound levels are very high along the highways and other roads.
- Various industrial activities in the future, especially Agro-based industries and power plants, will be a source of water pollution. Nevertheless, it will be moderate but must be mitigated by taking recommended mitigation measures.
- The program intervention will provide adequate climate-resilient structures. Thus, the program will be developed with moderate impact due to climate change.

xliii. The social risks and impacts will be in the form of displacement of people due to land acquisition, loss of structures, loss of livelihoods, etc. The impact intensity will be high on the social attributes. The shrimp/fish cultivation or industrial development will be the source of increased land disputes among the locals since land records are old.

xliv. The program will have high economic benefits in rural areas and change the quality of life due to better connectivity, road safety, and access to health centres.

Environmental and Social Management Strategy

xlv. This SESA study report suggests an environmental and Social Management Strategy (ESMS) that aligns with previous studies, funding agencies (ESS), and national legal framework requirements for mitigating E&S risks and impacts arising from the program interventions. The suggested ESMS is to mitigate the high-magnitude E&S risks and impacts that arise from the various program interventions. The implementation will be a multiphase approach through different implementing agencies and multilateral funding agencies.

xlvi. As discussed in the report, program interventions will have potential negative impacts, which must be mitigated for sustainable development. General strategies and mitigation action plan, mitigation plan for program interventions/project level, and sector level are discussed along with institutional responsibilities in the section. Management Action for addressing the environmental and social risks and impacts at the Regional Level with the involvement of the Department of Environment of MOEFCC is also discussed. The DOE needs to collaborate with other listed agencies to address environmental and social risks and impacts at the regional level.

xlvii. The ESMS also discusses mitigation actions for mitigating the social impacts and risks of land acquisition and livelihood restoration. To restore the livelihoods of the program's affected areas, the WeCARE program may tie up with other

livelihood restoration projects such as the Accelerating and Strengthening Skills for Economic Transformation (Asset) through the Ministry of Technical and Madrasah Education Division (TMED), Ministry of Education (MOE) and Resilience, Entrepreneurship, and Livelihood Improvement (RELI) Project, Social Development Fund. The WB also funds these projects. For example, the RELI project aims to improve the livelihoods of the poor and extremely poor, enhance their resilience, and support rural entrepreneurship in select rural areas. The other project, ASSET, aims to help build a highly skilled labor force in the country, and the program includes women and disadvantaged groups (Small minority ethnic vulnerable communities). Already, a Small Ethnic and Vulnerable Community Development Framework (SEVCDF) has been developed to ensure that SEVCs so that they would be sufficiently covered in the project. The WeCARE program may utilize these two projects to implement livelihood restoration measures effectively.

xlviii. The applicability of SESA to guide the project-level ESIA is shown in the flow diagram. The SESA also identifies the requirements of various environmental and social management plans to offset the intensity of impacts and risks associated with the program interventions are identified and listed.

Institutional Arrangement:

xlix. Based on the assessment of the existing structures of the institutions, the SESA identifies the requirement of subject matter experts in the implementing agencies at the head-quarter level. Additional hiring is needed to augment the internal E&S capacities of the relevant agencies or make more sweeping changes, as suggested in this section. Other E&S instruments, including capacity assessment and staffing within RHD, CSC, and contractors, are also discussed herein in this section. The assessment of the institutional arrangement of implementing agencies shows a need to strengthen the RHD Headquarters with more subject matter experts and appropriate logistics in their existing RHD Social and Environment Management Cell at Tejgaon. The data review/literature and discussion show that the LGED must establish an Environmental Management Cell at Headquarters and Divisional/Regional offices to handle E&S risks and impacts arising from the different implementation activities in the rural area.

l. Different agencies must interact regularly to intervene and take corrective action to mitigate the E&S risks and impacts. An Environmental and Management Cell only for the WeCARE program is suggested to be established in the apex body, which is the prime minister's office, and the Department of Environmental must take a lead role in monitoring the compliance of environmental and social issues and risks as identified in this study. The ESMC comprises a wide range of technical and bureaucrats, as well as subject matter experts, who can assist them. The rank of principal secretary should head it. Section 8 of the SESA suggests an organogram with the logistics arrangements.

li. A training module is suggested for capacity building on the bank's requirements, given the Environmental Management Framework and Environment Social Standards (ESS 1 through 10) issued in the recent past.

Conclusion and Recommendations

lii. Overall, the program will have beneficial impacts and improve the economic activity in the western region. The scenario analysis also stipulates that the mitigated impacts in medium—and high-growth scenarios outweigh the unmitigated negative impacts. Thus, mitigation measures must be adopted to maximize the benefits of these scenarios.

liii. The following mitigation measures are recommended Based on the E&S risks and impacts identified in the study.

- It is recommended that land surveys be undertaken on a priority basis to reduce land disputes. Further master plan studies shall be undertaken to cater to the need for rapid rural urbanization. Land zoning is necessary to reduce the conflict of interest among developing agencies and stakeholders.
- There is a need to develop a continuous environmental monitoring program to generate reliable data for offsetting environmental impacts at an early stage.
- Industrial development, agro-based industrialization, and development of growth centers in rural areas will cause huge solid waste. It will be a source of health and hygiene issues in the study area. There is a need to design a solid waste management system per Solid Waste Management Rules 2021 for the proper collection, transportation, and disposal systems. There is a need for compost plants and landfill sites. A public awareness campaign on waste segregation at source is recommended. A study of compost plants using wind row methods shall be considered for biodegradable waste. The compost plant will reduce the dependency on inorganic fertilizers.
- Further, it is recommended that illegal modes of transport be phased out from rural areas to reduce noise impacts and for road safety reasons. While phasing out this transport, studies of livelihood restoration measures shall be undertaken to reduce the impact intensity.
- Phase 4 LGED investment based on environmental and socioeconomic indicators such as value chain assessment,

poverty, economic activities, tourism potential, and gender inclusiveness should be considered. The areas where the locals can get maximum benefits should be given priority.

- A technical assistance study is recommended to study the pros and cons of the Final (Draft) Common Entitlement Matrix (2022) prepared by the RHD for multilateral funding projects. Its applicability to LGED program interventions may also be studied. This will help harmonize the government entitlement matrix with the Banks ESS5. This study will reduce the time to prepare the resettlement action plan and the conflict between the implementing and funding agencies' schools of thought.
- Lastly, it is recommended that another WeCARE-2 program, which is currently in the preliminary stage, be implemented to cover more regional roads/rural roads to cater to the needs of high-growth scenarios.

1 INTRODUCTION

1. Road transport is the prevalent mode of transport in Bangladesh. The total road network size of the country is roughly 375,000 km (road density of approximately 250 km per 100 km^2). About 70% of passenger traffic and 60% of freight transport are by road is. The average speed on the primary road network is less than 30 km/hour[6].

2.However, tremendous progress has been made in improving connectivity, particularly at the sub-national levels, but considerable investment is still needed to improve, upgrade, and maintain the current road network.

3.The primary road network[6] is congested and in poor condition, operating at or near-maximum capacity, and unable to keep up with rapidly increasing demand.

4.This is one of the reasons for the high logistic costs6 and for the country's inability7 It is to play a more active role in regional integration through its strategic location.

1.1 THE PROGRAM

5.The program is devised to upgrade and improve the national highways along with improved utilities, infrastructure, and services. Improvement through the program will help narrow the gap in the poverty reduction measures between the eastern and western regions. These impacts of poverty reduction are substantive and concentrated in central and eastern regions since 2010, as compared to western divisions[7].

6.Since the SESA study considers all past, ongoing, and planned implementation of development interventions in the study area, the study's outcome/recommendation will mainly be used in Task 4 of this study, i.e., the ESIA of phase 3 of this MPA.[7]

7.This program is ten (10) years long initiative have the following four phases as given in **Table 1-1** .

Table 1-1 : Phases of the WeCARE program

Phase	Scope
Phase-1: Upgrading the Jashore-Jhenaidah road section as a smart, resilient, and safe highway; and local economic infrastructure	► This phase upgrades the Jashore-Jhenaidah National Highway (J-J) - about 48km- from a two-lane single-carriageway to a climate-resilient four-lane dual-carriageway. It includes separate service lanes for slow-moving vehicles and vulnerable users on both sides of the carriageway installation of Optical Fibre Cable (OFC), Safe Corridor Demonstration Program (SCDP) and deployment of Intelligent Transport System (ITS). ► Upgrading of priority Upazila, Union, and village roads and complementary logistics infrastructure at rural markets (commonly called growth centers) in the four (4) Program Districts of Jashore, Jhenaidah, Magura, and Chuadanga. ► In response to the COVID-19 crisis, this phase will foster employment opportunities through labor-intensive civil works and the development of a "Pandemic Response Plan" for the leading road agencies in Bangladesh. Training/capacity building activities; ► Establishing a Road Transport Sector Integration and Coordination Platform (RTSICP) and operationalizing the Road Maintenance Fund Board Act (RMFD).
Phase-2: Road Maintenance Financing and Strengthening Road Sector Management & Institutional Capacity	This phase will primarily focus on improving the management and maintenance of road sector and will include mainly technical assistance.
Phase-3: Upgrading of Bhomra - Satkhira-Navaron road section as a smart, resilient,	► Upgrade the Bhomra – Satkhira - Navaron National Highway (62km) from a two-lane single carriageway to a climate-resilient four lane dual carriageway. It includes separate service lanes for slow moving vehicles and vulnerable users on both sides of the carriageway, installation of OFC, and deployment of ITS.

[6] Project Appraisal Document, WeCARE, PAD3635, The World Bank

Table 1-1 : Phases of the WeCARE program	
Phase	**Scope**
and safe highway; and local economic infrastructure	► Development of Upazila, Union, and village roads and complementary logistics infrastructure in the three (3) Program Districts of Jashore, Satkhira and Meherpur.
Phase-4: Upgrading of Local Economic Structure	Upgrade priority Upazila, union, and village roads and complementary logistics infrastructure in the four (4) Program Districts of Natore, Shirnjganj, Pabna, and Kushtia.
Source: Terms of Reference (TOR), RHD	

1.2 BACKGROUND

8. Previous assessments of the road sector also brought forward the requirement for upgrading the current primary road network.[7] Upgrading the primary road network and improving feeder roads in the study area for well-maintained connectivity with the highway is the urgent need to improve the socioeconomic situation in the western region.

9. The Government of Bangladesh (GoB) is implementing the Western Economic Corridor & Regional Enhancement (WeCARE) program as shown in Figure 1-1, to provide efficient, safe, and resilient connectivity along a section of a regional transport corridor in western Bangladesh. This program is being implemented through the RHD under the Ministry of Roads, Transport and Bridges (MoRTB) and the LGED under the Ministry of Local Government, Rural Development & Cooperatives (MoLGRDC).[8]

10. The RHD is primarily responsible for constructing and maintaining the national highway, including major/divisional roads and bridges. The RHD has proposed upgrading about 260 km of national highways from two-lane to four-lane, which will be undertaken in this program.

AIIB components

11. Of 260 km of the Western Corridor Highway, the Hatikumrul to Jhenaidah stretch of 150 km length is being financed by AIIB in parallel. The Kushtia-Jhenaidah Road[9] connects the Kustia & Jhenaidah districts with Dhaka, the capital of Bangladesh, through the greater national road network. Ruppur Nuclear Power Plant is situated at the east end of the Lalon Shah Bridge.

12. It crosses the railway track at the Gopalpur rail crossing (17 km from Bonpara), the Bheramara Power Station rail line, and the Kushtia bypass. The Roads and Highways Department, Kushtia, started constructing the about 6km long Kushtia bypass, starting from Borkanda (before Kushtia) and ending at Battail Mor to avoid Kushtia town. The proposed new road alignment will also follow this bypass. It is expected that Phase 1 will be completed in 55 months, and Phase 2 will be completed in another few months.

13. Other important places accessible through this road are the district towns of Natore, Pabna, Kushtia, Magura, then Faridpur, and Jhenaidah, directly connecting Kushtia with Dhaka. Other important places connected to this road network are Ruppur Nuclear Power Plant, Ishwardi; Bheramara Combined Cycle Power Plant Development Project, Islamic University Kushtia; Mongla seaport and Hili Land port, Hakimpur, Dinajpur.

[7] Terms of Reference, RHD
[8] Environmental and Social Management Framework, LGED February 2020
[9] Environmental Impact Assessment for Hatikumrul-Bonpara-Ishwardi-Kushtia-Jhenaidah Road, 2020

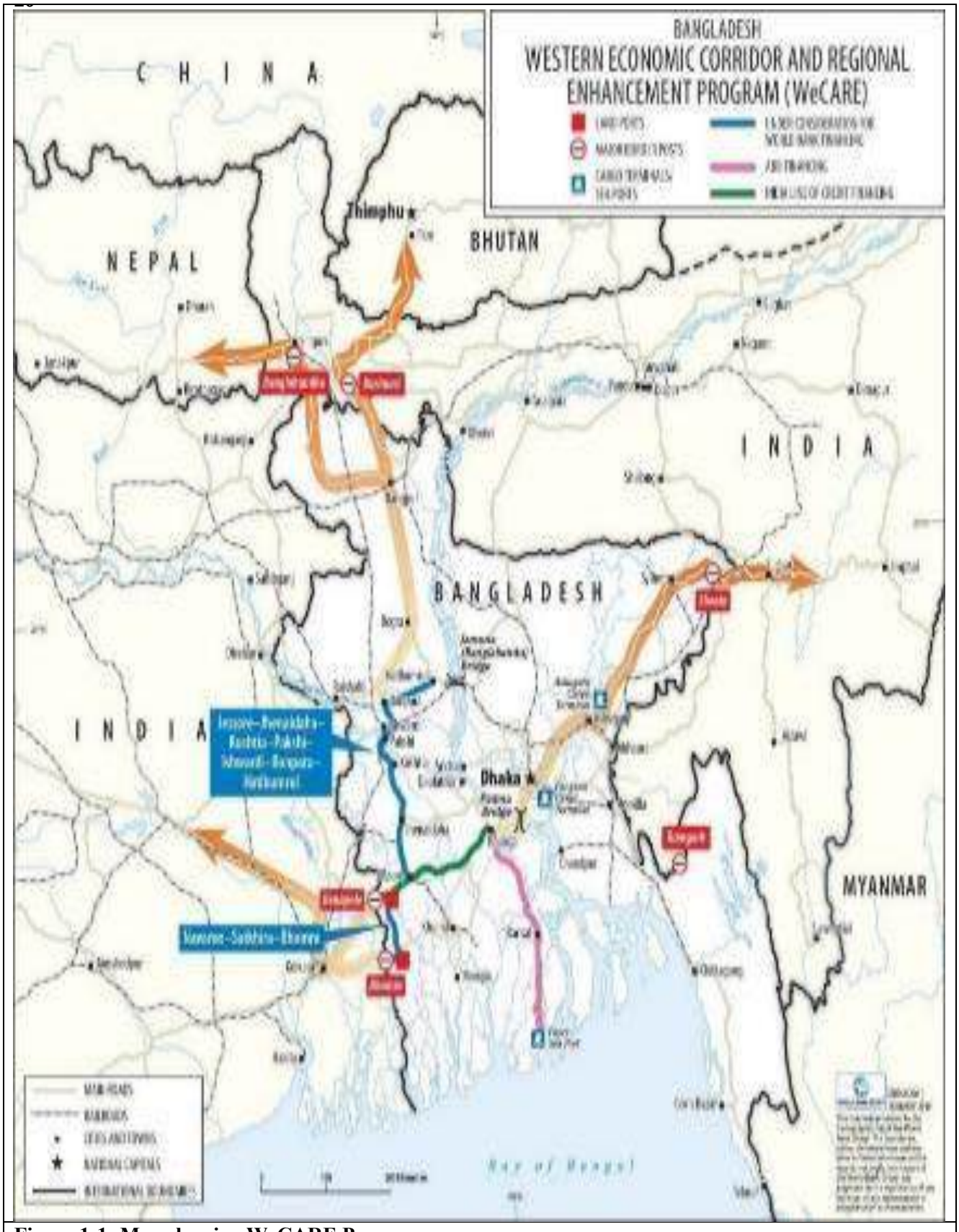


Figure 1-1: Map showing WeCARE Program

14. The program intervention details funding agency-wise are shown in Error! Reference source not found..

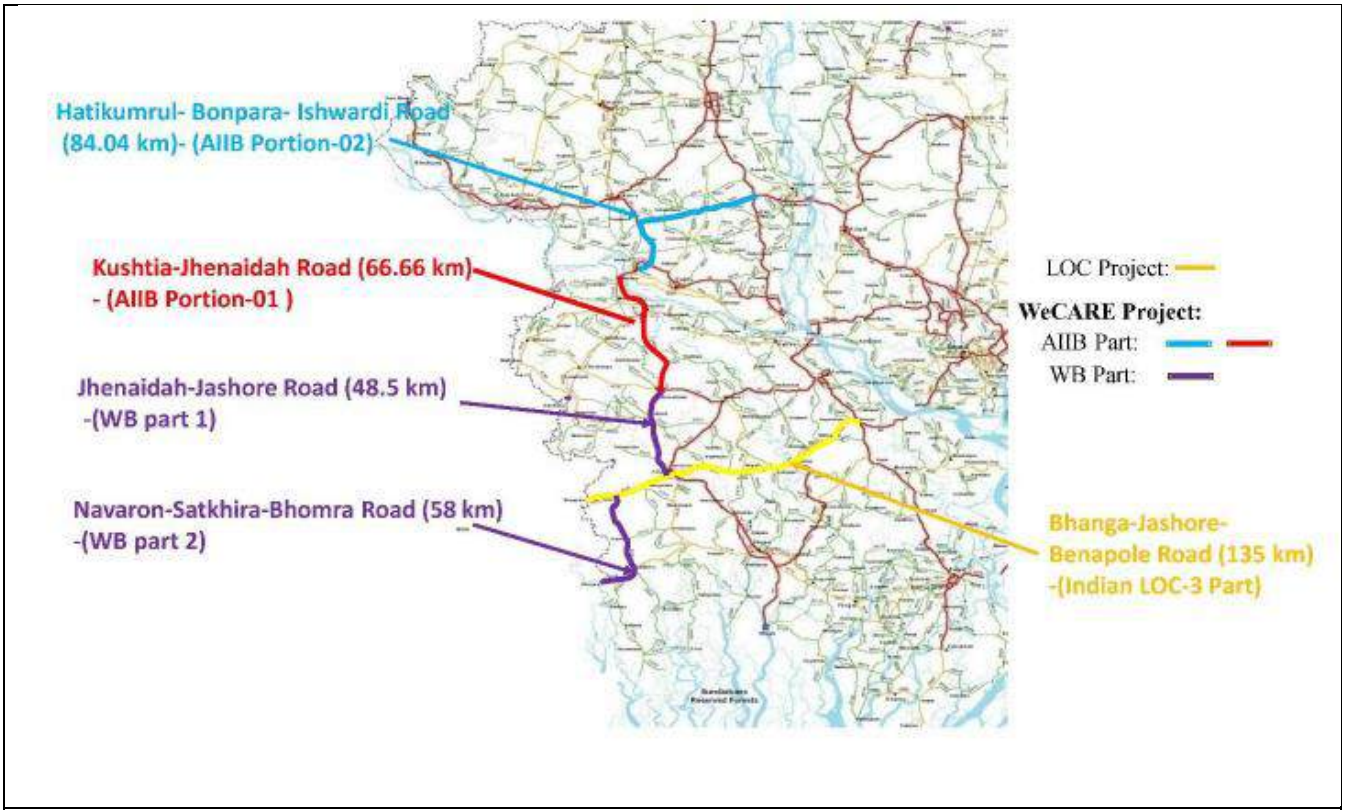


Figure 1-2: Location of Western Corridor and Stretches to Developed by the WB and AIIB

LGED sub-intervention of the program

15. LGED aims to improve high-volume Upazila and Union Roads, predominantly used by commercial vehicles, and connect them to the main transport arteries. Other rural infrastructure, such as rural markets, will also be improved to promote inclusive growth by expanding economic opportunities to poorer rural communities.[8]

16. The rural road network, which is the responsibility of LGED, consists of 37,800 km of Upazila Roads, 44,750 km of Union Roads, and 215,750 km of Village Roads[8]. Rural access connectivity to the country's main transport corridors is a priority for the government. Out of the total LGED, about 600km of rural roads and 32 growth centers are proposed in phase 1 with WB funding. The number, type, and locations of the LGED sub-interventions of the program will be decided in the due course of time of implementation.[10] Improvement and modernizing of potential Growth centers, Markets, and Ghats in the Program districts (Jashore, Jhenaidah, Satkhira, Magura, Chuadanga, Kushtia, Pabna, Meherpur, Natore, and Sirajganj).

- Improvement, widening, and capacity enhancement of LGED Feeder Roads as core road.
- Improvement of village/farm/hinterland roads aligned to core roads.
- Integrate and connect the Railway stations to the road network with the best possible connectivity.
- Improvement of new and possible linkage with the proposed Economic Zone.
- Integrate Road with Riverine/Water route, Multimodal Transport.
- Improvement or Construction of a road connected with markets with hinterlands and improvement of a collection hub or collection center at or near alignments proposed for improvement. These hubs or collection centers will reduce post-harvesting loss and ensure an effective value chain.
- Laying of "Fiber Optic Cable" will be engraved along the proposed alignment.
- Landscaping at Marketplaces, Bridge approaches, road dividers, and other spaces.
- Construction of Road Safety infrastructures

[10] Feasibility Study Report on Western Economic Corridor & Regional Enhancement Program (WeCARE) Phase-I: Rural Connectivity, Market and Logistic Infrastructure Improvement Project (RCMLIIP),

- Solar-powered automated railway crossing.

1.3 OBJECTIVE OF THE SESA

17. Since the program is being financed by the World Bank (WB) and Asian Infrastructure Investment Bank (AIIB) in different segments, the terms of reference of the study require carrying out a Strategic Environment and Social Assessment (SESA) of both investments. The study outcome will be applicable for the entire WeCARE Program across the multiple phases to be implemented by RHD and LGED feeder roads and the sections of the highway, which will be widened with the funding from AIIB. This will help the funding agencies (WB or AIIB) and RHD and LGED decide their investment strategies, types, and modalities of interventions along the entire western corridor that are environmentally and socially sustainable.

18. This SESA is to scope and identify the potential positive as well as negative E&S impacts and risks associated with the various investments included in this MPN/WeCARE Program, assess various alternatives, the robustness of the policy framework and capacity of institutions to manage such issues and based on this assessment recommend policy, institutional and high-level measures for addressing the relevant E&S related gaps at the broader and at the project level..

19. The SESA will guide the funding agencies and the project proponents in assessing and managing the environmental and social impacts arising from the program interventions. It will help facilitate cooperation among the project proponents and the funding agencies, avoid duplication, and encourage efficient use of project resources.

The Objective of the SESA Study

- Scope and identify the potential positive/negative environmental and social impacts/risks associated with the various investments included in the Multiphase Programmatic Approach (MPA)/WeCARE Program,
- Assess various alternatives and put forward recommendations to avoid, manage, and/or attenuate these impacts;
- Facilitate the integration of these measures into a coherent policy and to ensure its application;
- help capacity building and train Government officials in the road sector.
- manage such issues as the robustness of the policy framework and the capacity of institutions.
- Identify the gaps in this assessment and recommend policy, institutional capacity, and high-level measures.
- consider the opportunities and limitations represented by the existing environment and social conditions and will assess ongoing and planned activities in the catchment areas of the corridor.
- Assess the cumulative impact of all past, ongoing, and foreseeable development interventions in the western corridor.
- Over and above, identify the priorities based on assessment in the region.

20. RHD has appointed a joint venture of M/s Assystem-STUP Consultants Pvt. Ltd. and BCL Associates Limited as Environmental and Social (E&S) Consultant under the WeCARE program to prepare the Environmental and Social Management for Jhenaidah-Jashore Road Section (Phase-1) and Bhomora-Satkhira-Navaron Road Section (Phase-3) for the Western Economic Corridor and Regional Enhancement (WeCARE) Program. The SESA is has prepared as per Task 3 of the Scope of Work (SOW) of the E&S Consultant. The scope of work for the study is presented in **Annex 1.1.**

1.4 STRUCTURE OF THE REPORT

21. The structure of the SESA report is as follows:

Executive Summary
Section l: Introduction
Section 2: Legal and Administrative Framework
Section 3: Description of Region's Environment and Social Baseline Data
Section 4: Stakeholders' Engagement and Public Consultations
Section 5: Potential Environmental and Social Risks and Impacts
Section 6: Environmental and Social Management Strategy (ESMS)
Section 7: Analysis of Alternatives and Development of Scenarios
Section 8: Institutional Arrangement
Section 9: Conclusions and Recommendations

2 LEGAL AND INSTITUTIONAL FRAMEWORK

22. This chapter briefly discusses the country's existing legal and institutional framework relevant to the program within which the environmental and social assessment will be conducted and the World Bank and AIIB's Environmental and Social Safeguard policies to be followed.

2.1 LEGAL FRAMEWORK

2.1.1. NATIONAL RULES/REGULATIONS/ LEGAL FRAMEWORK

23. The Government has promulgated various rules/regulations/acts as the legal framework for sustainable development in the country. These are briefly discussed as follows:

2.1.2. NATIONAL ENVIRONMENTAL POLICY, 1992 (AMENDED 2018)

24. The National Environmental Policy (NEP) intends to foster sustainable economic development, which was devised in 1992 and revised in 2013. This policy is the essential framework for environmental action and several major sectoral areas for action. The following are the principal elements of the policy:

- Maintaining the ecological balance to ensure sustainable development;
- Protection of the country against natural disasters;
- Identifying and controlling activities that are polluting and destroying the environment;
- Ensuring environment-friendly development in all sectors;
- Promoting sustainable and sound management of natural resources; and
- Active collaboration with international initiatives related to the environment.

2.1.3. NATIONAL ENVIRONMENTAL MANAGEMENT ACTION PLAN (NEMAP), 1995

25. The National Environmental Management Action Plan (NEMAP) was prepared in 1995 per the NEP's requirements. The strategy suggests creating and implementing rules to prevent environmental contamination by transportation and communication infrastructure. It focuses especially on various environmental degradation, interference with natural drainage patterns, and the purchase of agricultural land because of transportation system growth.

2.1.4. ENVIRONMENTAL CONSERVATION ACT (ECA), 1995 (AMENDED 2000, 2002 & 2010)

26. The ECA is now the main environmental protection law in the country. It safeguards the environment and establishes environmental standards to control pollution. This legislation states that no industrial unit or project may start or be carried out without obtaining a prior Environmental Clearance Certificate (ECC) from the DOE. The ECA was amended in 2000, 2002, and 2010 per the requirement.

Environmental Conservation Act (Amendment 2000)

27. The Bangladesh Environmental Conservation Act Amendment of 2000 imposes penalties /compensation in situations of ecological harm, including punitive measures such as fines and imprisonment.

Environmental Conservation Act (Amendment 2002)

28. The 2002 Amendment of the ECA elaborates on the following parts of the Act:

- Restrictions on polluting automobiles.
- Restrictions on the sale, and production of environmentally harmful items like polythene bags;
- Assistance from law enforcement agencies for environmental actions;
- Break up of punitive measures; and
- Authority to try environmental cases.

Environmental Conservation Act (Amendment 2010)

29. This amendment of the act introduces the following rules and restrictions:

► No individual or institution (Gov. or Semi Govt./Non-Govt./Self Governing) can cut Hill and Hillock. In case of national interest, it can be done after getting clearance from the respective department
► The owner of the shipbreaking yard will be bound to ensure proper management of their hazardous wastes to prevent environmental pollution and Health Risk
► No remarked water body cannot be filled up/changed; in case of national interest, it can be done after getting clearance from the respective department and
► The emitter of any activity/incident will be bound to control the emission of environmental pollutants that exceed the existing emission standards.

2.1.5. ENVIRONMENT CONSERVATION RULES, 1997 (AMENDED 2002)

30. Following the enactment of ECA of 1995, Environment Conservation Rules (ECR) 1997 were issued which classify industries and projects in red, orange A and B, and green categories and specify the kinds of environmental assessments that must be performed in relation to each category of projects.

2.1.6. ENVIRONMENT CONSERVATION RULES, 2023

► The ECR, 2023, rules promulgated under the ECA, 1995. Applicability of ECR 2023 in the WeCARE program is presented in Box 2-1.

31. These Rules provide for, among other things, the following:

► Categorization of industries, development projects, and other activities on the basis of actual and anticipated pollution load in green, yellow, orange, and red categories.
► The National Environmental Quality Standard for Surface Water, groundwater, Drinking water, Industrial effluents, Emissions, and Vehicular exhaust.
► Procedure for obtaining environmental clearance.
► Requirements for undertaking IEE and EIA's as well as formulating EMPs according to categories of industries/development projects/activities; and
► Procedure for damage claim by persons affected or likely to be affected due to polluting activities or activities causing hindrance to normal civic life.

Box 2-1: Summary of Environment Conservation Rules, 2023 and applicability in the WeCARE Program Interventions

► The construction/reconstruction/expansion of regional/national/international highways requires a prior environmental clearance certificate since they fall in the orange category if they are up to 5km long.
► The construction/reconstruction/expansion of roads and highways requires a prior environmental clearance certificate since these are in the Red category if they are more than 5km long.
► Construction, re-construction, and extension of bridges with lengths between 100 m and 500 m fall under the Orange category. If the bridge is longer than 500 km, it falls under the Red category.
► Dredging of the river, canal, beel, and dredge material management (up to 5km), Residential and commercial buildings (5000 to 20000 sqm buildup area), and Recreational Parks (5-10 acres) fall under the Orange category, and above this mentioned criteria fall under the Red category.
► Coal and oil-based thermal power plants (up to 50MW), Gas-fired thermal power plants (up to 100MW), hydropower plants (up to 5 MW), and Solar power plants (up to 50 MW) fall under the Orange category. Above these criteria for power plants fall under red category.
► As per ECR'2023, most of the components/sub-components and associated activities are likely to fall under the Yellow, Orange, and Red Categories as has a significant impact on the environment and are likely to have negative environmental impacts on air, soil, water, and natural settings such as water bodies, vegetation, wildlife, and fishes.
► The program's interventions of LGED covering a vast area of the rural environment, with rehabilitation/construction of a higher quantity of small-scale infrastructures and construction/rehabilitation of rural roads, may fall under the schedule 'Orange and very few in Red Category' based on ECR '2023 of DoE.
► Whereas RHD will augment the national highways, their projects fall under red categories and require complete EIA and prior environmental clearance certification from the Department of Environment (DOE).

2.2. ENVIRONMENTAL CATEGORIZATION BY GOB

32. Following the Rio Conference, the MoEF enacted the Bangladesh Environmental Conservation Act (BECA, 1995) and the Bangladesh Environmental Conservation Rules (BECR, 2023) as per the demand of the National Environmental Policy (NEP, 1992). (1992). A National Land Transport Policy (NLTP 2004) was formulated to reduce the number of annual fatalities and injuries from road accidents.

33. The road sector projects, including bridge construction, have been categorized as both orange and red categories based on their length, as shown below:

- Orange Item 21: Road construction/expansion (5km to 10 km)
- Orange Item 22: Bridge construction (100m to 500m)
- Red Item 38: Road construction/expansion (more than 10km);
- Red Item 39: Bridge/flyover construction (more than 500m);

34. A project in the red category requires an Environmental Impact Assessment (EIA). The Terms of Reference (ToR) for the EIA need to be prepared according to ECR, 2023, and approved by the Department of Environment (DoE).

2.2 GOB ENVIRONMENTAL CLEARANCE

35. The actions to be followed for clearance are summarized in Table 2-1.

Table 2-1: Actions Required in Program

Stage of Project	Required Actions
Land development, construction, and Providing Utility service	Preparation and finalizing of terms of references (TOR), preparation of EIA according to the approved ToR and obtaining site clearance by submitting the EIA to DoE
Trial production or project opening	Obtaining Environmental Clearance Certificate (ECC).
Preparation of Development Project Proposal (DPP)	Inclusion of recommendations from EIA in the DPP
Approval and construction of the project	Implementation of an Environmental Management Plan (EMP) of the construction stage
Operational Stage	Implementing the Monitoring Plan set by the Environmental Management Plan (EMP) of the operational stage

36. A "No Objection Certificate" (NOC) is needed to get an ECC from the DoE. The Department of the Environment requires that the proponent get NOCs from relevant agencies or local/regional governments that approve the project. After securing the NOCs, the DoE issues an ECC or permission to start construction.

37. An NOC letter describes the project, including location, reason for obtaining NOC from that agency, and suggested project measures. The project proponent will submit the NOC letter to the agencies. This laborious and time-consuming procedure can take over a month and relies on consistent and persistent follow-up. As a result, the ECC stages are:

- The implementing agencies send letters to the head of the agency.
- The implanting agencies evaluate the NOC request, which sometimes requires field investigation for verification.
- The project proponent will pursue their project for ECC or NOC

2.3 INSTITUTIONAL FRAMEWORK

38. The institutional framework of the implementing agencies is discussed in the following subsections.

2.3.1 MINISTRY OF ENVIRONMENT, FOREST, AND CLIMATE CHANGE

39. This ministry ensures sustainable development and optimal forest cover to maintain in the country. It is an independent ministry[11] of the GOB. It oversees all environmental matters in the country and is a permanent National Economic Council executing committee member. Its main function is to plan, promote, coordinate, and monitor government environmental and forest activities. The following departments are working under this ministry:

- Department of Environment
- Forest Department
- Bangladesh Climate Change Trust
- Bangladesh National Herbarium
- Bangladesh Forest Research Institute (BFRI)
- Bangladesh Forest Industries Development Corporation
- Bangladesh Rubber Board

2.3.1.1 DEPARTMENT OF ENVIRONMENT

40. Bangladesh is a signatory of various international treaties and ratifications for sustainable development. Accordingly, the GoB was established in 1977 as a regulatory body named the Environment Pollution Control Board, which was restructured and renamed in 1989 as the Department of Environment (DOE). The Director General heads the department and discharges its responsibilities through a head office and eight Divisional offices in Dhaka, Chittagong, Khulna, Bogra, Barisal, Sylhet, Rangpur, and Mymensingh. To meet the requirement, the Government has recently established Fifty (50) new offices at the district level.

41. Ensuring sustainable development through the conservation of nature and the environment of the country is one of the major tasks of the Department of Environment. One of the responsibilities of the DOE is to ensure the implementation of the law. The following are some of the activities of the DOE:

- Air Pollution and Air Quality Monitoring
- Water Pollution Control
- Marine Pollution Control
- Noise Pollution Control
- Biodiversity Conservation
- Biosafety etc.

42. The DoE is also working on new regulations and amendments, such as the amendment of the Medical Waste Management and Processing Rules, the Chemical Waste Management Rules, the Amendment of the Environment Court Act (ECtA); and the ratification of key international instruments, such as the Minamata Convention on Mercury, the amendment to the Stock- holm Convention on Persistent Organic Pollutants. The organogram[12] of DOE is in Annex 2.1.

2.3.1.2 DEPARTMENT OF FOREST

43. The Forest Department is a government agency under MOEFCC responsible for protecting and maintaining forests and wildlife in the country. Agencies such as the National Botanical Garden, Forestry Development and Training Centre, Kaptai, and Bangladesh Forest College are under the forest department's jurisdiction. The department has planted the trees along roads, canals, and railway tracks. Permission is required from the forest department to remove the trees. As per requirement, three times the trees are to be planted for one tree removal. The organogram[13]of the department is shown in Annex 2.2.

[11] Ministry of Environment, Forest and Climate Change (Bangladesh) - Wikipedia
[12] Adapted from Enhancing Opportunities for Clean and Resilient Growth in Urban Bangladesh, Country Environmental Analysis 2018, the World Bank
[13] Organizational-Structure - বন অধিদপ্তর-গণপ্রজাতন্ত্রী বাংলাদেশ সরকার (bforest.gov.bd)

2.3.2 MINISTRY OF ROAD TRANSPORT AND BRIDGES

44. This Ministry is the apex body responsible for formulating and administering rules, regulations, and laws related to road transport, national highways, and bridges. [14] It comprises two subsidiary divisions: the Road Transport and Highways Division and the Bridges Division.

2.3.2.1 ROAD AND HIGHWAYS

45. The Roads and Highways Department (RHD) is responsible for constructing and maintaining Bangladesh's national highways/district roads and bridge network. The RHD works under the Ministry of Roads and Bridges, the apex body. This ministry is responsible for formulating the rules, regulations, and laws relating to road transport, national highways, and bridges and their administration[15].

46. The head office of RHD is in Tejgaon, Dhaka, and is headed by the Chief Engineer, who is supported by the additional chief engineers (ACE). The head office of the department contains a Technical Services Wing (TSW) among the five (5) wings, as shown in Figure 2-1, and is led by the ACE.

47. The objective of the TSW is to ensure the best practices in the RHD by establishing design and construction standards, including environmental and social impact mitigation and road safety, among other **roles and responsibilities** as summarized in Figure 2-2.

48. The TSW has four circles: Road Design and Safety, Bangladesh Road Research Laboratory (BRRL), Social and Environmental Cell, and Arboriculture. The total proposed strength of TSW is four hundred thirteen (413) persons, comprising Class I officers, Class II officers, Class III, and Class IV staff.

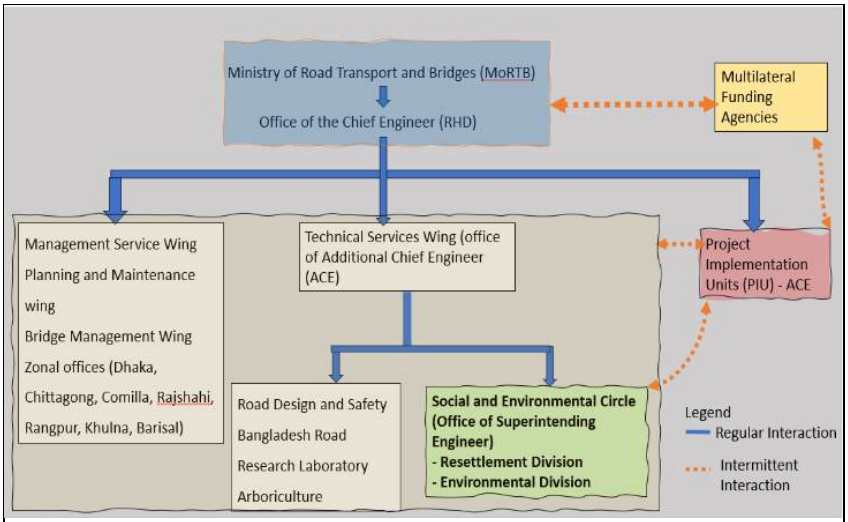


Figure 2-1: Organogram for the Implementation of ESMP

49. The existing RHD Social and Environmental Circle (RSEC), as shown in Figure 2-2, is under TSW circle with defined responsibilities. Includes compliance with the local regulatory bodies and Environmental Social Standards (ESS) in the project as per the requirements of multilateral funding agencies. This circle is divided into (1) the resettlement and (2) the environment division. The trained Executive Engineers are to supervise each division of RSEC as per the protocol. SDEs, SAE, and AE are deployed in the division. All these staff are from engineering backgrounds.

[14] https://rthd.gov.bd/
[15] https://en.wikipedia.org/wiki/Ministry_of_Road_Transport_and_Bridges

Figure 2-2: Organogram for the Implementation of ESMP

2.3.2.2 BANGLADESH ROAD TRANSPORT AUTHORITY (BRTA),

50. Bangladesh Road Transport Authority (BRTA) is under the Ministry of Road Transport and Bridges. It issues fitness certificates and conducts vehicle emission inspections delegated by the DoE based on ECA. The BRTA is also part of the NCAPC. The Ministry of Power, Energy, and Mineral Resources is also crucial for improving air quality in Bangladesh because of its mandate over power generation and fuel quality.

2.3.3 MINISTRY OF LOCAL GOVERNMENT, RURAL DEVELOPMENT, AND CO-OPERATIVES

51. It is a vital ministry overseeing local authorities and semi-autonomous local bodies, including city, town, district councils, and tribal administrations.

2.3.3.1 LOCAL GOVERNMENT ENGINEERING DEPARTMENT

52. LGED is one of the wings of the Local Government Division under the Ministry of Local Government, Rural Development and Co-operatives. and plays a crucial role in promoting socio-economic development and reducing poverty in Bangladesh by enhancing connectivity and accessibility to rural communities. It takes up rural development and infrastructure improvement covering development, maintenance, and management of Upazila Roads, Union Roads, and Village Roads, including bridges and culverts, and development, maintenance, and management of Growth Centers and other markets connected by Upazila Union, and Village Roads. Its strategies and approaches also include addressing emerging challenges and meeting the evolving needs of rural communities.

- Chief Engineer (CE): Heads the Engineering Department of LGED and oversees administration, including infrastructure project planning, design, and implementation.
- Additional Chief Engineer (ACE): Assists the Chief Engineer in various engineering-related functions and may have specific project oversight responsibilities.
- Superintending Engineer (SE): Supervises and manages engineering divisions or zones within LGED's operational areas.
- Executive Engineer (EE): Responsible for implementing infrastructure projects at the district or upazila (sub-district) level.
- Assistant Engineer (AE): Assists executive engineers in project implementation, design, and supervision.
- Deputy Assistant Engineer (DAE): Supports assistant engineers in fieldwork, project monitoring, and technical tasks.
- Planning and Development Officers: Engaged in project planning, development, and coordination activities.
- Monitoring and Evaluation Officers: Responsible for monitoring project progress, conducting evaluations, and ensuring project objectives and standards compliance.

- PIU: The Project Implementation unit is also established, headed by the Project Director.

53. Several government organizations play important roles in environmental management in Bangladesh, but the MoEFCC and the DoE are responsible for environmental protection.

2.3.4 THE MINISTRY OF PLANNING (MOP),

54. It fosters intersectoral coordination among ministries and sets short-, medium--, and long-term strategic government goals. It also plays a powerful role in defining policies and resource allocation to accomplish these objectives and in selecting public investment projects. As part of the MoP, the Bangladesh Bureau of Statistics (BBS) provides statistical information to guide decision-making and development. Under the Bangladesh Environmental Statistics Framework (BESF) 2016–2030, the GoB plans to implement an integrated approach to collecting, analyzing, and disseminating environmental data and information based on national priorities and plans.

2.3.5 THE MINISTRY OF FINANCE (MOF)

55. This ministry is fundamental to developing an Environmental Fiscal Reform and defining fiscal instruments to operationalize the polluter pays and user-pays principles. The National Board of Revenue (NBR), also under the MoF, collects tax revenues and, therefore, can advise using different market-based instruments to control pollution, including environmental taxes or deposit and refund schemes. NBR is also responsible for inspecting all chemical imports and keeping records of volumes and quantities of imported products into Bangladesh, including legally imported lead and lead compounds. Such information can be used to identify lead-use trends that should prompt additional government responses. The country's central bank, the Bangladesh Bank (BB), has developed green financing policy and guidelines, established mini- mum targets of direct green financing for all banks and non-bank financial institutions, and created green concessional lending schemes to promote eligible green investments.

2.3.6 THE MINISTRY OF WATER RESOURCES

56. It is primarily responsible for developing and managing the country's water resources, including surface and groundwater. However, there is no central institution governing the entire WSS sector in the country, and there is no formal regulator to approve low water and sanitation tariffs—which vary across consumer groups—and monitor service standards and performance of service providers.

2.3.7 THE MINISTRY OF INDUSTRIES

57. The ministry's core function is to issue and oversee industrial policy, including methods and standards through BSTI. The ministry is also a member of various national committees linked to environmental management, such as the Climate Change, Climate Finance, National Rivers Commissions, and the recently created NCAPC.

58. The Ministry of Commerce (MoC) is mandated to promote better environmental management of import—and export-oriented industries. The MoC's Import and Export Control Department must ensure that imports and exports meet minimum environmental, health, and safety standards, including those for harmful substances.

2.3.8 THE MINISTRY OF AGRICULTURE

59. It plays a key role in (a) supporting the development of new technologies to enhance agricultural productivity and distributing agricultural inputs (for example, urea and non-urea fertilizers); and (b) monitoring the content of pollutants and hazardous substances (for example, excessive amounts of lead) in food, including spices, fish and vegetables that previous studies have identified as containing high lead levels. The following department under the ministry are:

- Agriculture Information Service (AIS)
- Department of Agricultural Extension
- Bangladesh Institute of Research and Training on Applied Nutrition

- Soil Resources Development Institute
- Bangladesh Agricultural Development Corporation

2.3.9 THE MINISTRY OF LABOUR AND EMPLOYMENT,

60. Through the Department of Inspection for Factories and Establishments (DIFE), this ministry is responsible for ensuring the welfare, safety, and health of valuable human resources working in various sectors contributing to national development.

2.3.10 THE MINISTRY OF LAND

61. This ministry is responsible for formulating and implementing national policy on lands, cadastre, and other subjects under its purview. The Ministry of Land's main agencies are the Land Appeal Board, Land Reforms Board, Land Record and Survey Department, and Land Administration Training Centre.

2.3.11 MINISTRY OF HOUSING AND PUBLIC WORKS:

62. This ministry is important in providing sustainable, safe, cost-effective housing for low—and middle-income people, planning urbanization, and constructing infrastructures with modern facilities through well-planned research activities. The ministry's major Functions are as follows.

- Proper planning and activities are needed to solve the country's accommodation problem.
- Preparation of architectural and structural design of public buildings and other infrastructure, their construction and maintenance; Preparation/amendment of policies, laws, and codes of planned housing sector;
- Undertaking measures to ensure planned urbanization, proper use of land,
- Undertaking activities to solve the accommodation problem of government officers and staff; Conducting research and technological innovation on urban development, housing, construction of buildings, construction materials, and techniques.
- Management of land and abandoned property under this ministry.
- Creating opportunities for private sector involvement in solving urbanization and housing problems.

2.3.12 MINISTRY OF CIVIL AVIATION AND TOURISM

63. It is responsible for formulating national policies and civil aviation and tourism programs. Its key functions include modernizing airports, coordinating air routes and services, ensuring airspace control civil aviation safety, and licensing aircraft and pilots.[16],[17]

- Bangladesh Parjatan Corporation (Tourism Corporation)
- Bangladesh Tourism Board
- Civil Aviation Authority, Bangladesh

2.3.13 THE MINISTRY OF HEALTH AND FAMILY WELFARE:

64. At the national level, the Ministry of Health & Family Welfare (MOH&FW) is responsible for policy, planning, and decision-making at the macro level. Under MOH&FW, there are four directorates: the Directorate General of Health Services, the Directorate General of Family Planning, the Directorate of Nursing Services, and the Directorate of Drug Administration.

2.3.ENVIRONMENTAL AND SOCIAL FRAMEWORK FOR FUNDING AGENCIES

65. Funding agencies such as the World Bank (WB) and Asian Infrastructure Investment Bank (AIIB)'s Environment and Social Framework and Standards have their Environmental and Social Framework (ESF).

16 https://mocat.gov.bd/
17 https://en.wikipedia.org/wiki/Ministry_of_Civil_Aviation_and_Tourism

Funding agencies are committed to this framework for sustainable development. It contains a set of Environmental and Social Standards (ESSs) to improve poverty and promote shared prosperity.

2.3.1. THE WORLD BANK

66. Since the World Bank (WB) is committed to supporting the programs/projects that are environmentally and socially sustainable, all World Bank-funded investment project financing (IPF) has been required to follow the Environmental and Social Framework (ESF), which was initiated in on or after October 2018. The development of ESF is a significant step toward more sustainable and inclusive development outcomes. supports green, resilient, and inclusive growth by strengthening protection for people and the environment and making important advances in labor management, inclusion and non-discrimination, gender, climate change, biodiversity, community health and safety, and stakeholder engagement.[18]

67. The ESF comprises **ten (10) Environmental and Social Standards (ESSs).** These ESSs set out the requirements for the program interventions regarding identifying and assessing Environmental and Social risks and impacts associated with any project. The ESSs support the program interventions in achieving good international practice relating to environmental and social sustainability, assist them in fulfilling their national and global Environmental and Social obligations, enhance transparency and accountability, and ensure sustainable development through ongoing stakeholder engagement.

68. The ten Environmental and Social Standards (ESS) for the World Bank funding, numbered 1 through 10, are outlined as follows. Each ESS is briefly discussed in the subsequent paragraphs.

- ESS 1: Assessment and Management of Environmental and Social Risks and Impacts

69. It sets out the requirements for assessing, managing, and monitoring environmental and social risks and impacts associated with each project stage supported by the Bank through Investment. It includes conducting an Environmental and Social Assessment, forming an agreement on an Environmental and Social Commitment Plan, and preparing a Management Plan for contractors for program interventions.

- ESS 2: Labor and Working Conditions.

70. It recognizes the importance of creating employment opportunities and generating income to reduce poverty and promote inclusive economic growth. Ensuring fair treatment of workers and maintaining safe and healthy working environments fosters positive worker-management relations and enhances a project's developmental outcomes. Implementing ESS2 encourages adopting a systematic approach to addressing risks and impacts associated with labor and working conditions in the projects. The environmental and social assessment evaluates how national laws, and the requirements of this ESS are applied to the project, guided in part by various International Labour Organization (ILO) and United Nations (UN) Conventions.

- ESS 3: Resource Efficiency and Pollution Prevention and Management.

71. It acknowledges that economic growth and urban development frequently lead to air, water, and land pollution and the depletion of limited resources, which can pose risks to people, ecosystem services, and the environment on local, regional, and global scales. This ESS outlines the obligations for managing resource efficiency and preventing and controlling pollution throughout the project life cycle.

72. According to this Environmental and Social Standard (ESS), the project will adhere to standard procedures for resource optimization. To comply with national or international standards for sustainable development, necessary mitigation measures will be implemented. The environmental and social baseline conditions must be assessed by reviewing existing secondary data and performing field investigations during the Environmental and Social Impact Assessment (ESIA) study. This approach will facilitate comparisons to determine relative efficiency levels.

- ESS 4: Community Health and Safety.

[18] Environmental and Social Framework (ESF) (worldbank.org)

73. These standards aim to protect communities from the adverse impacts of project activities by ensuring that risks are identified and managed effectively. It emphasizes the responsibility to mitigate such risks, especially for vulnerable groups in the project. Under this ESS, each project intervention will identify, evaluate, and monitor the potential traffic and road safety risks to workers, affected communities, and road users throughout the project life cycle and will develop measures and plans to address them.

74. This ESS also highlights that the project activities must avoid or minimize the potential for community exposure to waterborne, waterbased, water-related, and vector-borne diseases, and communicable and non-communicable diseases that could result from project activities, taking into consideration differentiated exposure to and higher sensitivity of vulnerable groups.

- ESS 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement.

75. The ESS acknowledges that acquiring land for projects and imposing restrictions on its use can negatively affect communities and individuals. Nonetheless, it emphasizes the need to avoid involuntary resettlement whenever feasible. If resettlement cannot be prevented, efforts will be focused on minimizing it, and comprehensive plans and measures will be implemented to alleviate the adverse impacts on displaced persons and the communities hosting them.

76. It stresses that actions must be implemented to return livelihoods and living standards to the levels they were before displacement or to the levels existing before the start of project implementation, whichever is higher.

77. Additionally, it proposes enhancing the living conditions of poor or vulnerable individuals who are physically displaced by providing adequate housing, access to services and facilities, and ensuring security of tenure. It also suggests that an action plan shall be prepared as an entitlement matrix in case of physical displacement.

- ESS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources.

78. It acknowledges that conserving biodiversity and managing natural resources sustainably is essential for sustainable development, emphasizing the ecological functions of habitats like forests and their biodiversity. It also focuses on the sustainable management of primary production and harvesting of living resources, considering the livelihoods of those affected by projects, including Indigenous Peoples.

- ESS 7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities.

79. The project must ensure that the development process fosters full respect for the human rights, dignity, aspirations, identity, culture, and natural resource-based livelihoods of Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities. It is also meant to avoid adverse impacts of projects on Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities or, when avoidance is not possible, minimize, mitigate, and/or compensate for such impacts. Indigenous people are not in the country, so they are not in the study area.

- ESS 8: Cultural Heritage.

80. The ESS recognizes that cultural heritage provides continuity in tangible and intangible forms between the past, present, and future. ESS8 sets out measures designed to protect cultural heritage throughout the project life-cycle.

- ESS 9: Financial Intermediaries.

81. It sets out how Financial Intermediaries (FI) will assess and manage environmental and social risks and impacts associated with the subprojects they finance. The FI promotes good environmental and social management practices in the subprojects it finances, as well as sound human resources management.

- ESS 10: Stakeholder Engagement and Information Disclosure.

82. It acknowledges that engaging openly and transparently with stakeholders is crucial for good international practices. Effective stakeholder engagement can boost a project's environmental and social sustainability, increase acceptance, and facilitate successful design and implementation. It details the approach for systematic engagement with the stakeholders and the importance of maintaining a constructive relationship with them to

promote and provide means for effective and inclusive engagement with project-affected parties throughout the project life cycle. Address their aspirations/grievances in the project life cycle.

2.3.2. AIIB

83. The AIIB Environmental and Social Framework (ESF), 2016 (AIIB, 2016) provides an overview of the AIIB concerning (a) environmental and social sustainability and (b) its role in meeting the challenge of sustainable development in Asia. The pursue of complete objectives of development is framed within the ESF in terms of both local impacts, and global challenges, especially in climate change. The ESF provides general specifications, standards, and objectives that clients should adhere to during project preparation and implementation.[19]

84. The AIIB sets out three ESSs, which are as follows:

- ESS 1: Environmental and Social Assessment and Management (ESS 1);

85. The ESS1 requires conducting an environmental and social assessment of these risks and impacts and designing appropriate measures to avoid, minimize, mitigate, offset, or compensate for them. It also details the types of E&S risks and impacts that should be considered in the assessment.

- ESS 2: Involuntary Resettlement (ESS 2);

86. It also stresses avoiding or minimizing involuntary resettlement by exploring project design alternatives, restoring the livelihoods of the project-affected communities, and protecting vulnerable communities—compensation to the project-affected communities as per the approved entitlement matrix.

- ESS 3: Indigenous Peoples (ESS 3).

87. The development process must fully respect affected parties' human rights, dignity, aspirations, identity, culture, and natural resource-based livelihoods. Advocate for accessible, culturally suitable, and inclusive sustainable development benefits. Enhance project design and gain local support through continuous, meaningful consultation with the affected communities.

88. These guidelines require a structured approach of impact assessment, planning, and mitigation throughout the project cycle to address the negative consequences of projects. The ESP and ESSs form an environmental and social management system that requires (i) environmental and social screening and categorization; (ii) analysis of future project environmental and social risks and impacts; (iii) mitigation measures to prevent, reduce, mitigate, cover, or compensate for project environmental and social impacts; and (iv) a process to consult the public on environmental and social risks and impacts of projects. Annex 2.3 reviews the national laws/rules and regulations and the Banks (ESS 1 through 10) and AIIB (ESS 1 through 3).

89. The SESA is prepared per the requirements of the Banks requirement.

2.4. INTERNATIONAL CONVENTIONS, TREATIES AND PROTOCOLS

90. Bangladesh is a signatory of international conventions, treaties, and protocols (ICTPs) connected to the Project and is committed to ensuring that these protocols are followed throughout all development activities. **Annex 2.4** lists the details of ICTPs, which are as follows.

- International Plant Protection Convention (Rome) & Plant Protection Agreement for SE Asia and Pacific (1999 Revision)
- Convention on Wetlands of International Importance ("Ramsar Convention":1971)
- Convention Concerning the Protection of the World Cultural and Natural Heritage (Paris, 1972)
- Convention on Biological Diversity, (Rio de Janeiro, 1992.)
- Convention on Persistent Organic Pollutants, Stockholm.
- UN Framework Convention on Climate Change, (New York,)

[19] Environmental and social Management Planning Framework (ESMPF) for WeCARE-AIIB Program

- Convention on Biological Diversity, (Rio De Janeiro, 1992.)
- Kyoto Protocol to the United Nations Framework Convention on Climate Change
- International Convention for Protection of Birds, Paris
- Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matters (as amended), London-Mexico City- Washington
- Convention Concerning the Prevention and Control of Occupational Hazards caused by Carcinogenic Substances and Agents, Geneva.
- Convention Concerning the Protection of Workers Against Occupational Hazards in the Working Environment due to Air Pollution, Noise and Vibration, Geneva
- Convention on the Conservation of Migratory Species of Wild Animals, Bonn.
- Convention Concerning Occupational Safety and Health and the Working Environment, Geneva.
- Vienna Convention for the Protection of the Ozone Layer,
- Convention Concerning Occupational Health Services, Geneva.
- Montreal Protocol on Substances that Deplete the Ozone Layer, Montreal.
- Convention Concerning Safety in the Use of Chemicals at Work, Geneva.
- London Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, London.
- United Nations Framework Convention on Climate Change, New York
- Convention on Biological Diversity, Rio De Janeiro
- International Convention to Combat Desertification, Paris.
- Agenda 21, UNCED, Rio de Janeiro
- Copenhagen Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, Copenhagen
- Montreal Amendment of the Montreal Protocol on Substances that Deplete the Ozone Layer, Montreal

3 Description of Region's Environment and Social Baseline Data

91. Establishing the baseline conditions aims to identify the **key environmental and social issues** for assessing the environmental and social impacts and risks arising from the program implementation, benchmarking, and monitoring social and environmental changes over the multiphase plans envisaged in the proposed development program. In this section, the baseline data of the western part of the country, which is collected (from secondary sources), collated, and analyzed, has been presented at the macro level.

3.1 ENVIRONMENTAL ANALYSIS

3.1.1 THE PROGRAM AREA

92. The program area comprises the North-western districts, namely, Sirajganj, Pabna, and Natore; the Western Districts, namely, Mehrpur, Chuandaga, Jhenaidah and Kushtia and Magura; and the Soth-western Districts, namely, Jashore and Satkhira. These districts are located along the western corridor, which starts at Hatikumrul at Sirajganj and ends at Bhomra in Satkhira. The program area is between coordinates (24°48'8.262"N, 88°33'9.78"E, 24°46'59.173"N, 89°51'19.08"E, 22°11'4.819"N, 89°44'17.869"E, and 22°14'12.154"N, 88°29'31.564"E). The terrain is plain, mainly throughout the program area, which is shown in Figure 3-1.

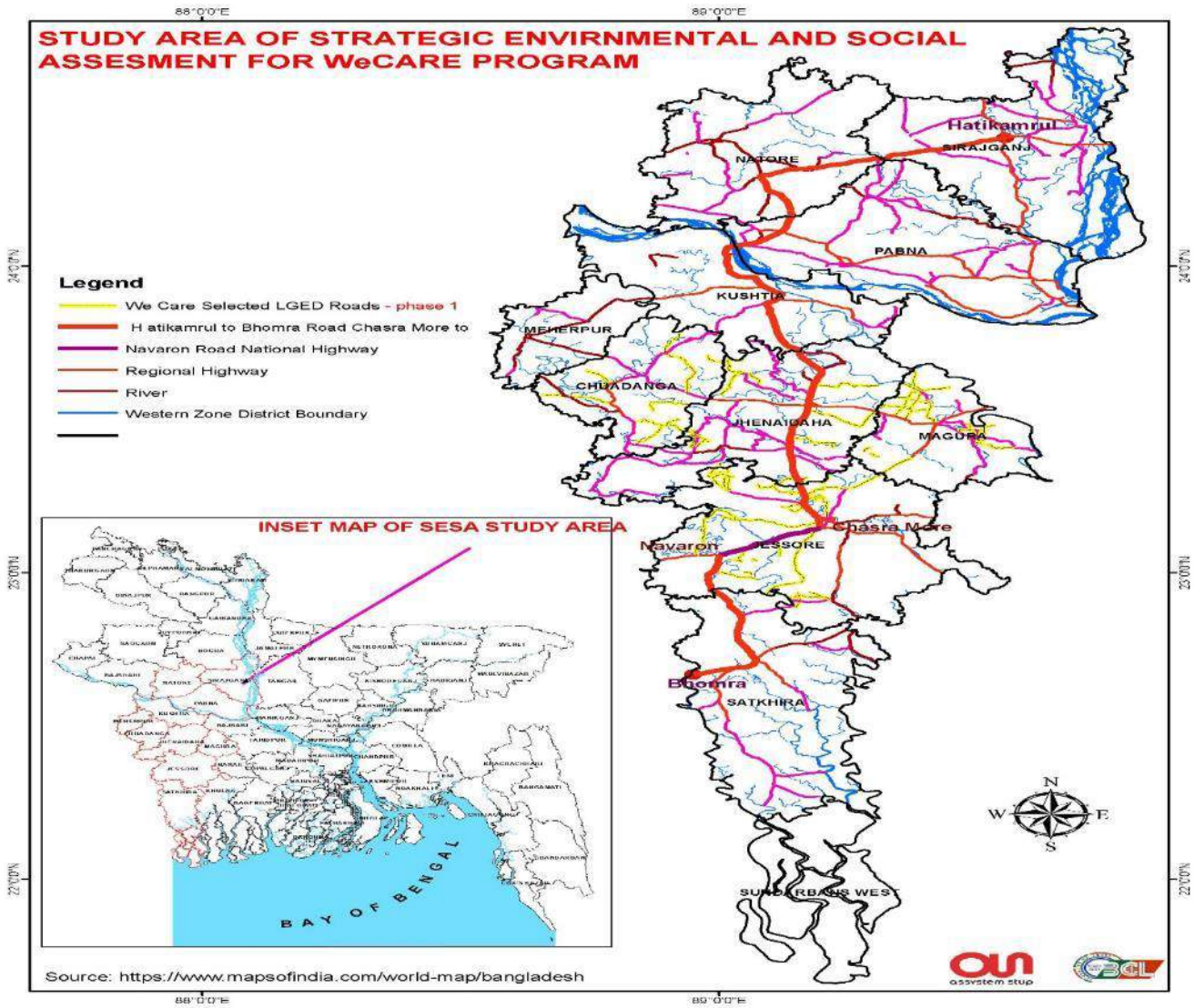


Figure 3-1: Program area for the Carrying out Strategic Environmental and Social Assessment

3.1.2 PHYSIOGRAPHY AND TOPOGRAPHY

93. Bangladesh is divided into three physiographic regions: (a) floodplains, (b) terraces, and (c) hills, each with distinct characteristics of its own. Furthermore, it has been classified into 24 sub-regions and 54 units. The physiographic units in the project areas include seven districts. The physiography of the program area is shown in **Annex 3.1**.

94. The program in the western region runs through the Lower Ganges River Plain (Pabna), the High Ganges Floodplain (Jashore, Jhenaidah, Kushtia) , the Ganges tidal Plain (Satkhira), and the Lower Atrai basin (Sirajganj) physiographic units[20]. Ganges alluvium is calcareous; however, most basin clays and older ridge soils have been decalcified and acidified in their upper layers. Lime is only present in the subsurface or substratum of such soils[21].

95. The Lower Atrai Basin in the program area is a small physiographic unit in a low-lying area. The basin is characterized by mixed sediments from the Atrai and Ganges rivers and the Barind tract, which overlay the down-warped southern edge of the Barind Tract. Heavy clay soils dominate, but loamy soils are also found on ridges in the south and west. Seasonal floods used to be deep and widespread, and Chalon Beel. Since the 1960s, the installation of polder projects has helped drainage to some extent[22].

96. The topography of the slopes from north to south with elevation ranged from 11m above msl to 15m above msl. Topography is presented in **Annex 3.2.**

3.1.3 GEOLOGY AND SOIL

97. The western region consists of Holocene alluvial deposits on the floodplain, largely composed of fine sand, silts, and clay. Precambrian rocks underpin all geological formations in the Bengal Basin and shield regions[23]. The geological map of Bangladesh given in **Annex 3-3** depicts the western region's overall geological properties. The Soil Resource Development Institute (SRDI) has identified around 500 soil series, divided into 23 significant kinds[24]. The project area comprises four soil types: Calcareous Dark Grey Floodplain Soils, Calcareous Brown Floodplain Soils, Peat, and Grey Floodplain Soils.

98. **Calcareous Dark Grey Floodplain Soils[25]:** These soils are found extensively in the active Ganges floodplain and locally on soils that have a cambic B-horizon and lime in part or all the soil, as well as dark grey topsoil and/or upper subsoil. These are seasonal flooded soils with lime in certain strata within 125 cm of the surface. Brown calcareous loamy soils, on the other hand, are found on the highest peaks and along riverbanks.

99. **Peat:** Peat is abundant in the Gopalganj-Khulna Beels and locally in some areas of the Sylhet Basin. Organic matter can be found on the soil's surface or buried behind a mineral soil layer at depths of up to 40 cm. The Histic horizon's organic composition ranges from dark brown, fibrous peat to semi-liquid black muck, which is classified as Histosols.

3.1.4 SEISMICITY

100. **Table 3-1** shows the characteristics of Bangladesh's seismic zonation. The western region is mostly in seismic zones 1, 2, and 3 (**Annex 3-4**). The southwestern portion of the country, which comprises Khulna and Jashore, is in the low-intensity seismic zone. Suitable zone coefficients shall be used for the design of structures.

Table 3-1: Seismic Zones of Bangladesh focusing Project Area

Seismic Zone	Location	Seismic Intensity	Seismic Zone Coefficient (Z)
1	Southwestern portion including Barishal Khulna, Jashore, Rajshahi	Low	0.12
2	Lower Central and Northwestern part including Noakhali, Dhaka, Pabna. Dinajpur, as well as the Southwestern corner, including Sundarbans	Moderate	0.20
3	Upper Central and Northwestern parts including Brahmanbaria, Sirajganj, Rangpur	Severe	0.28
4	Northeastern part including Sylhet, Mymensingh, Kurigram	Very Severe	0.36

[20] EIA - Bonpara-Jhenaidah Road, RHD
[21] Bandyopadhyay, S. (2007). Evolution of the Ganga Brahmaputra delta: a review. Geographical review of India, 69(3), 235-268.
[22] Malik, R. N., Jadoon, W. A., & Husain, S. Z. (2010). Metal contamination of surface soils of industrial city Sialkot, Pakistan: a multivariate and GIS approach. Environmental geochemistry and health, 32(3), 179-191
[23] http://en.banglapedia.org/index.php?title=Bangladesh_Soil and Bangladesh Agricultural Research Council (BARC)/GIS Project, BGD/95/006)
[24] FAO, Land resources appraisal of Bangladesh for agricultural development, Vol 2, Rome, 1988; FAO/ UNDP, Classification of the soils of Bangladesh, 1986; H Brammer, The Geography of the Soils of Bangladesh, UPL, Dhaka, 1996.
[25] Calcareous Soil - Banglapedia

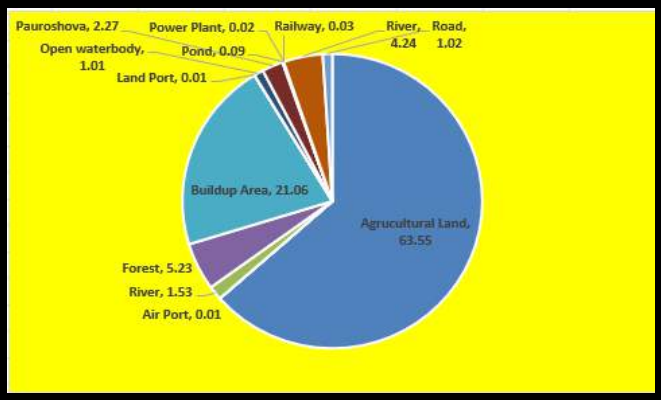
3.1.5 LAND USE

101. The downloaded satellite imagery from Google Earth was visually interpreted to study the qualitative and quantitative aspects of the images. On-screen digitization of the GeoEye Data has been carried out. The program area layers have been exported to ESRI shapefile format, and relevant attributes have been incorporated in GIS layer shapefiles.

102. The total program area is 19258.543 sq. km**.** The land use area-wise worked out from the shapefile of the porgram area is given in **Table 3-2.** The predominant land use in the program area is agricultural (63.55%), followed by built-up (21.06%), Forest (5.23%, Sundarban—not part of the study), river and water bodies (6.87%), roads (1.021%), and rail (0.03%). A land use Map is shown in Annex 3.5.

Table 3-2: Area-wise details of land use pattern in the Program Area

Sl_No	Type	Area (SQ km)	% age
1	Agricultural Land	12237.247	63.55
2	Airport	1.379	0.01
3	River	294.368	1.53
4	Forest	1006.938	5.23
5	Buildup Area	4054.018	21.06
6	Land Port	0.608	0.01
7	Open waterbody	193.991	1.01
8	Pauroshova	435.396	2.27
9	Pond	16.135	0.09
10	Power Plant	2.651	0.02
11	Railway	4.331	0.03
12	River	816.476	4.24
13	Road	195.005	1.02
Total Land		19258.543	



103. Most areas of the western corridor are occupied by cultivated land. Local people used such land mainly for rice cultivation in rainy and dry seasons. Apart from rice cultivation, the land is being used to grow different seasonal crops, including wheat, maize, sorghum, grasses, watermelon, sweet potato, sweet pumpkin, various pulses, cabbage, cauliflower, bottle gourd, beans, lady finger, sugarcane, tobacco, bitter gourd, gourd, aroids, yams, papaya, eggplants, tomato, chili, radish, carrot, turnip, spinach, amaranth, etc.

104. Several factors influence agriculture in the region, such as flooding, landforms, soil saltiness, drainage problems, and irrigation availability. Shrimp farming and fish cultivation are expanding in the program area and affecting agriculture. An estimate of CEGIS[28] has shown a 7.5% reduction in agricultural land between 2019 and 2020 due to an increase (6.5%) in shrimp farming and fish cultivation in the region.

105. The loss of good-quality agricultural land due to urbanization, infrastructure development, and other projects is a significant concern.28 According to a 2005 World Bank report, these activities in Bangladesh affect approximately 80,000 hectares annually.

3.1.6 METEOROLOGICAL ANALYSIS

3.1.6.1 CLIMATE

106. Although less than half of Bangladesh lies within the tropics, the Himalayan Mountain range has created a tropical macro-climate across most of the East Bengal land mass[26]. Bangladesh is divided into seven climatic zones, and the projects are in four climatic zones (**Annex 3-6**).

► **North-Western Zone (D):** Except that the extremes are less, and the rainfall is lower than in other zones. The lower rainfall makes this area drier than other zones.
► **Western Zone (E):** This zone comprises the Greater Rajshahi district and parts of adjacent districts. Rainfall is generally below 1,500 mm (annually), and summer humidity is less than 50%. In summer, it is the hottest and driest of all the climatic zones. The mean summer maximum temperature is over 35°C.
► **South-Western Zone (F):** Here, the extremes of the zones to the north are somewhat moderated. Rainfall is between 1,500 mm and 1,800 mm. The mean summer maximum temperature is below 35°C. Dewfall is heavier

[26] Rashid, H. E. (1991). "Geography of Bangladesh". University Press Limited, Dhaka.

than in the Western zone.

107. Three distinct seasons can be recognized in Bangladesh: the post-monsoon season, from November to February; the pre-monsoon hot season, from March to May; and the rainy monsoon season, from June to October. The month of March is the spring season, and the period from mid-October to mid-November is the autumn season[27].

3.1.6.2 CLIMATE IN THE PROGRAM AREA

108. Temperatures sometimes reach above freezing in the coldest months, while summers are mild, and excessive heat is uncommon. Iswardi and Jashore are the two Bangladesh Meteorological Department Stations in the program area. Previous climate data indicates that the maximum temperature (42.4^0C) was recorded in April, and the minimum (9^0C) was recorded in January. The program area is primarily characterized by West, West-Southwest, North, and North-West wind flow. Strong winds characterize the pre-monsoon season; winds calm down by November and remain calm in winter. The wind rose diagram is presented in **Annex 3.7**. Humidity varies throughout the year, with the highest being between 67.6% and 83.6% during monsoon season, and the annual average is 77.84%. Monthly averages of climatic variables of the program area is shown in Figure 3-2.

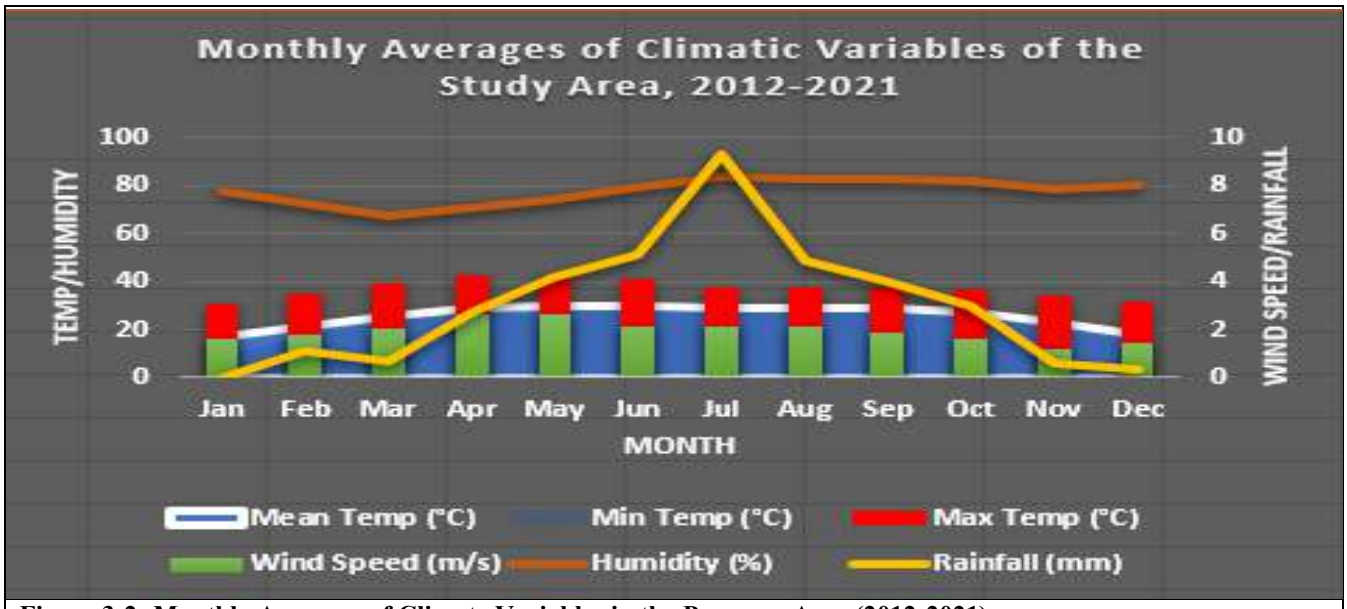


Figure 3-2: Monthly Averages of Climate Variables in the Program Area (2012-2021)

3.1.7 AMBIENT AIR QUALITY

109. Fuel combustion in stationary installations in the country, particularly in electricity generation and industrial processes, primarily contributes to CO_2 emissions. In 2020, it accounted for 66% of emissions and is projected to increase to 73% by 2030[28]. Approximately 62 small and big brick kilns, 65 industries[29](rice mills, sugar mills, and thermal and nuclear power plants), rural and urban settlements, workshops, transport depots, etc.

110. Recently, the team of environmental and social consultants for the program conducted monitoring of air pollutants such as PM2.5 and PM10, NO2, SO2, CO, CO2, and O3, and the statistical analysis of the same indicates that the results are well within the national guidelines30.

111. This program area could be considered a suburban region because it comprises smaller cities and towns with rural landscapes and industrial units. Many variables influence ambient air quality in suburban regions, including air movement, traffic volume, congestion, emissions from motor vehicles, and suspended dust particles. A continuous **monitoring scheme is required to assess air quality and develop any plan for mitigating health risks caused by polluted air. Particulate matter (PM_{10}, $PM_{2.5}$), CO, SO_X, and NO_X are the "criteria pollutants" that must**

[27] Brammer, H. (1996). "The Geography of the Soils of Bangladesh". University Press Ltd., Dhaka
[28] Updated Draft Final SEA Report, Strategic Environmental Assessment of the Southwest Region of Bangladesh for Conserving the Outstanding Universal Value of the Sundarbans Project
[29] Field surveys by the SESA team and Google Earth pro
[30] Updated ESIA, 2022 Report of Jashore-Jhenaidah Highway Under Phase 1 of WeCare Program

be monitored. Air pollution in the program area is mainly caused by road dust, emissions from diesel engines, construction dust, residential heating and cooking practices, and transit. Household emissions from cooking with solid fuels are a major source of air pollution and affect women and children.[31]

3.1.8 AMBIENT NOISE

112. According to the World Health Organization's Guidelines for Community Noise (1999)[32], daily sound pressure levels of 50 decibels (dB) or higher can cause discomfort in humans. In contrast, ongoing exposure to sound pressure levels above 85 dB is usually considered critical for temporary hearing damage. In the program area, three significant sources of noise have been identified:

- **Road Traffic:** Road traffic is one of the country's most significant noise sources. The transport sector, comprising both motorized and non-motorized vehicles, is the source of noise pollution along road corridors.
- **Industries:** The program area has approximately 62 brick kilns and 65 industries (rice mills, sugar mills, industrial setups). In an earlier SEA report[30]Noise generated from small industries was not considered a significant source of pollution. So, vehicle movement is the program area's primary source of noise pollution. As previously mentioned, the areas near the road alignment experience daytime sound levels between 55 dB(A) and 69 dB(A), exceeding the daytime standards.
- **Commercial/Bazar Areas:** There are 518 business or refreshment places [33] within the program area, where many people congregate, creating constant turmoil and a source of noise pollution.

113. According to historical data analysis and a review of the Western region's CASE project and CAMS data, most locations are exposed to high daytime sound levels but low at night.

114. Road traffic is one of the primary sources of noise pollution. Local types (unofficial) lorries (Nosimon, Korimon, Bhotbhoti, etc.) carry farm products to markets and building materials to nearby places. Their engine noise further contributes to noise pollution in rural areas. Since the small-scale industries are mainly in the program area, they do not contribute significantly to noise pollution.

3.1.9 GENERAL HYDROLOGY AND WATER RESOURCES

115. The 'Bengal Basin' includes Bangladesh and the western half of the Indian state of Bengal. This basin has the world's biggest river delta (the Ganges-Padma, Jumna Brahmaputra-Tista, and Meghna rivers, as well as several tributary complexes) and the world's largest undersea fan complex (the Bengal Fan). These river systems transport 1.5 to 2.4 billion metric tons of silt annually[34].

Surface Water

116. The NH and feeder roads cross rivers and distributaries. Several beel, Baors (Khajura, Purakhali, and Jhapa are named a few), and canals are in and around the program area (Annex 3-8). The canals store water for use in agriculture during the dry season. Furthermore, there are many ponds and ditches in the project area.

117. The road stretch from Hatikumrul to the Jhenaidah portion being funded by AIIB Part is approximately 157.6 km. Five (5) rivers, Chalon Beel, Baors, and more than fifteen (15) canals could be identified from the starting to the end of this stretch under the program. The rivers, namely, the Atrai River at Sirajganj and Natore, the Padma River at Kushtia, and Pabna and Kaliganga, are in the program area. Besides this, the Kumar River, Nabaganga River, Betna, Goamni, and Chitra River flow at various places, and numerous Beels and Baor are there in the Jashore and Jhenaidah districts of the program area. Table 3-3 summarizes the rivers crossing the national highways in Phase 1 and Phase 3 of the program.

Table 3-3: River Network of the Aligned Road Project from Hatikumrul to Jhenaidah and Jhenaidah to Sathkhira

Sl. No.	Rivers	Total Distance (From the Due Point)	Districts
Rivers Crosses Hatikumrul to Jhenaidah Road Section (Phase 4)			
1	Atrai	25.72 km	Sirajganj and Natore

[31] Addressing Environmental Pollution is Critical for Bangladesh's Growth and Development (worldbank.org)
[32] Berglund, Birgitta, Lindvall, Thomas, Schwela, Dietrich H & World Health Organization. Occupational and Environmental Health Team. (1999). Guidelines for community noise. World Health Organization. https://apps.who.int/iris/handle/10665/66217
[33] LGED Survey Data, 2013
[34] Rahman, M. J. J., & Suzuki, S. (2007). Geochemistry of sandstones from the Miocene Surma Group, Bengal Basin, Bangladesh: Implications for Provenance, tectonic setting and weathering. Geochemical Journal, 41(6), 415-428.

Table 3-3: River Network of the Aligned Road Project from Hatikumrul to Jhenaidah and Jhenaidah to Sathkhira			
Sl. No.	**Rivers**	**Total Distance (From the Due Point)**	**Districts**
2	Padma	73.98 km	Kushtia and Pabna
3	Kumar	123.95 km	Jhenaidah
4	Naboganga	137.32 km	Jhenaidah
River Crosses Jhenaidah to Sathkhira Road Section (Phase 1/3)			
5	Bhairab	4.95 km	Jashore
6	Kopodak	28.25 km	
7	Dead Betna	33.49 km	
8	Betna	39.37 km	

118. Wetlands in the program area are greatly affected by land use disputes, water damage in catchments inside and beyond the Bangladesh border, and upstream water diversion. Pollution of open water bodies caused by pesticide usage on agricultural land, solid waste, and fish culture impacts aquatic biodiversity and wetland habitat. The main challenges concerning surface water quality in the western area are using surface water for household, agricultural, and industrial purposes rather than depleting groundwater and discharging domestic and municipal pollutants in water bodies.

119. **Chalon Beel** in Sirajganj, Natore, and Pabna districts is along the Hathikamrul to Kushtia and LGED roads. It is a substantial inland depression and marshy. It is a rich source of flora and fauna. Forty-seven rivers and other waterways flow into the Chalan Beel. As silt builds up in the beel, its size is being reduced. (Refer to Section 3.3 as follows).

120. Industrial discharge and unmanaged waste, including plastics and untreated sewage, are major concerns, among other sources of water pollution of the surface water body.

3.1.9.1 GROUNDWATER

121. In Bangladesh, conventional groundwater storage reservoirs are divided into three sections: an upper clay and silt layer, a middle composite aquifer (fine to very fine sand), and a major deep aquifer (medium to coarse sand).

122. Water aquifers exist beneath the overwhelming bulk of Bangladesh and are replenished by major river systems and precipitation. The groundwater tables are within 5 meters below the ground. The groundwater table varies periodically, nearing the ground surface across most of the nation from July through September (during the monsoon). During July and October, groundwater levels in much of Bangladesh are within five meters of the ground surface in the project influence area. During the dry season, groundwater levels fluctuate across the nation based on proximity to surface water, aquifer depth and type, irrigation extent, and other factors. A map is presented in **Annex 3-9.**

123. The Digital Elevation Model indicates that groundwater elevation is 5.1-8 msl in the program area, particularly in the districts of Jashore and Satkhira, whereas in other districts of the program area (Pabna, Sirajganj Kushtia Jhenaidah), it is about 10.1-12 msl and 12.1- 15 msl in (Annex 3-9). During July and October, groundwater levels in much of Bangladesh are within two meters of the ground surface. During the dry season, groundwater levels fluctuate across the nation based on proximity to surface water, aquifer depth and type, irrigation extent, and other factors.

124. Arsenic concentration (<50µg/l - 200µg/l) is reported to be present naturally in the southwestern region, which exceeds the World Health Organization standards <10 µg/l (WHO) and Bangladesh Standards for drinking water quality ≤50 µg/l.

125. Salinity and Arsenic Contamination of Water Quality: The surface water system in the north of the program area has fresh water from the Ganges/Padma River, which keeps salt water away. But in the dry season and the monsoon, saltwater flows more along the Passur-Rupsha-Nabagnaga-Gorai River system.

126. Arsenic (As) groundwater contamination is a major problem and was termed a serious natural hazard in the country by Matin Ahmed[35] et al. because 97%[36] of the population uses groundwater as a reliable source for drinking and irrigation. The southwestern part, especially the Satkhira district of the program area, is affected by arsenic contamination. Thus, water potability is lower due to increased "As" contamination and seawater intrusion. Other areas also have contamination but not to the level of Satkhira, where "As" concentration is reported to be more than 50µg/l from groundwater samples.[37]

3.2 NATURAL HAZARDS AND CLIMATE CHANGE

127. Bangladesh is one of the most vulnerable countries to the world's natural hazards (cyclones, floods, etc.). About 24% of the country is vulnerable to flooding during wet seasons, and 10% is prone to seasonal floods. When cyclones land, the funnel-shaped northern region of the Bay of Bengal creates tidal waves, affecting thousands of people along the shore. Because Jashore is in Bangladesh's southwestern region and is near the Bhairab River, the project area is geographically elevated, and hence, there is a low risk of natural disasters such as floods, cyclones, and earthquakes[38].

3.2.1 FLOODS

128. Flooding is common in Bangladesh; approximately one-fifth gets flooded yearly. Flooding begins as early as May and lasts until November. There are three types: e.g. Monsoon Floods, Flash Floods, and Tidal Floods.

129. The project locations are in low to moderate river floods and no flood-prone zones (**Annex 3-10**). The categorization is based on a flood management database created by the BWDB in 1998. The BWDB defines a moderate flood zone as an area where 1-5 feet of flooding occurred in 1998. The road's crest level must be determined because of rising water levels in rivers and uncertain local heavy rainfall in a short period owing to climate change. The program area is free of river flooding, except for monsoon flooding in Chalon Beel or low-lying areas in the program area. Thus, the program area is secure from significant flooding. Meanwhile, many feeder roads in the program area get muddy during monsoon season or even due to prolonged rain. The district of Satkhira is prone to flooding and needs interventions to be designed with adequate cross-drainage structures and clearance.

130. Inadequate drainage is the primary cause of waterlogging. Box culverts or drainage openings should be provided in place of piped culverts.

131.

3.2.2 CYCLONES

132. Cyclones are most common in the Bay of Bengal between April-May and October-November. Bangladesh is frequently the landing ground of cyclones originating in the Bay of Bengal because of its funnel-shaped shoreline. From 1793 to May 2021, there were approximately 54 devastating cyclones in Bangladesh's coastal area. During this time, cyclones occurred around once every 4.5 years on average. The most recent cyclone, Amphan, hit the country in 2020 with a wind speed of 240-250 Km/hr and 10-16 feet tidal surges.[39] Resulting in the evacuation of a huge population. However, the cyclone intensity around the project site is often lower than in other parts of the coastal belt and is not in a cyclone danger zone except Satkhira district. The project area in the cyclone-affected zone is given in **Annex 3-11**.

3.2.3 CLIMATE CHANGE

133. Bangladesh has a wealth of natural resources and is in the delta region of three of Asia's major river systems – Ganga, Meghna, and Brahmaputra.[40] According to the Global Climate Risk Index, the country ranks between 1 and 10.[41] The country's population primarily relies on natural resources to fulfill their needs and support their livelihoods.

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[35] Arsenic enrichment in groundwater of the alluvial aquifers in Bangladesh: an overview, K.Matin Ahmed, Prosun Bhattacharya, M.Aziz Hasan, S.Humayun Akhter, S.M.Mahbub Alam, M.A.Hossain Bhuyian, M.Badrul Imam, Aftab A Khan, Ondra Sracek, Applied Geochemistry, Volume 19, Issue 2, 2004,

36 M.F. Hossain, Arsenic contamination in Bangladesh—An overview, Agriculture, Ecosystems & Environment, Volume 113, Issues 1–4, 2006, https://www.sciencedirect.com/science/article/pii/S0167880905004329

37https://www.researchgate.net/publication/226318320_Groundwater_Arsenic_Contamination_Its_Health_Effects_and_Approach_for_Mitigation_in_West_Bengal_India_and_Bangladesh, B Das et al.

[38] https://en.banglapedia.org/index.php/Natural_Hazard

[39] ti-bangladesh.org/images/2020/report/Amphan/Amphan_Study_ES_Eng.pdf

[40] USAID Bangladesh Tropical Forests and Biodiversity Assessment Report, 2016

[41] https://www.germanwatch.org/sites/germanwatch.org/files/2021-01/cri-2021_map_ranking_2000_-_2019.jpg

Frequent natural disasters and future infrastructure development are further causes of environmental and social impacts and risks. The long-term impacts of rising sea levels and global temperature are due to climate change, which could displace millions of people along Bangladesh's vulnerable coastline.[42] There is an urgent need to undertake sustainable development and increase the capacity of institutions. Recent studies estimated that the country could have 13.3 million internal climate migrants by 2050.[43] ESIA for the Hatikumrul to Bonpara report may be referred to for further information.

3.3 ECOLOGY AND BIODIVERSITY

134. A recently completed survey for an environmental assessment study shows[30] about 365 species are found in the program area, including herbs, shrubs, trees, and climbers from terrestrial and 131 woody plant species. Out of 131 species, 30% are represented by fruit-bearing tree species, followed by timber (27%), medicinal (24%), and ornamental plant (19%) species. Common species such as species such as Rain tree, Mahagoni, Babul, Neem, Mango Jackfruit, Debdaru, Deoa, Dumur, Gamari, Ipilipil, Jalpai, Jam, Kanthal, Khejure

135. A total of 125 fauna species are recorded in the area. Among them, 8 were amphibians, 13 were reptiles, 86 were birds, and 18 were mammals. Regarding fauna, IUCN is concerned with species such as Herpestesaur punctate, Prionailurus viverrinus, and *Varanus flavescens. Naja naja, Varanus bengalensis, Felis chaus* and *Vulpes bengalensis* were mentioned in the literature. But practically, the survey team didn't observe any such species along the roadside.

136. About 35 aquatic faunal species have been recorded in the program area. Among the species, the maximum is medicinal (34%), followed by fodder (20%), ornamental (17%), duckweed (15%), and edible (14%). 29 fish species were identified during the fieldwork. There are no species protected rare/endangered/endemic species found there during the survey. For details, refer to **Annex 3-12**. From the literature review, it may be inferred that the terrestrial ecological parameters are the same in the program area.

137. The program area contains oxbow lakes, called Baor in the vernacular. Marjat Baor is in Kaliganj Upazilla in the Jhenaidah district. The consultants visited Bukbhara Baor in the Jashore district. They observed that this baor supports the local economy through fishing and is used for irrigation purposes during summer to grow rice. It is also a rich source of aquatic life.

138. The Hatikumrul to Jhenaidah section and Phase-4 of the program cross the Chalan Beel, a low-land area in the lower Atrai basin in the Northwestern region of Bangladesh, spread across the districts of Natore, Pabna, and Sirajganj.[9] The area of the Beel is approximately 272,051ha, with an average depth of 2m and a maximum depth of 4m.[44] The banks of the Beel are covered with *Kash, Babla, Nol, Dhol Kolmi, Simul, Date Palm*[44], etc.

139. Various channels connect a series of Beel and form a water body called Chalon Beel when there is a flood in the Jamuna River in the monsoon season. However, it dries out during winter, and water patches can be observed in the central zone. This Beel was earlier attracting the aquatic birds, ducks, geese, and shorebirds in the winter, but now only fewer migrant waterfowl visit the area[9].

140. **It is listed in the Bio-ecological zones but has no protected area status[44].** Error! Bookmark not defined. **The percentage-wise data on species show that birds (31%) are recorded as the highest in this bioecological zone, followed by amphibians (29%), reptiles (21%), threatened animals (15%), and mammals (14%).[44] The literature review shows that 34 species of reptiles, including ten (10) turtles and tortoises, nine lizards, and various snake species, are found in this bioecological zone. There are also 27 species of mammals from 12 families.**[44]

141. No endangered species are found during the survey. There are no sensitive habitats, protected areas or critical natural habitats close to the ROW that would be directly or indirectly affected.

142. Roadside flora, homestead flora, agricultural flora, and aquatic flora are discussed briefly in the following subsections. But about 6-8 km east of the Kaliganj and Barobazar area, the natural Baor are named 'Mohishatir/Marajat/Bhokbara Baor,' and the largest Banyan tree of Bangladesh is located.

[42] https://www.bbc.com/news/world-asia-52734259
[43] Adopted from PID for Resilience, Entrepreneurship, and Livelihood Improvement Project (P175820) , Original source: World Bank (2018) Groundswell: Preparing for Internal Climate Migration.
[44] Adopted from Chalan Beel - Wikipedia, original source Bio-ecological zones of Bangladesh, Nishat, et.al

3.4 SOCIOECONOMIC CONDITIONS

143. The social data focus on socioeconomic and cultural features that differentiate various social groups in the Program area. The concerned highways are very important and strategic as it has been linked with three land ports, including (i) Benapol, (ii) Bhomra, (iii) Darshana, and extensive road networks with different districts and upazilas. The findings are based on secondary data from the Census and other Government documents.

3.4.1 POPULATION DYNAMICS

144. The country's population has doubled since the first census was conducted in 1974. About 169.83 million of the country's total population was reported by the Bangladesh Bureau of Statistics (BBS) census data in 2022. The country's population growth rate is declining[45] (refer to Figure 3-3). Most of the population is practicing Islam (91.04%), followed by Hindus (7.94%), Buddhists (0.61%), Christians (0.3%), and others (0.12%).

Figure 3-3 Country's Population Growth Rate 1974-2022

145. The SESA program area is comprised of ten (10) districts, namely Shirajgonj, Natore and Pabna, Kushtia, Mehrpur, Chuadanga, Jhenaidha, Magura, Jesshore, and Satkhira. The total population in the program area is 20,520,18, approximately 12% of the country's total population. There is 49.51% of the male population (10,158,809) and 50.59% of the female population (10,360,024). The male-to-female ratio in the program area is 97.6%. The total area is 19257.9 sq. km,. The average population density is 928.89 persons per sq. km. Sirajgonj is a densely populated district, followed by Kushtia, Pabna, Jashore, etc. The average household size in the program area is 3.86. The population data of the districts is summarized in [45].

Table 3-4: Population Dynamics in the Program area

District	Households	Population by Sex				Sex Ratio in%	Population density per sq. Km
		Male	Female	Transgender	Total		
1	2	3	4	6	7= (3+4+6)	6=(3/4x100)	7
Chuadanga	326,718	607,558	626,245	93	1,233,896	97.02	1,051
Jashore	798,057	1,522,763	1,549,146	195	3,072,104	98.30	1180
Jhenaidah	519,296	995,544	1,009,712	148	2,005,404	98.60	1,021
Kushtia	565,343	1,055,681	1,093,549	124	2,149,354	96.54	1,336
Magura	254,154	508,940	523,988	48	1,032,976	97.13	994
Meherpur	195,323	340,025	365,165	39	705,229	93.12	951
Satkhira	566,752	1,093,119	1,102,656	140	2,195,915	99.14	574
Natore	501,957	919,696	939,633	116	1,859,445	97.88	979
Pabna	753,557	1,449,989	1,459,013	165	2,909,167	99.38	1,225
Sirajganj	842,314	1,665,494	1,690,917	282	3,356,693	98.50	1428
Total	5,323,471	10,158,809	10,360,024	1,350	20,520,183	976	1074

Source: Population and Housing Census 2022 (BBS 2022)

[45] *Population and Housing Census 2022 (BBS 2022)*

3.4.2 DISTRIBUTION OF RURAL AND URBAN POPULATIONS

The distribution of the population data indicates that about 68.49% of the rural population and 31.51% of the urban population are being covered in the program area of the program. It indicates the scope and potential of the program's development that will benefit the rural areas.

3.4.3 ETHNIC MINORITY POPULATION

146. The total ethnic minority population (Ref **Figure 3-4: Ethnic and Cultural Biodiversity Map**[46]) in the country is approximately 1% of the total population. It is reported that the ethnic minority, including tribal people, lives in eastern frontier regions near Myanmar and Assam (India) and hilly regions of Sylhet, Mymenshingh, Rangmati, Khagrachari, and Bandarban[47]. There are about 12 significant tribes living in the Chittagong Hill Tracks[47]. The total ethnic minority in the program area is 0.29% of the total population in the program area. The highest (0.83%) and the lowest (0.02%) percentages of ethnic minority populations were found in Magura and Meherpur districts, respectively. The ethnic minority groups found during the site visits are Bede, Mahato, Santhals, Urao, etc. These minority group has a diversity of ethnic and cultural identity with their distinctive religions, traditions, rituals, customs and beliefs as discussed in the following subsection 3.4.4.

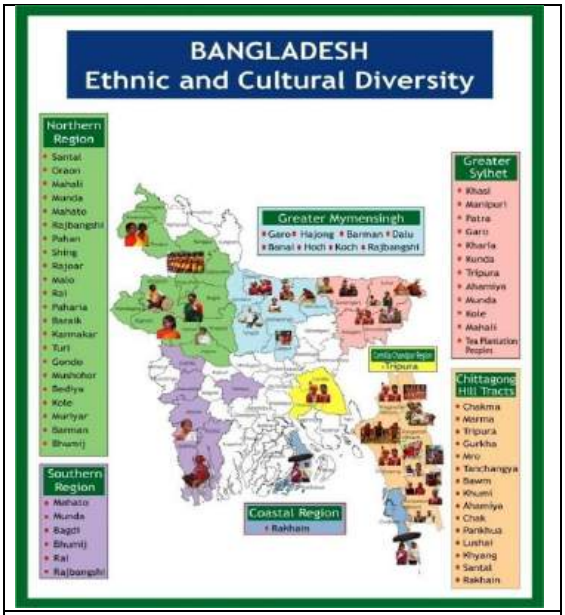


Figure 3-4: Ethnic and Cultural Biodiversity Map

3.4.4 FOLK CULTURE IN THE AREA

147. During the literature review and consultation/site visit, the notable folk culture in the program area is as follows:

► Notable folk songs of the program area include Madarer song, Padmapuran or Manasar song (on Manasa Puja), Sona Pirer or Mangar song (in the month of Poush), Yogir song, Murshidi song, etc. The indigenous community of the program area district observes various festivals such as Karam Festival (to satisfy nature), Pungtadi Festival, Saharai Festival (expecting good harvest), Danda Katna Festival (expecting peace and prosperity in the family), and traditional songs and dances during Fagua Festival (on Dol Purnima). Besides, the people of the district arrange various festivals on the occasions of marriage, plantation, and harvest times.

► Popular folk games and sports of the program area include boat race, bow and arrow game, Lari Lathi game, Dang-guti, wrestling, tug of war, Jor-bijor, Panch Guti, swimming, Bagarjani, Ban Bandhi, Gollachhut, Ha-du-du, Kanamachhi, Kumir-Danga, Snake charming, Monkey game, Bou Chhi, Ekka Dokka, Kite flying, etc

► Folk songs such as Jari, Sari, Murshidi, Bhatiali, etc are very popular in the program area. Folk games and sports prevalent in the area include bow and arrow game, Lathikhela (game played with sticks), boat race, etc. urshidi, Marfati, Baul songs, Jatra, Bhab song, Bhasan song, Kavigan, songs of Manik Pir, peasants' song, Gazir Geet, etc are notable

► Kothabari Than Fort (Kalaroa), Sonabaria Math (Kalaroa), Pancha Mandir (Annapunna Mandir, Kali Mandir, Shiva Mandir, Kal Bhairab Mandir and Radha Govinda Mandir), Jahajghata Naval Fort (Shyamnagar), Mazar of Hazrat Aziz (R).

► The annual Baruni Mela in Mehrpur district is celebrated in honor of the Hindu god, Shiva.

3.4.5 EDUCATION AND LITERACY RATE

148. Data on education and literacy rates indicates that the government's effort to bring all children into the education system yields fruitful results45. The national literacy rate increased by 17% between the two census years of 2011 and 2022, from 74.66% in 2022 to 57.11% in 2011.

149. The country's education system is divided into four levels: primary (from grades 1 to 5), Secondary (from grades 6 to 10), higher secondary (from grades 11 to 12), and Tertiary. Private institutions provide English-medium education and offer 'O' level and 'A' level courses. Madrasa provides religious education. Bangla is the mother tongue. There are universities, engineering, and medical colleges in Jashore, Rajshahi, Kushtia, Satkhira, etc.

[46] Map is adopted from Mapping BRAC Development Activities. Relating To Indigenous Peoples, Original Source: Source: Kapaeeng Foundation and Oxfam
[47] Minorities in Bangladesh: Biharis, Mru, Tribal People and An Insurgency that Began with a Dam | Facts and Details

150. The average literacy rate in the program area is 71.93%, slightly lower than the national level (74.66%). The literacy among the male population (73.90%) is reported to be higher than that of the female population (70.03%), whereas 55.15% of the transgender (Hijra) population is also literate. It is to be noted that the gap in the literacy rate of approximately 4% between males and females has improved.

151. Jashore has the highest literacy rate (76.96%), followed by Satkhira (75.23%), Jhenaidah (72.7%), Magura (72.1%), Natore (71.43%), Chudanga (71.43%), Pabna (70.38%), Sirajgaon (69.37%), Kushtia (68.88%), and Mehrpur (68.08%).

3.4.6 LABOR-FORCE AND LIVELIHOOD

152. The government has set 14 years as the legal age for employment in the labor force. According to the Bangladesh Bureau of Statistics (BBS), about 43.23% of the country's total labor force is available. Of the total, 74.84% is rural population, whereas 25.16% is urban, and the female contribution is 35.32%.

153. Since the 2022 census data does not present the district-wise data on the labor force, past census data (2011) has been included in the study to establish the baseline of data available in the program area. The 2011 census data shows that agriculture (55% to 69%) is the primary source of income, followed by commerce (10% to 18%), the construction sector (1% to 1.6%), and others (6% to 18%) in the program area.

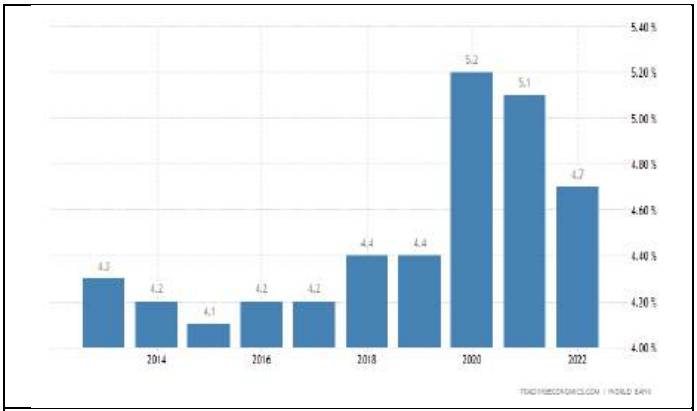


Figure 3-5: Latest Labor Projection

154. According to the latest projection by the International Labor Organization, the unemployment rate of 4.7% has decreased from last year to 2022. However, as seen from **Figure 3-5**[48], the unemployment rate is higher than in the pre-pandemic period, 2019. It is projected that the unemployment rate will be 4.2% in 2024[48]**Error! Bookmark not defined.**. The unemployment rate measures the number of people actively looking for a job as a percentage of the labor force in the country.[48] **Error! Bookmark not defined.**

155. **Local people28 do not have secure livelihoods, especially smallholders and marginal groups that engage in cultivation, fishing, and aquaculture.** Many people work as laborers for low wages and thus should adopt alternative livelihood options such as off-farm and non-farm activities.

156. Further, the dependency ratio is around 48.5% in the two divisions, namely Khulna and Rajshahi, where the program area districts are located. The dependency ratio in urban areas is comparatively lower than in rural areas. The dependency ratio measures the number of dependents aged 0-14 years and 65 plus compared to the working-age population (15-64 years).

3.4.7 HEALTH, HYGIENE AND SANITATION

157. Bangladesh has significantly improved the country's health, hygiene, and sanitation even though waterborne diseases such as typhoid are present. However, diarrhoea[49] is the most prevalent water-borne disease, including typhoid, dysentery, cholera, and meningitis. The water supply in the program area is deep/shallow tubewell.

158. Over 55% of the population uses total Flushing/Pouring Water, followed by pit latrines with slabs and unsafe disposal with flushing and pouring water. Less than 2% of the population uses open defecation in the Rajshahi division, whereas 0.34% in the Khulna division. The primary power supply source is the national grid, followed by solar.

3.4.8 WASTE MANAGEMENT

159. The program area faces significant waste (liquid/solid) management challenges in urban/industrial and rural areas without proper collection transportation and disposal systems. Public awareness of waste management and substantial waste is also lacking. Littering of waste is noted during visits to urban and rural areas.

[48] Bangladesh Unemployment Rate (tradingeconomics.com)
[49] https://bd.pureitwater.com/articles/most-common-waterborne-diseases-in-bangladesh

160. Solid waste is mainly generated from street sweeping, domestic waste, and commercial markets in urban areas. Growth centers in rural areas generate biologically degradable waste that can be reutilized by converting it into compost. However, proper waste collection and disposal facilities are required.

3.4.9 ECONOMIC SITUATION OF THE PROGRAM AREA

161. **The economy of study is predominantly agricultural**. Of the total 591 thousand holdings of the district, 63.38% are farms that produce local and HYV paddy, wheat, jute, vegetables, spices, pulses, oilseeds, sugarcane, and others. Various fruits like mango, banana, Jackfruit, guava, coconut betel nut, etc., are grown. Fish of different varieties abound in the district. During rainy seasons, fish are caught from rivers, tributaries, channels, creeks, and paddy fields. Besides crops, livestock and fishery are other sources of household income.

162. Non-agricultural activities include fish cultivation, poultry farms, handicrafts, small-scale manufacturing (both domestic and non-domestic), construction, repair, transportation, and community services also play an essential role in the economy of the program area. Expanding of non-farm rural enterprises and services has opened new sources of rural income and employment[50]. The growth of income from non-farm sources and the rapid inflow of foreign remittances have supported the increase in demand for various activities in construction, housing, trade, transport, schooling, health, and other services.

3.4.9.1 AGRICULTURE

163. The government has prepared a Strategic Plan for Agriculture and Rural Statistics (SPARS) to improve the agricultural and rural sectors. Agriculture primarily contributes to the country's sustained food, nutrition, and livelihood security.[51]

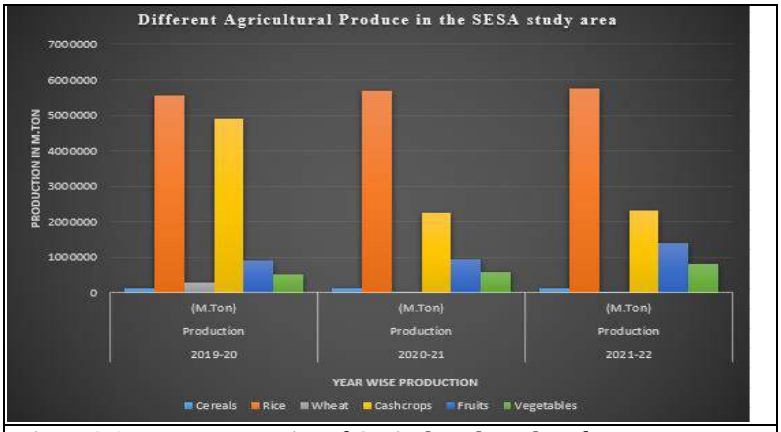


Figure 3-6: Data Presentation of Agricultural Produce from Program area

164. Also evident from the census 2022 is that most of the population lives in rural areas, and agriculture is the primary source of livelihood generation activity in the country and the program area. Thus, the last three years' agricultural data has been analyzed to study the pattern of agricultural products, including cereal, rice, wheat, cash crops, fruits, and vegetables. As shown in **Figure 3-6**, the total production of agricultural produce has increased from 2021-2022 by approximately 9% but is less than the pre-pandemic level, i.e., 2019-2020. The production of vegetables, fruits, and rice increased from 2021 to 2022. The program will provide better connectivity and efficient logistics to market agricultural products, further enhancing agriculture production in the program area and boosting the economy. Ultimately, the western region will benefit.

3.4.9.2 FISHING AND SHRIMP FARMING

165. Although agriculture remains one of the primary sources of income generation in rural areas, in recent years, there has been a transformation from cereals to protein-based food production, including livestock, fish and shrimp farming, poultry, fruits, etc. More than twenty (20) fish species, including shrimps and prawns, are available in the program area.[52] There is an increase in prominent species production during the period from 2019-20 to 2021-22, such as Carp (1.9%), Hilsa (2.68%), and Bombay Duck (1.66%). After Cyclone Alia in 2009, rice cultivation became very difficult for sustenance in the country due to increased salinity due to the submergence of the area. The farmers switched to shrimp farming, one of Bangladesh's most significant contributors to exportable merchandise.[50],[53]. It is to be noted from the agricultural statistical handbook that shrimp production increased (4.4%) has increased from 2019-20 to 2021-22 in the program area.5233 Within the program area, Shyamnagar Upazila of Satkhira District is one of the country's largest shrimp production areas.

[50] Eighth Five-Year Plan (July 2020-June 2025) of Bangladesh, General Economics Division (GED)
[51] Bangladesh Strategic Plan on Agricultural and Rural Statistics (2016-2030)
[52] Bangladesh Agricultural Yearbook of 2020 to 2022
[53] https://seafoodnetworkbd.com/current-status-of-shrimp-farming-in-satkhira-khulna

3.4.9.3 TOURISM

166. Tourism in the SW region is centered on the Sundarbans and historical, archaeological, and religious sites.[Error! Bookmark not defined.] The busiest months for tourism are November to February (with warm sunny days and cooler nights), although tourists also visit the country during the rainy season.28 In 2012, Bangladesh received about 600,000 tourists. In 2013, tourism accounted for 4.4% of GDP. [28]The country faces challenges in attracting tourists because of the poor maintenance and management of tourist sites. Several water bodies, called Baors and Chalon Beel, may attract tourists if the village roads connecting them are improved during Phases 1, 3, and 4 of this program.

3.4.9.4 POVERTY TRENDS AND SITUATION

167. Bangladesh has achieved a significant stride in poverty alleviation through concerted efforts by government development activities. According to the preliminary survey of the Household Income and Expenditure Survey,2022, the current poverty rate is 18.7 percent, and the extreme poverty rate is 5.6 percent. It is reported that the total upper poverty lines are 16.7 in the Rajshahi and 14.8 in the Khulna divisions. The poverty among the upper and lower lines in rural areas is higher than in urban areas of the Rajshahi and Khulna divisions, falling within the program area. The poverty rate among the lower levels is higher in Rajshahi than in Khulna.

3.4.10 RISK OF HUMAN TRAFFICKING

168. The most common forms of human trafficking in Bangladesh are, among others, trafficking for sexual exploitation, forced prostitution, domestic servitude, forced labor, and other exploitations. It is not only a problem for Bangladesh but also for the rest of the world. Bangladesh, along with other regional and international partners, is making continuous efforts to eliminate this vice. Human trafficking takes place both within the border and beyond the border. During the consultations, it is learned that locals are aware of such issues and risks. They also informed that human trafficking has been reduced considerably with time. Since the program will improve the quality of life in the area through increased economic activities, it will help reduce human trafficking. However, enforcement of patrolling along the check post/program interventions needs to be increased for further reduction in such cases.

3.5 INFRASTRUCTURE AND INDUSTRIES

169. The government has recognized the necessity of the country's infrastructure development, significantly improving the road transport network. The road network includes National Highways, Regional Roads, Zilla Roads, Upazilla Roads, Village Roads A, and Village Roads-B[33].

170. **National Highway, Regional Roads, and Zilla Roads:** The major national highways (N1 through N8) are the artillery road network and connect the country's capital with the divisional headquarter/s (HQ/s), seaports, land ports, or Asian highways. The total length of national highways is 3570km in the country. Three national highways traverse the program area, namely N5, N6 &N7. The branches of these national highways such as N502, N504, N507,513 N6, N602, N604, N7, N702, N703, N704, N705, N706, N708&N713 are within the program area. The efficiency of these highways has been reduced due to poor geometrics and frequent congestion due to haats, bazaars, and small towns.

171. **Regional roads connect the district HQ/s, main rivers, land ports, or with each other but are** not connected by the national highways RegionalhighwaysareN450, R451, R548, R601, R603, R604, R710, R713, R720, R745

172. **Zilla roads** connect district HQ/s with Upzilla Head Quarter/s or one Upzilla HQ/s to another by a single primary connection with the national or regional highway through the shortest distance or route. The total length of Zilla Road is 13,678 Km. in the country. Of the total length, about 1275km of zilla roads are traversing within the program area. These are pucca roads.

173. **Upazilla Roads** connects the Upzilla HQ/s with the growth centers and another growth center by a single primary connection. These roads also connect growth centers to the nearest NH, RH, or Zilla Road**.** A total of 5586km of Upazila road traverses the program area. More than 70% of the roads are pucca, and the rest, 30%, are Katcha. These roads are maintained by LGED or Local Government Institutions (LGI).

174. **Union Roads** connects Union HQ/s with Upazilla HQ/s, growth centers, local markets, or each other. Of the total Union roads, Katcha (3911km) and Pucca roads (2107km) are within the program area, providing the connection with Upazilla/Union Road or growth centers. These roads are maintained by LGED or Local Government Institutions (LGI).

175. **Village Roads** are divided into two categories, namely Village-A-Road and Village-B-Road. The road connects villages with union HQ/s local markets, farms, and ghats, or with each other, called Village-A-Road,

whereas the streets within the villages are named Village-B-Roads. Of the total village roads (22541 km), 53.55% are Village-A roads, 46.44% are Village-B roads. Of the village-A roads, 12% are pucca, and 88% are Katcha. Most of the Village-B (about 98%) roads are Katcha. These roads are maintained by LGED or Local Government Institutions (LGI).

176. Growth Center Markets is pivotal in rural and urban linkages in Bangladesh. (U. Barua et al.).[54] These GCMs are a focal point in rural areas or villages for economic, social, and cultural activities. The agricultural produce reaches growth centers, and from there onwards, it goes to urban retailers through wholesalers or farmer sellers. There are about 566 growth centers within the program area. These are well connected with the Katcha/Pucca roads, belonging to Union, Upazila, or village. The condition of GCM is that about 32 villages GC are to be developed in phase 1 on a priority basis. The role of GCMs is presented in Figure 3-7 **[54].**

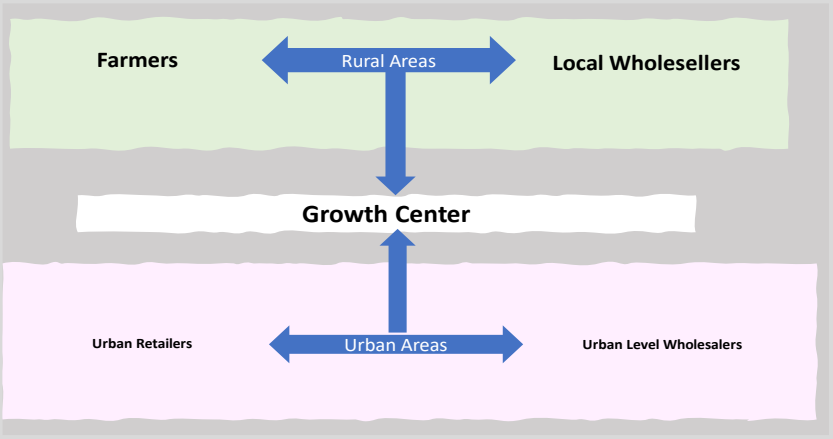


Figure 3-7: Role of GCM

177. Katcha roads become muddy during the monsoon season. During the field visit, it was learned that the national highway roads are pucca, but geometrics are not good.

178. Other Roads: There are Upazila Roads (Pucca and Kachcha), Union Road (Pucca and Kachcha), and Village Roads (mostly Kachcha).

179. Under this program, the combination of national highways, regional roads, and Zilla road is being developed through the World Bank as a western corridor of 260 km length by connecting Jessore – Jhenaidah – Jessore – Bonpara - Hatikumrul and Bhomra – Navaron – Satkhira corridors, respectively. Of the total 150km, the Jhenaidah -Bonpara -Kushtia - Hatikumrul road is financed in parallel by AIIB. It is to be noted that the section of 26km between Jessore and Benapole Highway has been proposed to be undertaken in another program. However, the Chachra intersection has been included in Phase 1 with additional funding. This program will support the government's vision of becoming a high-income country by 2041.

3.6 VALUED ENVIRONMENTAL AND SOCIAL COMPONENT

3.6.1 ENVIRONMENTAL COMPONENT

180. Dead arms of rivers such as the Ganges are formed due to changes in river meandering and subsequent siltation ranges. There are more than 14 Boars in the program area. These boars are oxbow-shaped and between 500m and a few km long. Baors are more stagnant and generally have water throughout the year. They are rich sources of aquatic ecology. Marjat Baor in the Jhenaidah district is famous for local tourism. These baor supports the local economy through fishing and is used for irrigation purposes during summer to grow rice.

181. Chalon Beel in Sirajganj, Natore, and Pabna districts is along the Hatikumrul to Kushtia and LGED roads. It is a substantial inland depression and marshy, a rich source of flora and fauna. Forty-seven rivers and other waterways flow into the Chalan Beel. As silt builds up in the beel, its size is reduced. This beel is in a bio-ecological zone with

[54] Rural-Urban Linkage through Growth Centers in Bangladesh, ISSN: 1998-2003, Volume: 10, Issue: 4, Page: 314-320, January - February, 2015

no protected area. Different species of birds, amphibians, reptiles, threatened animals, and mammals are found in the area.44

182. Shilaidah Kuthibari is a tourist destination located seven (7) Kilometres north of Kushtia on the banks of Padma in Kumarkhali Upazila of Kushtia District. This Kuthibari is related to the famous laureate Rabindranath Tagore. Besides this, there are several mosques, temples, etc.

3.6.2 SOCIAL COMPONENT

183. As discussed above, in 3.4.4, notable folk songs, festivals, games, and sports are valuable social components. Indeed, cultural elements such as folk songs, festivals, games, and sports are very important social aspects that enhance Bangladesh's cultural identity and social cohesion. They are vital in maintaining the country's diverse legacy and customs.

3.6.3 FINDINGS OF KEY ENVIRONMENTAL AND SOCIAL ISSUES AND RISKS

The analysis findings of baseline environmental and social conditions are listed below in .

Table 3-5: Key Environmental and Social Issues Risks Identified During Baseline Study

S. No	Attributes	Issues and Risks
1	2	3
	Environmental	
1	Air Pollution	• PM10, PM2.5 emissions from stacks, and CO emissions from the vehicles' movement will be sources of pollution. • Pollution emissions mainly from poor quality roads, frequent congestion, old and poorly maintained vehicles, industrial activity (brick kiln, etc.), and the construction industry • Expansion of urban areas
2	Noise Pollution	• Noise Pollution from vehicle movement on the national highway • Unauthorized high noise-generating vehicles. • Urbanization of rural areas. • Increase commercial activities.
3	Waste Generation	• Industrialization, growth centers, urbanization, and economic development. • Littering due to improper collection, disposal, and treatment of solid waste. • Stagnation of liquid waste near the GCM in absence of drains • Clogging of drains due to improper drainage. • Changed living style and increased use of plastic in rural areas. • Hazardous waste management (HWM) facilities almost nil
4	Water Pollution	• Discharge of untreated and insufficiently treated municipal sewage, Industrial effluents • Construction activities near the water bodies • Ingress of saline water due to water logging or development of haphazard shrimp/aquacultural farms • Land Use Planning
5	Water logging	• Cross-drainage structures of adequate capacity • Seasonal flooding in the Chalon Beel area in the districts of Sirajganj and Pabna. Waterlogging is in the Satkhira district.
6	Climate Change and Resilient	• Construction of cross-drainage structures/bridges at critical locations with adequate capacity to meet the requirement. • Road networking with appropriate top level to prevent submergence.
7	Carbon Emissions	• Old and poorly maintained heavy vehicles or lorries, brick kilns, cooking practices in the rural area
8	Land use Pattern	• Land use changes from agricultural to shrimp or aquaculture cultivation. • Limited availability of Land
19	Soil Erosion	• river protection works and flooding • Tree cutting
20	Loss of Habitat	• Industrialization, expansion of road network

Table 3-5: Key Environmental and Social Issues Risks Identified During Baseline Study

S. No	Attributes	Issues and Risks
1	2	3
21	Ecology and Biodiversity	• Loss of trees • Untreated discharge of effluents and sewage to water bodies, • Littering of solid waste, including plastic waste
23	Institutions	• There is a requirement of institutional strengthening at the HQ level and district level of implementing agencies
	Social	
1	Land Acquisition	• Loss of structures
2		• Loss of livelihoods
3		• Land records are old
4		• Small ethnic groups and marginalized
5	Land disputes	• Old land records, land grabbing due to increased shrimp/aquacultural cultivation. • Expanding infrastructure programs' intervention requires additional land, resulting in the diversion of agricultural land and sometimes leading to conflicts between developers and farmers who rely on the land for their livelihoods. • Land use planning.
6	Traditional Mode of Transport	• Noise pollution and safety issues • Oil and grease leaks cause of soil pollution and water pollution
7	Social Dynamics and well being	• Lack of connectivity and social supporting infrastructure
8	Migration	• Out-migration (mainly poor people) is common in the program area, especially from coastal areas. • Disasters, indebtedness, dispossession/land grabbing, lack of livelihood options, etc., drive much. • Poor people move to unhealthy urban slums and become further marginalized in an uneven job market. • Educated people migrate to urban areas/overseas for employment. Migrant remittances depend on family incomes and contribute to the national economy.
9	Health and Sanitation	• Waste Collection, disposal, treatment, and improper drainage systems cause vector-borne disease carriers. • Lack of Environmental, Health, and social safeguards policy at the workplace • limited access to health facilitiesPublic awareness • Non-availability of proper sanitation facilities at growth centers, bus stops, etc. • Use of conventional fuel in rural areas for cooking or another household chore
10	Poverty and Food Security	• Insecure Wage
11	Education	• The dropout rate is higher. • Limited resources and access to higher education facilities.
12	Cultural Shock	• Small ethnic groups are landless and marginalized.
14	Gender Equality and Inclusiveness	• Limited availability of facilities for women at workplaces or growth centers. • Women face socio-political exclusion in decision-making processes at home and in society. • Lower wages for women workers • Lower literacy rate among women • Safety issues due to poor transportation network.
	Economical	
1	Growth	• Connectivity and logistics support
2	Industry and Export	• Industrialization will cause poor air quality, water quality waste generation, and noise pollution. • Requirement of Sanitary landfills and common effluent treatment for disposal of liquid and solid.
3	Employment	• Migration of skilled labor to Middle Eastern countries.
4	Infrastructure, transport, connectivity, and communication	• Poor geometrics and inadequate infrastructure to cater to future demand. • Trafficking issues

Table 3-5: Key Environmental and Social Issues Risks Identified During Baseline Study

S. No	Attributes	Issues and Risks
1	2	3
5	Agriculture	• Low availability of agricultural labor due to shrimp/aquacultural cultivation. • Land disputes and low available Agro-logistic support.
6	Tourism	• The program area has the potential to develop tourism..

4 STAKEHOLDERS' ENGAGEMENT AND PUBLIC CONSULTATIONS

184. The Stakeholder Engagement and Information Disclosure (SEID) process is a powerful tool that empowers stakeholders to actively participate in the project design, planning, and implementation. In this Strategic Environmental and Social Assessment (SESA), stakeholders are given a platform to listen to program-related relevant information from the facilitators, voice their concerns, and provide valuable suggestions. The ESSs of funding agencies (ESS10 of WB and ESS1 of AIIB) emphasize the importance of open and transparent engagement with project stakeholders through SEID.

185. The objectives of conducting stakeholders' consultation meetings, Focus Group Discussions (FGDs), and Key Informant Interviews (KIIs) to explain the program intervention and the purpose of the Strategic Environmental and Social Assessment (SESA) study are explained to the participant. It is also briefed that these are not just to disseminate relevant program information but also to incorporate stakeholders' views in the decision-making process. This ensures that their views on the environmental and social risks and impacts of various investments included in this program are heard and considered.[55] to the affected persons, interested parties, and stakeholders in conformity with the ToR and to obtain their views on the environmental and social risks and impacts of various investments included in this program.

4.1 PUBLIC PARTICIPATION PROCESS

186. The Stakeholders' Consultations emphasized inclusivity through various methods and techniques. Diverse participants, including local individuals, officials, elders, teachers, farmers, vulnerable groups, ethnic minorities, and women, were engaged to understand the program area's cultural values and environmental and social risks. The program objective and aim briefly explained to the stakeholders. The different components and implementation of the same in phased manner were informed to them. The role of implementing and funding agencies were discussed. The program area superimposed with the proposed Western Corridor, which was prepared using ArcGIS tool, was shown to them. Environmental and Social risks and impacts were discussed with them. Their opinion on the program implementation was also sought during the open discussion with the stakeholders. Separate gender issue checklists were used during the Focus Group Discussions (FGDs) and Key Informant Interviews (KIIs).

187.

4.1.1 IDENTIFICATION OF STAKEHOLDERS

188. The key stakeholders of this study encompass a wide range of individuals and groups, including the project-affected persons (PAPs) and beneficiaries, owners of commercial and business enterprises, farmers, businessmen, vendors, small ethnic minority communities, wage earners, including daily wage earners, marginal workers, poor, , vulnerable persons and groups, women, and women's groups, underprivileged groups, drivers, and transport workers' group, the GCM market vendors, users and local contractor society workers, and feeder road users.

189. Other stakeholders of the project include RHD, LGED, District Administration (Deputy Commissioner), District Forest Office (DFO), Department of Environment (DoE), Regulatory Bodies, Highway Traffic Police**,** BWDB,Upazila Nirbahi Officer (UNO), Local Government Institutions (LGIS)- Upazila Parishad, UP Chairman, and Member, Non-Government/Civil Society Organizations (NGOs), Academic and Research Institutions, Business/Industry, Department of Agricultural Extension (DAE), Utility Services providers such as PBS, Rural Electrification Board (REB), and international stakeholders (E.G., WB and AIIB) as the financing institutions., etc. These stakeholders are listed in Error! Reference source not found.**.**

Table 4-1: Stakeholders' Mapping for SESA Study of the WeCARE Program Interventions

Decision maker stakeholder	Roles of relevant stakeholder(s)
RHD	► RHD is responsible for constructing and maintaining highways and bridges in the projects under the WeCARE Program (Phases 1 and 3). ► Project steering committee (PSC), project management unit (PMU), project

[55] Participants in SCMs, FGDs, and KIIs were informed about and also facilitated to discuss (i) positive and negative environmental and social impacts and risks associated with various investments, as well as other aspects presented in the ToR (ref. subsection 3.3.1 of the ToR).

Table 4-1: Stakeholders' Mapping for SESA Study of the WeCARE Program Interventions

Decision maker stakeholder	Roles of relevant stakeholder(s)
	implementation unit (PIU) at headquarters and project level RHD field offices play significant roles in the preparation and implementation of the projects under the WeCARE Program (Phases 1 and 3) through the Liaison with central government and other government offices.
LGED	▶ LGED is entrusted with establishing, managing, and maintaining transport infrastructures in rural areas of Bangladesh, including the ten WeCARE Program districts. ▶ LGED provides technical support to the rural and urban local government institutions (LGIs).
Department of Environment (DOE)	▶ Two divisional DoE offices, Khulna, Rajshahi, and relevant district-level DoE offices, play specific roles in preparing and implementing the WeCARE interventions sustainably.
Department of Forest (DOF)	▶ Operates at the national and local levels, with no direct influence on activities at the program interventions.
District Administration (DC/ADC (Rev./LA/ADC record room)	▶ As executive head of the district, each DC of the ten WeCARE Program districts plays significant roles in land acquisition and designs, prepares, and implements the WeCARE Program. ▶ District Council (Zila Parishad) Chairman and Chief Executive (an officer ranked Deputy Secretary with the assistance of the concerned staff in the ten WeCARE Program districts look after the overall development activities under the WeCARE Program (Phases 1, 2, 3, and 4).
Regulatory bodies (Highway Police and Traffic Police)	▶ Ensure safe and secure highways to reduce traffic accidents and save human lives, ▶ Remove obstacles to facilitate uninterrupted traffic flow, ▶ Create awareness among the drivers, helpers, conductors, and road users, ▶ Enhance the sense of security among highway and road users, ▶ Enforce law with integrity, courtesy, and the highest standard of professionalism, ▶ The Chief of Highway Police is entrusted with (i) public safety and discipline, (ii) criminal investigation, (iii) community policing, and traffic management. ▶ Traffic police officers are skilled who (i) control accidents, (ii) enforce traffic regulations, (iii) warn people about road dangers, (iv) help keep roads and walkways free of congestion so that regular traffic, emergency vehicles, and pedestrians can move safely.
Department of Agriculture Extension	▶ DAE has responsibilities of (i) policy formulation, (2) planning, (3) monitoring, and (4) administration for the projects under RHD and LGED WeCARE Program (Phases 1, 2, 3, and 4). ▶ DAE contributes to promoting people's livelihood, employment, and GDP.
BWDB	▶ BWDB is responsible for surface water and ground water management to possible in the projects under RHD and LGED WeCARE Program (Phases 1, 2, 3 and 4). ▶ Operates at both national and local levels and has no direct influence on activities at the project level.
PBS (Palli Biddyut Samity) Power Development Board (PDB)	▶ PBS is responsible for providing electricity in rural areas across the country. It works under the Bangladesh Rural Electrification Board. ▶ PDB, Bangladesh, is another utility service provider in the country and is responsible for electricity generation and distribution mainly in the urban areas. ▶
Upazila Nirbahi Officer (UNO)	The Upazila Nirbahi Officer's Office's important activity is implementing all kinds of central government decisions and coordinating the different departments. Besides, he has overseen general, revenue, criminal, and development administration. ▶ Supervision of law and order and development activities, ▶ Supervision and implementation of government's development work, ▶ Take pre-existing and next necessary action to deal with various natural disasters, ▶ Communication system development, ▶ Implementation of various development projects through Union Parishad, ▶ Arrangement of helpless people in various shelters, ▶ Distribution of disaster relief material and implementation of VGD, VGF, and over-poor employment program, ▶ Roads, bridges, culverts, inlet-making and renovation, ▶ Manage mobile court according to conventional laws,

Table 4-1: Stakeholders' Mapping for SESA Study of the WeCARE Program Interventions		
Decision maker stakeholder		**Roles of relevant stakeholder(s)**
		▶ Maintain social harmony, ▶ Agricultural development, ▶ Supervising Upazila Development Fund and Revenue Fund, ▶ Assisting the decision of the Upazila Parishad and implementing it, ▶ Motivating people to overcome social problems (dowry, child marriage), ▶ Khas Land Settlement Process and ▶ Vested property management
Local Government	Upazila Parishad	Upazila Parishad Act According to the second schedule of 1998, the function of the Upazila Parishad are as follows: ▶ To make 5-year and various term development plans. ▶ To implement the programs of various government departments handed over to the council and ▶ To supervise and coordinate the activities of that department.
	Pouroshava (Mayor or Councilor)	▶ Pouroshava, also known as municipal corporations or municipalities, plays a crucial role vide Local Government (Pouroshava) Act, 2009 in town planning and development, ▶ Provides various services related to public health and sanitation, water supply, and waste (Liquid/solid) disposal, ▶ Maintenance of public infrastructure and amenities.
	UP Chairman, Members	The chairman of the union parishad plays the central role and focal point of all activities. At the same time, he/she is the administrative head and makes decisions in all activities. The functions with which the Union Parishads are entrusted by law include the following: ▶ Maintenance of law and order and assistance to administration for this purpose, ▶ Adoption and implementation of development schemes in the fields of local economy and society and ▶ Performing administrative and establishment functions.
Non-Government Organizations (NGOs)		▶ Partnerships between NGOs and the local government are crucial to ensure optimal governance at the local level, ▶ NGOs have become essential actors in local development and governance. ▶ NGOs play significant roles in women empowerment, disaster management, and environmental conservation.
Civil Society organizations		▶ Civil society contributes to minimizing corruption in the country by creating awareness among the people about corruption. For example, Transparency International in Bangladesh (TIB) has been working to create a transparent system of governance. ▶ Civil society organizations contribute to development and democratization by delivering basic services, such as primary education, health, water, and sanitation, and providing shelter, counseling, and support services to disadvantaged groups.
Beneficiary		
PAPs		▶ Efforts should be made to consider PAPs not only as the project-affected persons, rather they should also be kindly considered to be beneficiaries of the project through effective and timely implementation of the RAPs in the projects under WeCARE RHD and LGED Program (Phases 1, 2, 3 and 4).
Business/Industry		▶ Businesses and industries in the areas of the projects under WeCARE RHD and LGED Program (Phases 1, 2, 3, and 4) will benefit through their businesses and increased industrial productions due to reduced travel and transportation time.
Farmers		▶ Farmers will benefit through (i) a decrease in post-harvest loss, (ii) purchasing agricultural inputs and other necessities quickly, and (iii) availing increased accessibility to nearby markets
Fishermen		▶ Improved connectivity allows fishermen to transport their catch more effectively for better marketing. ▶ .
Small Ethnic Minority and Vulnerable Community		No direct Influence at the Program intervention level
Service providers/ Workers		
Academic and Research Institutions [Beneficiary]		High credibility with the local community, powerful and highly vocal group. It is well organized and meets regularly, no direct influence in the project level

4.1.2 IDENTIFICATION OF VENUES AND TOOLS USED FOR THE CONSULTATION PROCESS

190. Venues and locations for stakeholders' consultations, including FGDs and KIIs, were selected purposively based on the design team's road map under the WeCARE RHD program and the list of study areas collected from the WeCARE LGED program for the SESA study in the ten (10) program districts of the South-western and Western regions of Bangladesh from December 2022 to August 2024. The locations, venue, date, and time were communicated to the stakeholders through multiple means, including personal contacts, announcements, distribution of leaflets, etc., as presented in Table 4.2. Attendant sheets of participants in consultation meetings, focus group discussions, and Key Informant Interviews are attached as **Annexes 4.1 through 4.5.** Detailed information on the number of total participants, including the men and Women, is given in Error! Reference source not found..

Table 4-2: Venues, Date and Participants of Stakeholders' Consultation Meetings for SESA

Sl. No.	Venue	Date	Participants		
			Male	Female	Total
Total 13. Stakeholder Consultation Meeting (SCM) conducted for SESA					
1.	Solonga UP Auditorium, Shirajgonj	19/12/2022	80	31	111
2.	Muladuli UP Auditorium, Pabna	21/12/2022	95	29	124
3.	Ujan Gram UP, Kustia	21/12/2022	70	19	89
4.	Ghorashal UP, Jhenaidah Sadar, Jhenaidah	31/01/2023	48	2	50
5.	Hazrapur UP, Magura Sadar, Magura distrcit	02/02/2023	24	14	38
6.	Jhenaidah Central Bus Terminal Area(Bantu Mia Villa)	12/4/2022	69	0	69
7.	Moharajpur Union Parishad Auditorium, Jhenaidah	13/4/2022	271	15	286
8.	Kaliganj Poura Auditorium, Kaliganj, Jhenaidah	19/4/2022	289	70	359
9.	Baro Bazar Union Parishad Auditorium, Kaliganj, Jhenaidah	20/4/2022	172	13	185
10.	Nearby Banyan Trees at Jame Mosque, Laodia, Jhenaidah district	27/5/2022	24	0	24
11.	Jame Mosque, Salabhora in Jhenaidahdistrict	27/5/2022	15	0	15
12.	Auditorium, Hoibatpur Union Parishad, Barinagar, Jashore	11/6/2022	48	3	51
13.	Satiyantola Alia Madrasha, 7 No. Churamankathi Bazar, Jashore	12/6/2022	73	7	80
	Sub-total		***1,278***	***203***	***1,481***
Participants of FGD and KIIs					
14.	28 (Twenty-eight) FGDs	December,2022-August 2024	256	181	437
15.	53 (Fifty-three) KIIs	December, 2022-August 2024	27	10	37
Total Participants			***1,561***	***394***	***1,955***

4.1.3 INFORMATION DISCLOSURE, CONSULTATION AND PARTICIPATION:

191. Total- ninety-four (94) events were organized, including thirteen (13) stakeholders' consultations, twenty-eight (28) focus group discussions (FGDs), and fifty-three(53) key informant interviews (KIIs) in the ten (10) program districts between December 2022 and August 2024. A total of 1,955 persons (including 1,561 males and 394 females) participated in stakeholders' consultation meetings, focus group discussions and key informant interviews for the SESA study on the interventions of the WeCARE program.

192. The following issues were discussed during the stakeholders' consultation process: (1) pertinent project and program-related information; (2) project objectives and benefits. (3) land acquisition (LA) and involuntary resettlement for the proposed development and LA process; (4) requirement of relocation of utilities, Common and/or community property resources (CPRs); (5) gender-based violence issues, (6) skill development requirement under livelihood restoration program for the poor and vulnerable households and groups and ethnic minority groups; (7) labor influx during construction phase; (8) removal of trees for development of road sections; (9) safety of the pedestrians; (10) pollution arising from the movement of construction equipment and vehicles; (11) prevalent diseases in the SESA study region(s); (12) human trafficking related problems, and (13) potential scope of development initiatives in the Chalan Beel area.

4.1.4 OUTCOME OF STAKEHOLDER CONSULTATIONS:

193. Discussions on project and program features such as relocation options, compensation, assistance, allowance, resettlement benefits, negative and positive social and environmental impacts due to the project, pedestrian safety, solid waste management, development for the GCMs and connecting roads etc., were held with affected persons, their communities, and local people. Their perception of land acquisition procedures, compensation payment mechanisms, relocation requirements, and strategies, the participants very often expressed their concerns regarding unfair, unjust, and inadequate compensation and potential risks due to accidents because of the project. It is to be noted that regular interaction is to be maintained with the design consultant team and PIU. They should be informed about the stakeholders' feedback on project design. Accordingly, additional measures need to be adopted in the project design. Some examples from the previous phase 1 are below (refer to Annex 4.1 through 4.3).

- The design team added a Vehicle Overpass (VOP) at Tetultola Bazar and a Foot Over Bridge (FOB) at Tetultola mor (square) under the J-J highway improvement project,
- The team also made some adjustments and proposed VOP, Intersection, etc., in the sensitive areas at Alhera mor (square), Jhenaidah,
- They made required adjustments in the design like providing realignment, proposing a toe wall to avoid land acquisition, Curve Improvement and Pedestrian Over Pass (POPs), VOPs, etc., according to PAPs demand in Moharjpur Union, Jhenaidah, and in Baro Bazar area.
- Passenger shades and VOP were proposed in Churamonkathi mor (square). Besides, a flyover in the cantonment area was provided in the design,
- The team proposed adequate facilities for drainage on both sides with cross-drainage structures to minimize flood and water logging in Baro Bazar.
- To improve economic condition of this region GCMs and connecting roads need to be developed
- Proper solid waste management also needed
- Curve improvement in Bhutiargati Chutlia mor (square) and POP at Bishoyekhali in Jhinaidah sadar were proposed in the design. Necessary precaution mitigation measures were suggested in the ESMP. The issues of cutting trees on both sides of these highways under the RHD program were discussed. Participants agreed to removing these trees since they were very old and fragile, which might fall on potential pedestrians due to moderate to high wild wind. They suggested a new plantation against felled-down old trees.
- The participants raised their queries about potential different environmental and social pollutions and impacts such as air pollution, sound pollution, water pollution, loss of livelihood, houses, and various diseases, etc., due to the construction activities,
- They expressed their concerns about various waterborne diseases such as Typhoid, Hepatitis, and also waterlogging, which would be a breeding ground for mosquitoes. They were concerned about releasing fumes during tar making for road construction.
- They raised points on environmental and social risks and impacts on the disadvantaged, marginalized, and vulnerable groups. In response, the E and S consultant and RHD PIU informed the participants that the disadvantaged, marginalized, and vulnerable groups will receive income restoration grants, special assistance of a one-time payment, and training along with their other entitlements and also added that Labor Health and Safety (LHS) will be ensured.
- Participants were concerned that community safety must be ensured as there would be influx of labors during construction and safety for females in the community and female workers (local and migrant) are very important.
- The possible loss of wildlife, aquatic diversity, and biodiversity, including tree replantation, was another major issue raised by the community's conscious people.
- A proper drainage system should be there to stop water logging, which will save crop and stop land sliding.
- Tin-made fences should be in the construction area to ensure safety,
- To guarantee that their fertile topsoil will not be used in the earthwork in the road embankment construction.

4.1.5 KEY INFORMANT INTERVIEWS (KII)

194. KIIs with the stakeholders, including PAPs, social elites, service holders, drivers & rickshaw pullers, businessmen, Union Parishad Chairman, Members and Secretary, women representatives of social and development organizations, management committee members of the affected graveyard, etc., along with the proposed alignment were conducted. KIIs were also carried out with secondary stakeholders such as public administrator, Upazila Nirbahi Officer (UNO), local influential personalities, and other concerned people who would play important roles in the design, planning, and implementation of the project. The opinions, concerns, existing state and situation of and demand for improvement in the study areas, and recommendations were sought from the key informants (as stakeholders), which are as follows, and details (with utility departments) are given in Annex 4.4.

A. Opinion:

► The Upazila Vice Chairman announced that a 6-lane road would be constructed, reducing the distance from Bhomra to Dhaka by 180 km and saving time while providing additional facilities to the north Bengal part.

► **Concerns**

► The Satkhira area, renowned for mango production, faces challenges in exporting enough mango produced while an inadequate storage system exists due to a lack of cold storage. Owners of the mango groves encounter a loss of income to some extent.

► They expressed their concerns regarding pollution along the roads, frequent hydraulic horns, a lack of a sound traffic system, and unskilled or untrained drivers involved in road transportation.

► Rainwater may be logged on the landscape area of the highway until a proper drainage system is included in the design to pass the rainwater.

► There are inadequate health providers, clinics, and hospitals involving sufficient-experienced health providers in the study area.

► Now, the youth lack adequate capacities for being financially independent and contributing to their local economy.

► Salinity intrusion in Kaliganj and Shymnagar upazilas has polluted the groundwater and structures.

►

► Representatives of the nuclear power plant at Ruppur (under construction and supposed to be commissioned soon), Iswardi and Pabna, expressed concerns regarding the existing national highway, which is 1000m from the plant areas and is supposed to be undertaken through AIIB funding. They said the Bangladesh Railway is linked to the Lalon Shaha and Hardinge bridges, about 3-4km. Since these existing bridges cannot be shifted due to the country's economic considerations and have historical significance also, they want a concrete barrier on the side of the newly constructed power plant to obstruct the line of sight for national security.

B. Existing system

► Significant growth center markets (GCMs) are situated on the banks of the rivers for using the river transportation facilities along with the village, union, and upazila roads. In most cases, GCMs and rural markets are connected to the village, union, or upazila roads. These GCMs attract farmers to purchase their necessary agricultural inputs, market their agricultural products, and ensure comparatively fair prices. Thus, they help promote local economic growth.

► As stated, the Union Parishad Chairman is cooperating with LGED officials in developing and constructing GCM and feeder roads in the WeCARE RHD and LGED program's southwestern and western regions.

► Improved growth center markets (GCMs) include slaughterhouses, separate sheds, drainage systems, restrooms, lighting, and clean drinking water to facilitate local people (including farmers, petty traders and businessmen, shops and businesses operated by women, drivers, and/or rickshaw pullers, the fisher community, etc.) and attract the outside businessmen for improving the local economy.

► Salinity intrusion is a significant issue in Satkhira, with numerous ponds for culturing and exporting fishes, including shrimps, prawns, crabs, etc.

► The Additional Project Director (APD) (Traffic), Land Port Authority, Bhomra, Satkhira, has proposed measures including the construction of a drainage system to resolve the waterlogging problem, a service road for easy local access, and the establishment of holiday markets to eliminate black markets.

► A few connecting roads are required towards Kumarkhali Upazila, a popular tourist destination with numerous archeological sites, especially "Rabindra Kuthibari."

► Road development will improve socio-economic conditions by reducing transport costs and saving transport time for inputs required for agricultural production and produce. The 10-km-radius market near the Navoganga River will facilitate long-distance transportation of goods. The development will require the collection of NOC from concerned agencies to construct stockyards.

► **Demand**

► Representatives of the nuclear power plant at Ruppur, Iswardi, Pabna demanded the security and safety of the Nuclear power plant by constructing the proper enclosure structures for barriers from the highways and the railway.

► They demanded improved road connectivity for (i) positive change in their daily lives, (ii) better businesses, (iii) students' increased attainments in their educational institutions due to a decrease in travel time, (iv) a decrease in road accidents, and (v) better marketing of vegetables, agricultural products, and fishes.

► They demanded a pollution-free road where unnecessary hydraulic horns would not be allowed, plantations on permissible slopes and shoulders of the highway could be encouraged, the traffic system should be sound and good, and skilled drivers should drive the vehicles according to the traffic rules.

► Proper cold storage and establishing a juice industry could help address these issues and export mango juice.

► The Chairman of Solonga Union Parishad (Pabna) also suggested appointing a road cleaner to clean up the

road.

C. Recommendations

- Implement road-specific technology to manage traffic volume and categories, connect villages to cities, and prioritize road connectivity in the "Amar Gram Amar Shohor" project.
- The village roads should be improved so that students from rural areas can attend more schools, madrassas, and colleges by decreasing travel time between their residences and educational institutions.
- Passenger sheds, zebra crossings at required locations, and a divider on the front side of the educational institution (e.g., school, madrassa, or college) should ensure the safety of students and other pedestrians.
- Some health clinics involving sufficiently experienced health providers (e.g., physicians, health workers, and pathological lab technicians) should be established at suitable locations with better connections to feeder roads to facilitate patients seeking necessary treatment in these clinics.
- Sprinkling water or watering on the haul roads should be done regularly to reduce dust pollution.
- Encourage poor women to be included as wage earners in developmental work to promote gender equity in the 10 WeCARE program districts.
- A proper drainage system on the landscape area of the highway should be included in the design to pass the rainwater.
- Some health clinics involving sufficiently experienced health providers (e.g., physicians, health workers, and pathological lab technicians) should be established at suitable locations with better connections to feeder roads to facilitate patients seeking necessary treatment in these clinics.
- A special corner for women should be included in the passenger sheds.
- Installation of traffic signal and signboard at the entry point of the feeder road

4.1.6 FOCUS GROUP DISCUSSIONS (FGDS)

195. Focus Group Discussions (FGDs) were carried out with a particular emphasis on different groups to obtain in-depth information on environmental and social issues and risks. Feedback/suggestions and recommendations to mitigate the impacts have been recorded. In the process, four hundred thirty-seven (437) people from various groups participated, , comprising 256 males and 181 females. The different groups usually formed in the form of affected households and affected women-headed households, groups comprising businessmen, teachers, shop owners, Union Parishad Members, Labor Contracting Societies (LCS), Students, Job-holder, members of market committees at GCM, Rice mill owner, Mechanic, Tea stall owner, Shop owner, School peon, Farmer & Ethnic minority group. Their views are summarized as follows, and details are given in **Annex 4.5**.

- The beneficiaries' group opined for a hassle-free compensation package for their properties. They were also looking for employment in the project work to earn their livelihood during the construction phase.
- The participants insisted on a safe alternate passage for their everyday movement.
- The project activity must not create water logging in their living areas,
- To drain out the stagnant water, an adequate number of culverts and bridges should be constructed.
- The safety and security of female laborers are to be ensured at the construction yard during the construction phase.
- Women participants requested to keep a corner for breastfeeding in the passenger shed
- Toilets for men and women are in opposite directions.
- Skill development training for the poor, rehabilitation, loan facility on easy terms, etc.
- The participants demanded the construction of an overpass/underpass in the School and Bazaar areas to avoid traffic accidents and easy crossing.
- Road safety issues should be put in place
- Employment opportunities for poor and vulnerable women must be considered.
- Benefits for loss of income and payment before displacement
- Lane divider for slow-moving vehicles
- Training for the drivers
- DC Satkhira suggested an elevated structure in place of acquiring agricultural land.

4.2 ENVIRONMENTAL IMPACT ASSESSMENT AND MITIGATION MEASURES:

196. SESA is a method where an area's social and environmental risks and mitigation measures are assessed as well as the resources and potential of the area, and investments are made in the development of the area with priority given to those resources and potential. Hence, SESA is crucial for Western regional connectivity, economic

integration, and development in the Western region's current and post-Padma demand scenarios. This program will benefit the western region and the entire country by addressing the challenges of the transport sector.

197. Based on (ESS 1 through 10, except ESS9), potential environmental impacts and risks are determined at the macro level while considering the research area's regional settings. The effects and hazards are briefly covered in the following subsections: Stakeholder Engagement and Information Disclosure (ESS10); Biodiversity Conservation and Sustainable Management of Living Natural Resources (ESS6); Indigenous Peoples (ESS7); Labor Working Conditions (ESS2); Resource Efficiency and Pollution Prevention and Management Resource (ESS3); Community Health and Safety. The Stakeholder Engagement Expert and E&S Consultant highlighted the environmental issues that the Program Interventions will impact. As said some exotic species will be removed due to program intervention.

- These species include Raintree, Koroi, Shimul, Debdaru, Mehogini, Jam, Banyan tree etc.
- Some terrestrial and aquatic faunal resources, like frogs, snakes, kathakali, birds, falcon insects, etc., will lose their habitats.
- Natural hazards such as water logging, dust pollution, noise, and air pollution will arise during construction.

4.2.1 ENVIRONMENTAL AND SOCIAL ISSUES

- Sound pollution will increase during the construction of the project due to piling works, crushing of the stone and brick into cheeps, driving vehicles involved in construction works, and moving different equipment,
- Effective sound barriers can be built to minimize sound pollution to an acceptable level,
- Dust will be generated by moving the vehicles and crushing the stone and brick cheeps,
- Dust pollution can be reduced/managed by spraying/sprinkling water on a routine basis,
- Huge gathering of migrant people (influx of laborers) during construction of the project,
- Maintaining occupational health and safety by giving and ensuring proper utilization of PPE, first aid, sanitation, and shed facilities,
- To protect against erosion of land and landslide, and water logging in the agricultural (cropped) land,
- Construction of drainage in the lower part of the road to maintain the rainwater and save the agricultural land from landslides.
- Keeping necessary culverts, service roads, cross sections, and poles
- Construction of an adequate underpass or foot-over the bridge for the movement of the school and college-going students, market people, mosque and Mondir worshipers, and animal passes.
- Identify the Borrow areas for the Asphalt mix plant and keep salvageable materials.

4.2.2 MITIGATION MEASURE DISCUSSED

- Road Safety Measures to be adopted in the project,
- Side drains are to be provided along with proper outfall structure,
- Preparation of a Greenbelt Development Plan,
- Preparation of Social Impact Assessment and preparation and implementation of RAP
- Maintaining drainage system to ensure protection from water logging,
- Maintaining the occupational health and safety (OHS), and Community Health and Safety Plan
- Preparation of Traffic Management Plan (TMP),
- Development of Grievance Redressed Mechanism (GRM) to resolve any resettlement-related grievances locally and amicably in consultation with aggrieved persons/parties and/or accused persons/parties based on investigation and hearings and
- Scope of potential impacts and risks inconvenience.
- Continuous stakeholder engagement to create and deepen awareness about all the risks and impacts of the projects

198. The local impacts of the corridor would be transmitted through investments in LGED-managed Rural Roads, Local Markets, Ghats/Bridges, and agro-logistics in ten districts through which the corridor passes. The program will have four distinct phases: Phases 1 and 3 will be implemented by RHD, and Phases 2 and 4 will be implemented by LGED. LGED has finalized different project activities like the improvement of Village Roads and construction of rural Growth Centre Markets and Ghats/Bridges, etc.; in this regard, the consultant team has visited different potential project sites and identified potential impacts and risks.

4.2.3 OPEN DISCUSSIONS AT STAKEHOLDERS' CONSULTATION MEETINGS:

199. The stakeholders were asked and facilitated to express their concerns, views, queries, suggestions, and perspectives on environmental and social impacts, especially removing old trees and corresponding mitigation

measures for old trees, which had been on both sides of the road for 100 years. Plates showing the stakeholders' consultation meetings during the study and details are presented in **Annex 4.1**

4.2.4 ETHNIC MINORITY GROUPS

200. Bangladesh, with 166.2 million residents, the population achieves general ethnic homogeneity despite the relatively small representation of a few ethnic groups in this nation.

201. The SESA study team visited some of the NGOs supporting ethnic people, including BRAC from Dhaka and Alo NGO from Mirpur in Kushtia, and collected data from the BBS to determine the area of ethnic population. The consulting team used tools like FGD and KII to collect data with different ethnic groups such as the Orao of Natore, the Mahato of Pabna and the Sardar and Kol ethnic groups of Kushtia.

202. 'Orao' and 'Mahatho' 'Sordar', and `Kol' (four ethnic minority groups) live in the program area, away from the project site. The consultants' team approached the local champions/NGO/local office to identify them in the program area. The team explained the program using a well-prepared A3-size map of the program area. They were briefed about the development of the western corridor, which starts from Hatikumrul and ends at Bhomra, to four lanes and both side service roads through the RHD, LGED roads, growth centers development, etc. The program objectives and goals have been explained. They were informed about the funding agencies and implementing agencies. Some briefs about the ESS 10 were also explained so that the issues could be discussed closely.

203. Following the consultant team's initiative, SVCM representatives recounted their history, social stigma and cultural dynamics, family, religion, language and dialect variations, land ownership and source of livelihood, food habits, occupational habits, customary cultural, and market participation level. These are elaborated in Annex 4.6.

204. Overall, they showed enthusiasm for participating in the program through skilled and unskilled jobs, as most do not own land. However, they also voiced their main issue: "Construction camp/construction facilities should be at least 1000 meters away from their settlement." It is advised that the constructor carry out an appropriate survey before setting up these facilities (Details are given in annex4.6).

5 Analysis of Alternatives and Development of Scenarios

205. This chapter compares possible alternatives to the proposed program activities covering sites/alignments, 2-lane or 4-lane routing/corridor options, technology, design, and operation - and how they would positively or negatively affect the environment and society. After evaluating the following three alternatives, this chapter has also developed pessimistic to optimistic scenarios (low-growth, medium-growth, and high-growth).

5.1 DEVELOPMENT OF ALTERNATIVES

206. The proposed program's environmental and social risks and impacts have been studied, considering the following two options.

- Alternative 1: Program with Activities
- Alternatives 2: Program without

207. The alternative analysis in the following subsection evaluates the environmental and social risks and impacts of each option, including the following aspects: land use, ecology, biodiversity, air quality, noise quality, water quality, waste management, soil and sediment condition, health, socioeconomic factors such as human dynamics and social welfare, education, poverty and food security, gender equity, and economic factors.

5.1.1 ALTERNATIVE 1: PROGRAM WITH ACTIVITIES

208. This alternative will evaluate environmental and social risks and impacts due to the proposed activities and development to be taken up in the program. The program includes the proposed development of the Western Corridor traversing through Sirajganj, Pabna, Kushtia, Jhenaidah, Jashore, and Satkhira. The main design features of the proposed development are a 4-lane highway with service road, junction improvement, drains, bypass, and elevated Road Sections. The program is being implemented through the WB and AIIB funding. The WB will finance the Jhenaidah – Jashore section of the national highway (N7) in Phase 1 (Currently under implementation) and the Bhomra – Satkhira – Navaron road section in Phase 3. However, from Hatikumrul to Jhenaidah, a 150km stretch will be developed with AIIB funding. An analysis of alternatives for the sites/alignments is carried out in .

Table 5-1: Analysis of Alternatives for Alignment/Sites

Parameters	Existing alignment (Option 1)	Bypass/Major realignment (Option 2)	Elevated Structure (Option 3)
Carriageway	4 Lane, along with Service Road		
ROW	Proposed ROW up to 60m		
Geometrics	Good	Very Good	Very Good
Tree Cutting	More	Fewer	Fewer
Land Requirement	Yes	Yes	Comparatively lower than options 1 & 2
Land Disputes	Low	High	High
Loss Agricultural Land	Low	High[56]	Comparatively lower than options 1 & 2
Loss of Structures	High	Fewer	Fewer
Resettlement Cost	High	Less	less
Utility Shifting	Yes	Fewer	Yes
Construction cost	Lesser than Option 3	Lesser than Option 3	High
Land Acquisition	Yes	Yes	Yes
Environmental Risk rating	High	Very High[56]	High
Social Risks	High	Lower than option 1	Lower than option 1 &2

[56] No project on triple-cropping land: PM | The Daily Star (No project on triple cropping land), "The premier has given a clear directive that no triple-cropping land can be destroyed. No project can be taken on triple-cropping land. Rather such land will have to be protected," Cabinet Secretary Md Mahbub Hossain said at a briefing at Bangladesh Secretariat." Dated Mon Feb 6, 2023 05:03 PM

209. All the options have their own merits and demerits. However, proposing a bypass or major realignments has more environmental impacts because it directly impacts agricultural land. The premier has clearly stated that no triple-cropping land can be destroyed, and no project can be undertaken on triple-cropping land. Rather, such land must be protected.

210. Any bypass/major realignment proposal for upgrading the union/feeder roads will be unfriendly to the existing rural area's environmental and social setup because it carries higher and irreversible ecological and social risks and impacts. Option 2 is a non-preferable option for rural roads.

211. The purpose of analyzing these options is to study the formulation of road development strategies by identifying opportunities to enhance the benefit for local communities. This will also summarize the key challenges/gaps in implementing new road development strategies and discuss possible trade-offs.

212. An analysis of alternatives for single/intermediate/2-Lane/4-lane roads is carried out in .

Table 5-2: Analysis of Alternatives for Rural Roads

Parameters	Single Lane (Option 1)	Intermediate Lane (Option 2)	2-lane (Option 3)	4 lane (Option 4)
Carriageway	3m to 3.7m	5.5m	7.3m	16m (Minimum)
ROW	Minimum	High	Very High	Very High
Geometrics	Good	Good	Very Good	Very Good
Loss of Tree	Minimal	More than Option 1	More than Options 1 &2	More than Options 1, 2, &3
Land Requirement	Minimal	More than Option 1	More than Options 1 &2	More than Options 1, 2, &3
Land Disputes	Low	More than Option 1	More than Options 1 &2	More than Options 1, 2, &3
Loss Agricultural Land	Low	High[57]	High	Very High
Loss of Structures	Minimal	High	Very High	Very High
Resettlement Cost	Low	High	Very High	Very High
Utility Shifting	Minimal	High	Very High	Very High
Construction cost	Less	More than Option 1	More than Options 1 &2	More than Options 1, 2, &3
Land Acquisition	Minimal	High	Very High	Very High
Land Availability	Low	Low	Low	Low
Environmental Risk rating	High	Very High[56]	Very High	Very High
Social Risks	High	Very High[56]	Very High	Very High
Feasibility as per Commercial Vehicles/day	Union Road[58], where CVD is up to 100	Upazila Road[58], where CVD is 200 - 300	Upazila Road[58], where CVD is 751 -1000	National Highway (RHD)[59]

213. Based on the field visits and land availability, Option 1 is preferred for union/feeder rural road development without any new bypasses or major realignments. However, the Upazila roads are mostly of option 2, which requires maintenance work on the shoulders, damage due to rain cuts, etc.

214. The WeCARE program has adopted a holistic approach to infrastructure development across the ten districts, enabling industrial growth and connecting rural markets with urban markets through the development of the proposed western corridor.

5.1.2 ALTERNATIVE 2: PROGRAM WITHOUT ACTIVITIES

215. This alternative presents the merits and demerits of the program undertaken without any activities, as discussed above. In this case, it is speculated that the vehicle-carrying capacity of the national and rural roads is not augmented, and rural roads/areas remain unconnected or without proper agro-logistics development.

[57] No project on triple-cropping land: PM | The Daily Star (No project on triple cropping land), "The premier has given a clear directive that no triple-cropping land can be destroyed. No project can be taken on triple-cropping land. Rather such land will have to be protected," Cabinet Secretary Md Mahbub Hossain said at a briefing at Bangladesh Secretariat." Dated Mon Feb 6, 2023 05:03 PM,
[58] 2021-09-13-08-25-3ac26994cce2b5ea731ecd1e79525d3d.pdf (lged.gov.bd)
[59] Road Geometric Design Manual.pdf (rhd.gov.bd)

However, other government projects are running or are proposed to be taken up in due course. Currently, phase 1 activities of the program are already in the implementation phase.

5.2 ANALYSIS OF ALTERNATIVES

216. A comparison of the alternatives in conjunction with environmental and socioeconomic factors is presented in .

Table 5-3: Analysis of Alternatives

Parameters	Program without Activities	Program with activities
Road Network	The main road network is in poor condition and congested. It operates at or near its maximum capacity and fails to meet the rapidly increasing needs.	The main road network will be converted from a 2-lane to a 4-lane with service roads and other supported infrastructure to improve the condition. This will remove bottlenecks and frequent congestion on the western corridor.
Environmental Factors		
Climate Change Resilience		
GHG (CO2) Emission	There will be CO_2 emissions due to road capacity.	Reduced due to improved design speeds and removal of bottlenecks.
Water Pollution	Haphazard disposal of wastewater from the growth center in the absence of drains	Drains collect the wastewater from the growth centers.
Water Logging	inadequate or badly maintained drainage infrastructure	Providing adequate cross-drainage structures will alleviate the water logging problems in the area.
Air and Noise Pollution	The noise level will be increased due to increased traffic movement.	Mitigation measures such as providing boundary walls with tree plantations will attenuate noise pollution. Implementation of ECR 2023 rules.
Waste Management	Inadequate Solid/liquid waste management system.	Waste management facilities are envisaged in the program.
Terrestrial Ecology	There is no ROW requirement to remove the mature trees.	No sensitive habitats, protected areas, or critical natural habitats are directly or indirectly affected. However, many mature trees will be removed to accommodate the ROW demand for highway expansion as a western route.
Aquatic Ecology	-	No sensitive habitats, protected areas, or critical natural habitats are directly or indirectly affected. No impacts on Chalon Beel, Marjat, Bhokbhara, or other boars are envisaged.
Tree plantation	Business as usual	Three times of plantation in place of affected trees will increase carbon sink in the area.
Cultural or Historical Sites	-	Cultural properties such as mosques and temples will be affected or relocated as per the Resettlement Action Plan. However, no impact on historical sites is envisaged.
Socioeconomic Factors		
Land acquisition	Minor works are expected, and there is no need for land acquisition, so there will be no loss of structures, livelihoods, land, or income.	Land acquisition will be required to meet the ROW requirement for highway development.
Loss of Structures/livelihoods/land /income	Minor works are expected, and there is no need for land acquisition, so there will be no loss of structures, livelihoods, land, or income.	The program will widen the highways and construct feeder roads. Thus, land acquisition will result in the loss of land and structures or the disruption of income streams and livelihood activities for individuals or groups.
Loss of Agricultural land	Urban and industrial expansion are the main reasons for the loss of agriculture.	Land acquisition will be required to strengthen the road network in the study area, and agricultural land will be lost to meet the geometrics requirement.

Table 5-3: Analysis of Alternatives

Parameters	Program without Activities	Program with activities
Land disputes	Considerable land disputes are under formal and informal processes, and there is inadequate land use planning.	Proper land use planning methods are expected to be adopted during program development to reduce land disputes through government agencies' intervention at the land acquisition stage and adequate compensations.
Resettlement Action Plan	No	Resettlement Action Plans (RAPs) will be developed during project preparation to mitigate the social risks/impacts.
Socioeconomic Impact – loss of income	No	Income loss due to disturbance of business center
Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	No	No, however, there are special ethnic minority groups in certain areas/districts of the study area. If their presence is reported during the Environmental and Social Impact Assessment, special consideration shall be given to them in the RAP.
Road safety and community health and safety	Poor	Significantly improve with the installation of safety features
Physical and social infrastructure	Currently inadequate	The program will have adequate physical infrastructure, such as roads and bridges, vehicular underpasses, pedestrian overpasses, railway overbridges, improved junctions, growth centers with washrooms (for men/women), Labor Sheds, drains, waste management system, etc. The program development will boost the development of social infrastructures such as health centers and educational institutes.
Regional integration	Less active role	Greater connectivity will tremendously enhance regional integration, enabling the program area to trade in transport services and help it become a regional logistics and transit hub in South Asia.
Economic benefits	Low	The program is expected to provide impetus to the regional economy, as plans are underway to develop as an economic hub for agro-based processing industries. Proposed Bangladesh Economic Zones are in the Kushtia, Natore, and Sirajganj districts.
Approach	No holistic approach	Holistic Approach
Environmental Sensitivity	Mild in due course.	Substantial
Social Sensitivity	Mild	High
Final Remarks	No comment	Preferred options with mitigation measures.

5.2.1 SUMMARY OF E&S RISKS AND IMPACTS FROM THE ALTERNATIVE 2: PROGRAM WITH ACTIVITIES

217. The main environmental risks and impacts are from construction work, especially cutting down trees along the ROW, the health and safety of workers and people near the project and supply transport routes, and dirt and sand in waterways from road work. These impacts are mostly during construction and within existing footprints and can be managed with engineering and good site management. Better safety features of the wider roads during operation are expected to benefit the economy and community safety. Environmental risks and impacts, though negative, are mostly limited to the ROWs and activity sites and mainly occur during construction.

218. The program will affect many buildings and people along the proposed ROW who will lose their land, houses, and jobs. Some will have to relocate. There will be many squatters and vulnerable people (e.g., elderly, disabled, and female-headed households) who will suffer more. There will also be a risk of SEA/SH for women and girls from the workers who will come for the construction. So, proper plans must be made for resettlement, stakeholder engagement, and labor management. They will also have to deal with the impacts on local businesses and markets, which may cause poverty and resentment. The workers require a code of conduct to prevent Sexual Exploitation and Abuse and Sexual Harassment (SEA/SH) issues. The agencies are unfamiliar with the new processes and must coordinate well with AIIB. The operation phase will have mostly good impacts, although increased traffic risks to cause accidents. Thus, road safety programs will need to be conducted in the program. The social risk is high.

5.3 SCENARIOS DEVELOPMENT FOR ASSESSING THE RISKS AND ASSESSMENT

219. Considering alternative 1, Program with Activities, as a preferable alternative, three scenarios have been postulated: Low-growth, Medium-growth, and High-growth scenarios. While evaluating scenarios, the Environmental, social, and economic parameters studied to determine the factors affecting future developments of the program's pessimistic to optimistic scenarios are given in **Error! Reference source not found.**.

Table 5-4: List of Environmental and Socioeconomic parameters for driving the factors

Environmental	Social	Economical
Land use pattern	Quality of Life	Agriculture
Ecology and Biodiversity	Education	Employment
Air Pollution/Carbon Emission	Health and Sanitation	Infrastructure, transport, connectivity and communication
Noise Pollution	Poverty and Food Security	Urbanization
Water Pollution	Migration	Industry and export
Waste Generation	Land Acquisition	
Vulnerability of Climate Change	Gender Equality and inclusiveness	

5.3.1 2021-2041 PERSPECTIVE PLAN – A 20-YEAR DEVELOPMENT FRAMEWORK

220. The Bangladesh government has prepared a 2021 – 2041 perspective plan – a 20-year development framework for the country. It has outlined the development of infrastructure and improvement in education and healthcare. It envisions eliminating poverty and placing the country in Upper Middle-Income Country (UMIC) by 2031 and High-Income Country (HIC) by 2041. The government is working seamlessly towards achieving it, being well-coordinated and coherent.

221. Considering the salient features of the perspective plan, three growing scenarios are developed in subsection 5.3.2, and a summary of driving factors are discussed in **Table 5-5** considered concerning environmental and social risk as identified in the above table**Error! Reference source not found.**.

5.3.2 DEVELOPMENT OF GROWTH SCENARIOS IN THE STUDY AREA

222. A low growth scenario is when the development is completed, and future developments will be slower than expected. Midterm growth Scenario is when the development is underway faster and unfolds over a medium-term period, for example, 2024 to 2031. The High Growth scenario is when overall growth and development are at a macro level/faster pace. The current study focuses on the Western region of Bangladesh, particularly the ten districts where the program will be implemented in different phases over ten (10) years. For this purpose, the following driving factors in have been considered to analyze the growth scenarios based on their program.

Table 5-5: Driving Factors for the Development of Pessimistic to Optimistic Scenarios

Scenario	Key Considerations	Drivers of Changes				
		Regional Connectivity	**Environmental Factor**	**Implementation of Mega Projects**	**Social factors**	**Economic Factors**
High growth	The second decade of the government's 20-year perspective plan helps transform the country into a high-income country and achieve zero poverty by 2041. The strategic goals and milestones include industrialization with export-oriented manufacturing, paradigm shifts in agriculture to enhance productivity, a service sector of the future providing the rural agricultural economy with a primarily industrial and digital economy status, and the urban transition. Thus, it represents the growth path required—through added stimulus (investment, innovation, etc.)—to achieve high-income country (HIC) status by 2041.	► The developed western corridor will have good connectivity with the capital, Dhaka (the central part of the country), and the northwestern part via priority roads such as Benapol—Bhanga Road and Hatikumrul—Rangpur Road (N5). ► Properly connected the rural road network with the trunk road (Western Corridor) and the country's capital.	► Improved environmental compliance monitoring ► Well-established district and regional DOE offices. ► Well-developed land use planning and zoning. ► Proper waste (Liquid/Solid) management system. ► Effluent treatment plant ► Greenbelt development and afforestation of degraded forests lead to increased carbon sink. ► Carbon emissions due to good geometrics will be reduced. ► Reduction in Plastic waste ► Waste recycling and reduction at source. ► Extended producer responsibility in place. ► Climate-resilient structure	► 2nd Padma Bridge ► Natore Agro-Based Economic Zone ► Kustia EZ ► WeCARE Phase 4	► Improved land records ► Less land disputes ► Change in quality of life, ► Improve human dynamism and well-being ► Modern state-of-the-art facilities at the growth center markets. ► Good sanitation facilities. ► Improved access to health and education facilities with more social infrastructure development is envisaged due to program interventions. ► Women inclusion ► The outmigration rate will be low since good opportunities are available in the region.	► Increase in economic activities ► Employment generation ► Good Digital Connectivity ► Industrial Growth ► Growth in the Tourism sector ► The proposed western corridor is vital to the national highway network. It helps the country's role in the Asian Highway Network and complements the government's plans to increase trade with India.

Table 5-5: Driving Factors for the Development of Pessimistic to Optimistic Scenarios

Scenario	Key Considerations	Drivers of Changes				
		Regional Connectivity	Environmental Factor	Implementation of Mega Projects	Social factors	Economic Factors
Medium growth (Existing Condition in Bangladesh)	It is equivalent to the country's current growth path, which aims to achieve upper-middle-income country (MIC) status by 2031.	► Road connectivity will improve within the program district after Phase 1 and Phase 3. ► Improved rural roads will connect with the section of the envisaged western corridor (national highway), smoothing the transition to the high-growth scenario.	► Moderate progress in environmental compliance monitoring. ► Construction of climate-resilient structures under Phase 1 and Phase 3 in rural areas. ► Plastic waste and hazardous waste management plan ► Public awareness program on recycling, reusing solid waste, and waste reduction at source. ► Tree plantation, ► Preparation of ESIA and ESMP reports	► Padma Railway Bridge ► Ruppur Nuclear Power Plant ► WeCare project -Phase 1 ► WeCARE Project -Phase 3 ► Hatikumrul Intersection-(SASEC)	► Change in lifestyle ► Moderately improved poverty reduction. ► Moderate improvement in secure wages, ► Moderate improvement in women's economic participation. ► Moderate improvement in women-friendly workplace facilities. ► Loss of structures, and land due to land acquisition	

Table 5-5: Driving Factors for the Development of Pessimistic to Optimistic Scenarios

Scenario	Key Considerations	Drivers of Changes				
		Regional Connectivity	Environmental Factor	Implementation of Mega Projects	Social factors	Economic Factors
Low growth	The low growth scenario represents low economic and limited infrastructure development, primarily due to external factors, such as a pandemic or paradigm shift towards undertaking developmental activities in the study area. The reduction in economic activity due to any pandemic will be short-term and limited to that time.	► Given the Padma Bridges operation, which has provided direct connectivity to program districts Magura and Jashore, the program district's primary road network is congested and in poor condition. It is operating at maximum operating capacity. ► frequent congestion and increased travel costs. ► Inefficiencies in logistics systems ► Roads are exposed to different levels of flooding during the flooding.	► Lack of Environmental Compliance monitoring (Air, Water, and Noise pollution). ► Establishment of DOE's regional and district offices. ► Rapid urbanization of rural areas and stress on land use pattern ► Aquacultural (Shrimp/Fish) farming is proliferating faster. ► Waste (Liquid/solid) generation and its management. ► Water logging in the Satkhira district ► Regular flooding due to the absence of climate-resilient structures.	► Padma Multipurpose bridge ► Bhomra Land port ► Bheramara Power station	► Out-migration to Middle Eastern countries ► Migration to the urban area in the absence of lack of logistic and physical and social infrastructure ► Old Land records ► More Land disputes, ► Poor Social infrastructure (Health and Education) ► Food supply chains could collapse due to the lack of efficient transport. ► High post-harvest losses for food security ► SEA/SH issues and increase in domestic violence. ► Women's participation in employment generation activity is less due to the lack of women-friendly workplace facilities.	► Logistics costs are especially high for agricultural products, ► Slower agriculture growth ►

5.3.3 LOW GROWTH SCENARIOS

223. The low growth scenario represents low economic and limited infrastructure development, primarily due to external factors, such as a pandemic or paradigm shift towards undertaking developmental activities in the study area. The reduction in economic activity due to any pandemic will be short-term and limited to that time. Nevertheless, the Padma Multi-Purpose Bridge -1 was completed during the recent pandemic and opened in 2022. Recently completed and ongoing projects have been considered to assess the low-growth scenario in the study area.

224. The identified development programs in the low growth scenario also represent the Vision 2021 goals aiming to attain the status of a middle-income country. The government has set specific strategic goals and milestones as part of the country's long-term development and growth objectives. The vision is a holistic approach to economic development aiming to balance industrialization, agricultural transformation, and the growth of the service sector. The vision is for a more interconnected and digitally advanced economy, focusing on transitioning from agrarian to industrial and digital in rural and urban areas.

225. Bangladesh's western region, which includes the districts to be covered under the WeCARE program, is divided by the Padma River. Investors are less interested in setting up large-scale industries and businesses because of poor transport and communication between the capital and the south, southwestern and coastal districts. Thus, the area remains less developed than the country's other regions. Moreover, due to limited opportunities, migration from study area districts to other parts of the country and abroad remained higher than the rest.

a) Padma Multipurpose Bridge

226. The 6.5km long Padma Bridge significantly impacts the country, especially the southern western region, because of good connectivity, as shown in [60].

227. From the social perspective, the bridge plays a role in the culture and way of life of the nation's growth. Individual thoughts, attitudes, collaboration, and interests will become more united because of this generally mixed impact and may become more unified (Islam et al., 2020). Overall, the development has a positive impact on social dynamics and well-being.

228. It is expected that the bridge has brought a positive stimulus in improving road connectivity and enormous potential for new trade openings and foreign direct investment (FDI) opportunities. Ultimately help generate employment[61] and contribute progressively to the Gross Domestic Product (GDP).

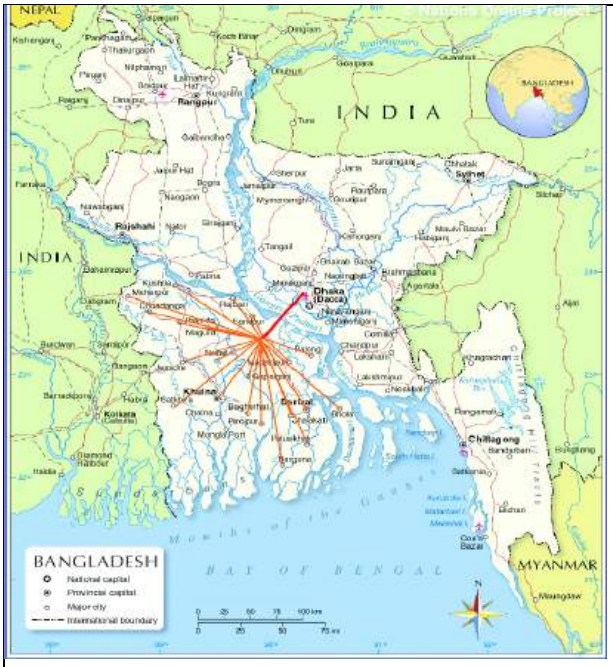


Figure 5.1 : Connectivity through Padma Bridge

b) Bhomra land port digitalization (Operational)

229. With the launch of the Padma Bridge, the Bhomra land port in Satkhira is expected to see a significant surge in export-import activities with India. The main reason is the location of this land port and its distance from Kolkata is only 65 Km, while Benapol, the country's mainland port in Jashore, is 86km.

230. After the inauguration of the Padma Bridge, Bhomra port will reduce transportation costs for traders as the distance between Satkhira and Dhaka via the Padma Bridge will also be reduced by about 100km. In addition to the Padma Bridge, the land port is selected for the "Digitalization of Border Procedures at Bhomra Land Port" project. This will advance the land port and increase economic activities due to better facilities. Thus, the revenue earned from this land port is expected to rise significantly.

60 Padma Bridge Connects 21 Districts of the Southwest Region Hussain, Muhammad. (2022). the Padma Multipurpose Bridge and Bangladesh.
61 The Business Standard, 2022

c) Bheramara Combined Cycle Power Plant (Operational)

231. A dual-fuel-fired 360MW capacity Bheramara Combined Cycle Power Plant is in Bahirchar union, Bheramara upzilla of Kushtia district. The plant was built to meet the growing electricity demand in the country. Parts of the plant were commissioned in 2017, and it has been in commercial operation since May 2017. The commissioning of the Bheramara 410-MW Combined Cycle Power Plant resulted in 100 percent electrification in the 51 upzillas, including the western region districts covering Kushtia, Pabna, Netore, and Satkhira.

232. In the recent past, considering a low-growth scenario, the country has reached several milestones, including the self-financed Padma Bridge. As part of the First Perspective Plan of 2010-21, the country was engrossed in achieving the status of a middle-income country and a digitized one.

233. As a continuation of the Vision 2021 development plan, the completion/ operational status of these three major programs of the western region will have a low impact on the national growth at the current period. However, the situation is expected to result in an increased medium to high impact on national growth in the next decade.

234. All these developments have been considered to assess the study area's environmental and social impacts and risks for studying the low-growth scenario. (Refer to **Table 5-6**)

Table 5-6: Low Growth Scenario in the Study Area

Environmental Parameters	
Land Use Pattern	• Insignificant change in land use due to low economic activities. Low impacts. • Land degradation is expected due to inadequate measures being unable to cater to high population growth needs. • Water logging for longer periods due to improper drainage structures.
Ecology and Biodiversity	• Impacts on ecology and biodiversity will be less in the low-growth scenario.
Air Pollution/Carbon Emissions	• High impacts are expected. • Regular congestion and idling of vehicles. • Increased vehicular growth and deficient infrastructure. • High carbon emissions. • Poor enforcement of pollution reduction measures and enforcement of the regulations.
Noise Pollution	• Increased vehicle movement, idling, and regular congestion in urban areas will aggravate noise pollution. • Poor enforcement of pollution reduction measures and regulations.
Waste Generation	• The liquid/solid waste in rural areas is generated primarily from the growth centers and, without a proper collection and disposal system, is a source of pollution and vector-borne diseases such as malaria, filaria, and dengue. • Limited or no compost plant in the study area to treat agriculture/vegetable waste. • Poor management of agricultural waste in the growth center markets. • Liquid waste from
Water Pollution	• Limited treatment of agriculture/vegetable waste generated in the growth center. • Limited industries have treatment facilities. • Salinity Intrusion in the coastal areas
Water Logging	• Poor and inadequate cross-drainage structures
Social Parameter	
Human social dynamics and well-being	• Limited sources to improve quality of life. • Limited mode of transport and connectivity for social connection and long-term relationships
Education	• Limited change in Education. • Government-sponsored primary schools/middle schools or madrassa in rural areas. • Limited availability of vocational education and skill development, particularly to women or poor or marginalized.
Migration	• The outmigration rate is high due to low economic activity. The high migration rate impacts the availability of skilled labor in the local area.
Health and Sanitation	• Limited improvement in health facilities due to improper connectivity and development of infrastructure. • Limited Sanitation facilities.

Table 5-6: Low Growth Scenario in the Study Area	
Land Acquisition/Disputes	• Poor and old land records. • Increase in land disputes/conflicts due to poor maintenance of land records, land grabbing, etc.
Poverty	• High population growth in a low-growth scenario [28]will cause poverty. • The poverty level is higher in the study area because of lesser infrastructure development and industrialization, as the area was not connected well in the past. • Currently, Food price inflation is in the range of 5-30%.62 @ 12.76%63 • Constraints to women's economic participation, productivity, and returns reduce the quality of life of women and their families. They also hold back progress toward national poverty reduction and inclusive growth goals.
Gender Equality and inclusiveness	• Limited avenues for women to earn better income and have employment opportunities. • Limited women inclusiveness measures such as separate washrooms for women or sheds for women workers in the growth centers, working places, etc. • Safe and secure physical mobility of women
Economical Parameters	
Low Growth	• Low economic activities with no improvement in efficiency. • Limited increase in the share of GDP of industry, transport, and services. • Minimum wages remain unchanged @BDT 8000 per month[28] • Foreign Direct Investment in the country has reduced from 2019 to 2022.[28]
Industry and Export	• Less export and import from Bhomra Land port due to inadequate handling capacity and poor road connectivity. • Customs and border management issues • There is a low rate of further industrialization and no immediate transformation of the rural agrarian economy to a primarily industrial and digital economy due to poor road network and connectivity.
Employment	• The expansion of shrimp cultivation is mainly in Satkhira, and fish farming in other parts of the study area is the cause of low employment in agricultural activities. • Low economic growth in the study area is the source of unemployment and migration to urban areas or other Middle Eastern countries.
Infrastructure, transport, connectivity, and communication	• Poor infrastructure and geometrics of the road network • Congested road network • Road Safety • Low Digital Connectivity • Condition of rural or feeder roads is poor. • Interconnectivity between the district/towns or village/towns is limited due to insufficient transport arrangements. • Week road sector management, especially planning and design
Agriculture	• Substantial post-harvest losses, especially among small farmers, because of limited connectivity, market access, and agro-logistics facilities. • Limited Logistics and transport services to access growth centers or local markets. • Agricultural produce gets damaged between farms and local markets (Production, transportation, and storage). • Employment of conventional methods/equipment. • Expansion of less labor-intensive shrimp farming is causing a reduction in employment in agriculture, especially in the Satkhira district, • Paradigm shift towards other industrial sectors • Thus, people are migrating to industries or cities for better jobs.

62 Food Security Update, April 6, 2023, The World Bank
63 Bangladesh Food Inflation - August 2023 Data - 2013-2022 Historical (tradingeconomics.com)

5.3.4 MEDIUM GROWTH SCENARIO IN THE STUDY AREA

235. Considering the government's Vision 2041, the midterm scenario for the SESA study area is assessed between 2024 and 2030. The government is determined to promote economic growth and to take measures for poverty reduction. Accordingly, planning to create new job opportunities, reduce the country's reliance on a few sectors, and make the economy more resilient by ensuring inclusive and sustainable development.

236. To achieve the 8% GDP growth target, there are plans to diversify the economy, moving beyond the traditional sectors of agriculture and textiles—the development of information technology, logistics, and industries, including agriculture, pharmaceuticals, renewable energy, women empowerment, and gender equality are the salient issues to be addressed for the nation's progress. Vision 2041 shows the government's keenness and initiation of the WeCARE program as an example that will help address a broad spectrum of socioeconomic and environmental issues, including sustainable infrastructure development through the program, which covers the western region.

237. The projects that may be expected to fall in the midterm scenario during the program interventions are discussed as follows.

a) Padma Bridge Railway (completed)

238. The newly constructed multipurpose Bridge over the Padma River connects Dhaka to Jashore through a Rail Link called the Padma Bridge Road Link Project (PBRLP). This rail is a 170 km long railway link. The main construction work on the railway project started in July 2014 and was opened to the public in June 2022. Trial operations on the railway line commenced in April 2023. The project's first batch of 100 passenger coaches were delivered in July 2023.

239. It is scheduled to be completed in June 2024 in all aspects and reduce the travel time to southwest Bangladesh by several hours from the country's capital.

b) Ruppur Nuclear Power Plant (under construction)

240. The Rupppur Nuclear Power Plant is the first nuclear power plant in the country on the bank of the river Padma and is in Ishwardi upazila in the district of Pabna and falls in the program area. The plant is about 140 km west of Dhaka. The first of the two units is expected to operate in 2024. It is expected to generate around 15% of the country's electricity when completed.

241. The plant will generate low-cost electricity and meet society's demand for reliable and affordable electricity. Moreover, it will provide employment opportunities, meet the electricity demand, and help industrial development in the study area. Moreover, it will support a strong economy.

242. The power plant is expected to bring the people of North Bengal into the mainstream and transform the country's profile.

c) Hatikumrul Crossing Intersection point.

243. The Hatikumrul Crossing Intersection is a part of the South Asia Sub-Regional Economic Corporation - SASEC, located in the Sirajganj region. The project is at the final stage of construction and is expected to be completed soon.

244. In conjunction with the development of the WeCARE program and commissioning of the Hatikumrul Crossing intersection funded by the ADB, it will provide a new horizon in the connectivity of districts of North Bengal, southwestern, and western parts of the country in the study area. Overall, it will benefit thousands of commuters and motorists.

d) WeCare project -Phase 1 (Under Construction/Ongoing)

245. The Western Economic Corridor and Regional Enhancement Program for Bangladesh aims to provide efficient, safe, and resilient connectivity along a regional transport corridor in western Bangladesh and promote local economic development in the corridor's hinterland.

Jashore to Jhenaidah Section of National Highway

246. This section of the national highway is 48.7 km and was funded by the World Bank in Phase 1. The main features of the proposed development include converting a two-lane single-carriageway to a climate-resilient four-

lane dual-carriageway with utilities for improved digital connectivity. Construction started in the latter half of 2023 and is expected to be fully operational by the end of 2026.

e) Development of LGED roads and Growth Centers (Phase 1)

247. About 600 Km of rural/feeder roads and 32 growth center markets will be developed by the LGED through the WB's funding in the districts, namely Jashore, Jhenaidah, Magura, and Chuadanga.

f) Hatikumrul to Jhenaidah Section of Western Corridor (AIIB funding)

248. The development of the 160 km Hatikumrul—Bonpara—Jhenaidah section is a program intervention funded by the Asian Infrastructure Investment Bank (AIIB) under RHD. The plan is to be implemented in two phases: Phase 1 from the Lalonshah Bridge (West side), Kushtia to Jhenaidah road corridor, which is 67 km long, and Phase 2 from Hatikumrul—Bonpara—Ishwardi Road, which is 84.04 km long.

249. The phase 1 portion of the AIIB funding is expected to start in 2024 and finish by 2026. The implementation duration of Phase 1 will be around 55 months64 from the start date. Thus, it is considered in the mid-term growth scenario. However, Phase 2 of the AIIB funding program intervention is expected to be completed in another five years and will be considered in High-growth scenarios.

250. During the mid-term scenario, the environmental impacts will only be local, short-term, and limited to the construction phase. The mitigation measures will help reduce/offset the intensity of these impacts.

251. The social impacts and risks on project-affected people, squatters, etc., will be due to land acquisition and structures. A well-structured Resettlement Action Plan (RAP) will help offset the intensity by taking appropriate measures.

g) Bhomra – Satkhira – Navaron section

252. This section of Phase 3 of the program intervention connects the western corridor with the Bopara–Jenaidah Road on the northern side and the Bhanga–Benapol on the eastern side. Since the Bhomra land port is a gateway to West Bengal, India, the phase 3 section of the Western Corridor will be crucial because it will significantly enhance the economic development in the study area.

253. Phase 3 of the program will create an alternative business opportunity while avoiding congestion at the Benapol border. This will also open a new window of opportunity for Bangladesh to become a transport hub in the subregional countries.

254. In Phase 3 of the program, the LGED will develop the rural feeder roads and growth centers in Jashore, Satkhira, and Meherpur districts.

255. Phase 3 of this program is finalizing the design and is expected to be operational by 2030 at the latest. The program will create a new investment environment in the study area. The program interventions have been considered in the midterm scenario and help socio-economic development by allowing timely transport of goods and services, which is essential for agricultural and industrial development. Thus, this will help the country attain middle-income status by 2030.

256. The midterm growth scenario regarding environmental, social, and economic impacts and risks has been presented in Table 5-7.

Table 5-7 Medium Growth Scenario in the Study Area

Environmental Parameters	
Land Use Pattern	• Land use will be changed due to the RHD sub-intervention in Phase 3. • Reduction in Agricultural Land due to bypasses and realignment. • Change in Landscape, which will have a permanent impact on the land use pattern.
Ecology and Biodiversity	• Moderate impacts due to tree cutting for the RHD sub-interventions. • LGED sub-interventions will have a lesser impact due to tree removal. • Tree plantation in a 1:3 ratio will mitigate the impact. • Presence of Baors[65] in Phase 3 if the implementation phase is mis-designed.

64 Consults personal interaction with the RHD officials in January 2023
65 Oxbow Lakes (Baors) are normally the dead arm of the river.

Table 5-7 Medium Growth Scenario in the Study Area

	• Moderate impact due to partial filling of the ponds.
Air Pollution/Carbon Emissions	• Air pollution is expected to increase moderately, especially PM10, due to industries. • Carbon emissions will be moderately reduced due to improved road network geometry and the use of low-emission cars/vehicles. • Stringent air pollutant emissions standards for combustion-engine vehicles. • Enforcement of pollution reduction measures will be followed stringently.
Noise Pollution	• Moderate increase in noise pollution due to increased vehicular traffic and speed. • Better enforcement of pollution reduction measures and regulations. • Low noise-generating vehicles will be there in the future.
Waste Generation	• The liquid/solid waste in rural areas is generated primarily from the growth centers, which will have proper collection and disposal systems. • Treatment plants such as compost plants in the study area to treat agriculture/vegetable waste generated in the growth center. • Good logistic services will help the management of agricultural produce in growth centers/local markets.
Water Pollution	• Treatment of waste generated in the growth centers or local markets. • Industries will have treatment facilities.
Water Logging	• Adequate cross-drainage structures will reduce water logging along road networks.
Institutional	• Supporting Sectoral and institutional reforms and technical assistance (RHD/LGED)
Social Parameter	
Human dynamics and social well being	• Moderate improvement in quality of life due to improved connectivity. • Modest transport and connectivity for social connection and long-term relationships.
Education	• Moderate changes in education level due to good connectivity between rural and urban. • Moderate growth will help bring higher education institutes. • Government-sponsored primary or middle schools will be improved to a modest level. • Availability of vocational education and skill development, particularly for women, the poor, or the marginalized, will increase to a moderate level.
Migration	• A modest level of economic activity will bring down the outmigration rate moderately.
Health and Sanitation	• Moderate improvement in health facilities. • Modest sanitation facilities in the growth centers
Land Acquisition/Disputes	• Social impacts and risks from the land acquisition include psychological and economic loss due to livelihood disruption for affected families and individuals. • Moderate loss of business income, either temporary or permanent. • The squatters on the right-of-way or in growth centers pose moderate risks and impacts. • LGED sub-interventions of the program will be restricted to temporary shifting of squatters or businesses and thus would be moderate. • The land acquisition for RHD sub-interventions will be high.
Poverty	• Moderately improved poverty reduction measures and • Constraints to women's economic participation will be modestly improved, • Improvement of quality of life of women and their families.
Gender Equality and inclusiveness	• Moderate avenues for women to earn a better income and have employment opportunities. • Women inclusiveness measures include separate washrooms for women or sheds for women workers in the growth centers, working places, etc. (moderate improvement) • Safe and secure physical mobility of women
Economical	
Mid-level Growth	• Economic activities with improvements in efficiency and connectivity will increase. • Limited increase in the share of GDP of industry, transport, and services.
Industry and Export	• Export and import from Bhomra Land port due to improved handling capacity and road connectivity. • Customs and border management issues will be improved. • Industrialization and transformation of the rural agrarian economy to a primarily industrial and digital economy.

Table 5-7 Medium Growth Scenario in the Study Area

	• Expectations are that the agro-based industries will flourish.
Employment	• Shrimp cultivation is expanding, especially in the Satkhira district of the study area. • Strengthening of infrastructure in rural areas will generate employment opportunities in the agricultural sectors. • Ultimately help reduce in migration rate rural to urban areas. • Overall employment opportunities will improve moderately in the mid-term.
Infrastructure, transport, connectivity, and communication	• The infrastructure and geometrics of the road network will be moderately better. • Modest Road Safety measures • Moderate improvement in digital connectivity • Fairly improved and well-maintained rural roads/Union • Moderate interconnectivity between the district/towns or village/towns.
Agriculture	• Moderately improved Trade and corridors in Phase 1 and Phase 3 study areas. • Moderate logistics and transport services to access growth centers or local markets. • Optimizing the supply chain in agriculture areas with moderate digital technologies. • Employment of conventional methods/equipment • The expansion of less labor-intensive shrimp farming in Satkhira is causing a reduction in employment in agriculture, and people are migrating to industries or cities for better jobs.

5.3.5 HIGH GROWTH SCENARIO IN THE STUDY AREA:2026-2031

257. The second decade of the government's 20-year perspective plan helps transform the country into a high-income country and achieve zero poverty by 2041. The strategic goals and milestones include industrialization with export-oriented manufacturing, paradigm shifts in agriculture to enhance productivity, a service sector of the future providing the rural agricultural economy with a primarily industrial and digital economy status, and the urban transition. This vision also focuses on ensuring efficient energy and infrastructure and paving the country to be resilient to climate change and other environmental challenges. To achieve all this, the government is employing strategies for rapid, inclusive growth to eliminate poverty, increase productivity, and protect its environment. Phase 4 of the program is expected to be completed in the period. The sub-interventions of Phase 4 activities of the program have been considered for placing the high-income growth scenarios, as these will be operational between 2031 and 2041. The program likely to come up in this period are discussed in the following subparagraphs, and scenarios have been presented in **Table 5-8.**

a) WeCARE Phase 4

258. In the Western Region, LGED will implement construction, rehabilitation, and improvements of priority rural roads and market infrastructures in 4 districts (Pabna, Natore, Shirajgonj, Kushtia). The exact locations of these roads and market infrastructures are not known at this point. The number, type, and locations of the LGED component interventions will be decided during the project implementation stage. The first and second priorities of LGED are to improve Upazila and Union and prioritize village roads, including culverts/bridges, which are strategically important in connecting the road network, railway, and waterway. Other priorities include the development of growth centers and the construction of ghats.

b) Phase 2 from Hatikumrul – Bonpara – Ishwardi Road of 84.04km length

259. The western corridor's 84.04 km long Hatikumrul—Bonpara—Ishwardi section will be developed in this phase with AIIB funding. The sub-intervention will take another 40 to 50 months after Phase 1 of the AIIB sub-interventions of the program is completed. This program phase is expected to be finished in the high-growth scenario. Kuhstia would be in the high-growth scenario.

c) Bangladesh Economic Authority (BEZA)

260. The Economic Zones are expected to be developed by 2041 in the districts of Natore as agro-based, Pabna, Kushtia through Bangladesh Economic Authority (BEZA). The economic zones are to increase the country's industrialization, employment, production, and exports with state-of-the-art facilities in the country's economy.

d) 2nd Padma Bridge on Padma River

261. The Bangladesh Bridge Authority (BBA) plans to achieve Vision 2041 by constructing a second Padma Bridge on the Padma River in the Paturia-Daulatdia area, per the master plan for 2020-2050.

Table 5-8 High Growth Scenario in the Study Area

Environmental	
Land Use Pattern	• Land use will be changed due to the program's sub-intervention and other industrial projects (BEZA). • Reduction in Agricultural Land due to bypasses and realignment. • Change in Landscape, which will have a permanent impact on the land use pattern.
Ecology and Biodiversity	• Moderate impacts due to tree cutting. • LGED sub-interventions will have a lesser impact due to tree removal. • Tree plantation in a 1:3 ratio will mitigate the impact, improve the landscape, and increase the carbon sink in the area. • Chalon Beel may be impacted if the implementation phase is mis-designed. • Moderate impact due to partial filling of the ponds.
Air Pollution/Carbon Emissions	• Air pollution is expected to increase moderately, especially PM10, due to industries. • CO emissions from the WeCARE program interventions will be within the prescribed limits of DOE (<20ppm) • Carbon emissions will be moderately reduced due to improved road network geometry and the use of low-emission cars/vehicles. • Stringent air pollutant emissions standards for combustion-engine vehicles. • Enforcement of pollution reduction measures will be followed stringently.
Noise Pollution	• Moderate increase in noise pollution due to increased vehicular traffic and speed. • Better enforcement of pollution reduction measures and regulations. • Low noise-generating vehicles will be there in the future.
Waste Generation	• The liquid/solid waste in rural areas is generated primarily from the growth centers, which will have proper collection and disposal systems. • Treatment plants such as compost plants in the study area to treat agriculture/vegetable waste generated in the growth center. • Good logistic services will help the management of agricultural produce in growth centers/local markets.
Water Pollution	• Treatment of waste generated in the growth centers or local markets. • Industries will have treatment facilities.
Water Logging	• Adequate cross-drainage structures will reduce water logging along road networks.
Institutional	• Supporting Sectoral and institutional reforms and technical assistance (RHD/LGED)
Social Parameter	
Human dynamics and social well being	• Moderate improvement in quality of life due to improved connectivity. • Modest transport and connectivity for social connection and long-term relationships.
Education	• Moderate changes in education level due to good connectivity between rural and urban. • Moderate growth will help bring higher education institutes. • Government-sponsored primary or middle schools will be improved to a modest level. • Availability of vocational education and skill development, particularly to women or poor or marginalized, will be increased to a moderate level.
Migration	• A modest level of economic activity will bring down the outmigration rate moderately.
Health and Sanitation	• Moderate improvement in health facilities. • Modest sanitation facilities in the growth centers
Land Acquisition/Disputes	• Social impacts and risks from the land acquisition include psychological and economic loss due to livelihood disruption for affected families and individuals. • Moderate loss of business income, either temporary or permanent. • The squatters on the right-of-way or in growth centers pose moderate risks and impacts. • LGED sub-interventions of the program will be restricted to temporary shifting of squatters or businesses and thus would be moderate. • The land acquisition for RHD sub-interventions will be high.
Poverty	• Moderately improved poverty reduction measures and

Table 5-8 High Growth Scenario in the Study Area

	• Constraints to women's economic participation will be modestly improved, • Improvement of quality of life of women and their families.
Gender Equality and inclusiveness	• Moderate avenues for women to earn a better income and have employment opportunities. • Women inclusiveness measures include separate washrooms for women or sheds for women workers in the growth centers, working places, etc. (moderate improvement) • Safe and secure physical mobility of women
Economical	
Mid-level Growth	• Economic activities with improvement in efficiency and connectivity will increase. • Limited increase in the share of GDP of industry, transport, and services. • Foreign Direct Investment in the country
Industry and Export	• Four (4) proposed economic zones are operational. • Import and Export will boom in the study area due to the operation of the Bhomra Land port, development through the WeCARE program, and development of BEZA areas. • Transformation of the rural agricultural economy to a primarily industrial and digital economy. • Agro-based industries will be improved. For example, Natore Economic Zone, other agro-based industries • There will be positive impacts on the industry and export sector.
Employment	• Complete development of infrastructure will help reduce unemployment in rural areas. • Ultimately help reduce the migration rate from rural to urban areas to the maximum extent.
Infrastructure, transport, connectivity, and communication	• Infrastructure and geometrics of the road network will be moderately better. • High Road Safety measures. • Improved digital connectivity. • Fairly improved and well-maintained rural roads/Union • Better interconnectivity between the district/towns or village/towns.
Agriculture	• Improved Trade and corridors. • Improved logistics and transport services to access growth centers or local markets. • Better supply chain in agriculture areas with moderate digital technologies. • Employment of state-of-the-art methods/equipment in the farming sector

5.3.6 COMPARATIVE STUDY OF LOW-, MEDIUM- AND HIGH-GROWTH SCENARIOS

262. A comparison of the above three identified scenarios in the study area considering the nature/type of development with the WeCARE program is presented in **Table 5-9.** All the developments during the medium and low growth scenarios will impact the environmental and social aspects. It may be observed that the low scenario will not meet the requirements of the Bangladesh Government's perspective plan for 2021 – 2024 to bring the country to a high-income country status. Thus, the high-growth/medium-growth scenarios outweigh any negative potential impacts and risks if measures are mitigated while implementing the program.

Table 5-9: Comparison of Low-, Medium-, and High-Growth Scenario

Attributes	Low	Medium	High
Environmental Parameters			
Land Use Pattern	• Insignificant change in land use due to low economic activities. Low impacts. Land degradation is expected due to inadequate measures unable to cater to high population growth needs. Waterlogging for longer periods is due to improper drainage structures.	• Moderate intensity impacts due to the agricultural land diversion to other land use types such as paved roads and industries. There is a moderation reduction in the water logging problem	• High economic activities will impact land use. Infrastructure and industrialization require land. A master plan is needed for the optimization of agricultural land utilization.
Ecology and Biodiversity	• Impacts on ecology and biodiversity will be less in the low-growth scenario. • Tree plantation will be less in the presence of old trees. • High Impacts due to soil erosion on aquatic life. • Removal of old trees during unfavorable climatic conditions	• Impact due to tree felling for implementation of the program. However, 1:3 trees will be planted. Thus, the impacts will be mild. • Tree plantation and improvement of cross drainage structure will reduce soil erosion. • Tree Plantation (1:3) in lieu of trees to be removed will reduce the intensity of impacts during Phase 1 and 3 of the programs.	• Number of tree-cutting to be removed for infrastructure and industry. • Tree Plantation (1:3) in place of trees to be removed will reduce the intensity of impacts.
Air Pollution/Carbon Emissions	• Frequent traffic congestion and idling on deficient road network. • Increased vehicular growth. • Poor traffic management in urban areas No Segregated traffic on the national highways • Carbon emissions are more due to lower speed, frequent congestion, and vehicle idling.	• Moderately increased gaseous emission The use of low-emission technologies, especially in the energy sector, is expected. • Ruppur Nuclear Power Station will help boost energy and reduce dependency on Diesel Generating (DG) sets. • LPG as a cooking fuel will help reduce wood burning in rural areas. • Carbon emission from vehicular movement is expected to be reduced.	• Air pollution will moderately increase but remain within the yardsticks of DOEs' prescribed limits. • Low-emission technologies will be employed, and cleaner fuel will be used for electricity generation. • The brick kiln industry will be switched to modern green technology, significantly reducing air pollutant emissions. Lower-emitting (EV) vehicles will be in use. • Carbon emission from vehicular movement is expected to be reduced. • 3 times tree plantation will increase carbon sink
Noise Pollution	• Frequent traffic congestion and idling will lead to noise pollution. • Poor enforcement of noise pollution control measures. • Use of localized versions of vehicles on feeder roads	• Increased traffic will cause noise pollution in adjoining areas of the corridor. • Rural areas will face a moderate impact on noise quality due to industrial activity and increased vehicular traffic. • Reduction in the use of the localized version of vehicles	• Increased traffic will cause noise pollution in adjoining areas of the corridor. • Expected that the stringent enforcement of the regulations will completely out of the localized version of vehicles

Table 5-9: Comparison of Low-, Medium-, and High-Growth Scenario

Attributes	Low	Medium	High
Waste Generation	• Improper management of Waste (liquid/solid) in the growth centers • Limited or no compost plant in the study area to treat agriculture/vegetable waste. • Poor management of agricultural waste in the growth center markets.	• Moderate improvements are envisaged due to proper collection and disposal of solid/liquid waste from the growth center market.	• Improved waste collection, treatment and disposal will be in place. • City corporations are expected to have waste recycling systems, for example, compost plants.
Water Pollution	• There is no wastewater treatment from the growth centers. • In the absence of treatment, wastewater is discharged into water bodies. Soil Salinity is expected to increase due to no measures. • Poor drainage system in rural areas Inadequate cross drainage structures.	• Improved drainage system in the growth centers and side drains along the highways. • Moderately improved soil salinity due to adopting sustainable land management (SLM) practices. • Adequate provision of cross-drainage structures in the phase 1 program.	• City Corporations are expected to have wastewater treatment plants. • Adequate provision of cross-drainage structure will be provided in phases 3 and 4 of the program. • Moderately improved soil salinity due to the adaptation of sustainable land management (SLM) practices
Climate Change	• Deficient Infrastructure to meet climate change issues, especially flooding	• Strengthening LGED and feeder roads, secured access, and escape routes during extreme weather events under phase -1 of the program. • Phase 1 Phase 3 will provide climate-resilient structures, for example, bridges and culvert openings (capacity increase)	• Early Warning system installations • Strengthening LGED and feeder roads, secured access, and escape routes during extreme weather events. • Adaptation to cleaner fuel and lower-emission technologies in the transport sector. • Carbon emissions will be reduced due to improved road geometry and lesser highway congestion.
Road Safety	• Poor geometrics • No segregated traffic on the highways • Inadequate Street lighting Road junctions	• Non-motorized traffic will not be allowed on the main carriageway. • Segregated traffic on the corridor Street lightening and Improved junctions	• Segregated traffic on the corridor will provide better road safety. • Entry of non-motorized traffic will be completely prohibited on the main carriageway. • Street lightening and improved junctions
Institutional Structure	• Inadequate number of subject matter experts with the implementing agencies • Currently, there is occasional interaction among the implementing agencies.	• Formation of a Coordination committee to have regular interdepartmental meetings.	• Improved coordination among the policymakers and regulatory requirements.

Table 5-9: Comparison of Low-, Medium-, and High-Growth Scenario

Attributes	Low	Medium	High
Human Dynamics and Social Well-being.	• Limited sources to improve quality of life Limited connectivity for social well-being and human dynamics due to inadequate modes of transport.	• Moderately improved.	• Improved due to upgraded feeder/national and regional highways.
Education	• The average literacy rate in the study area is 71.93%, slightly lower than the national level (74.66%) • About 70% of women are literate, comparatively lower than men.	• Access to higher education	• Improved
Migration	• The outmigration rate is high due to low economic activity. • Many people work as laborers for low wages and thus should adopt alternative livelihood options such as off-farm and non-farm activities.	• moderately improved economic activity in Phase 1 and Phase 3 of the program areas	• Adequate adaptation and mitigation measures implemented (embankments strengthened, coastal afforestation).
Health and Sanitation	• Over 55% of the population uses total Flushing/Pouring Water, followed by pit latrines with slabs and unsafe disposal with flushing and pouring water. • Less than 2% of the population uses open defecation in the Rajshahi division, whereas 0.34% in the Khulna division.	• Public awareness of health and hygiene will be moderately improved. • Moderately improved sanitation facilities in growth centers.	• Public awareness on health and hygiene will be moderately improved. • Moderately improved sanitation facilities in growth centers.
Land Acquisition and Disputes	• Old and poorly managed land records	• Land records will be updated	• Land records updated completely.
Poverty	• High population growth in a low-growth scenario will cause poverty and food insecurity. • The poverty level is higher in the study area because of lesser infrastructure development and industrialization.	• Access to higher education • Better connectivity and industrialization will moderately improve food security and avenues of regular income.	• Reduction in Poverty and improved food security • The rapid global expansion will enable people to escape poverty.

Table 5-9: Comparison of Low-, Medium-, and High-Growth Scenario

Attributes	Low	Medium	High
Gender Equality and Inclusiveness	• Limited avenues for women to earn better income and have employment opportunities. • Limited washrooms for women or sheds for women workers in the growth centers, working places, etc., restricts inclusiveness. • The absence of streetlights is the cause of unsafe and insecure physical mobility of women.	• Moderately improved in the program areas	• Improved
Growth	• Agriculture is the main source of the economy. • Non-agricultural activities include fish cultivation, poultry farms, handicrafts, small-scale manufacturing (both domestic and non-domestic), construction, repair, transportation, and community services. • Application of conventional methods. • Low Growth	• Better connectivity will improve the main economic activity in the study area.	•
Industry and Export	• Low	• Moderately improved	• The improved road network in the study area will increase industrial and export activity. • Increased movement of cargo due to improvement of road network
Employment	• Low rate of employment	• Moderately improvement in employment	• Highly improved due to more industry and export development.
Infrastructure, transport, connectivity, and communication	• Slightly Improved after Padma Bridge in operation since 2022	• Moderate improvement in the infrastructure in the study area	• State of the Art infrastructure and transport.
Agriculture	• Total production of agricultural produce has increased from 2021-2022 by approximately 9% but is less than the pre-pandemic level, i.e., 2019-2020.	• Total production of agricultural produce is expected to be improved.	• Use of the State of the Art technology will increase the product.

5.3.7 COMPARISON STUDY OF LOW-, MEDIUM- AND HIGH-GROWTH SCENARIOS

263. An attempt to compare the environmental and social, including economic impacts and risks associated with different attributes in low-, medium- and high-growth scenarios while the WeCARE program interventions contribute to the study area's development. The comparison presents impacts and risks on different attributes for the three growth scenarios under discussion without applying any mitigation measures and after applying the mitigation measures. A three-scoring scale has been considered for assessment as follows **Table 5-10** to keep the assessment simple:

Table 5-10: Intensity of Impacts and Risks Unmitigated/Mitigated

Unmitigated Score				Mitigated Score		
High	Moderate	Low	Neutral	Low	Moderate	High
-3	-2	-1	0	+1	+2	+3

264. In **Table 5-10 above,** the unmitigated score is the WeCARE program sub-interventions developed using the ESG policy of the World; in contrast, the other developmental programs are undertaken without any safeguarding policy. The mitigated score is considered when all the developmental programs are implemented using proper ESG policy. The comparison of different assessments has been presented in .

Table 5-11: A Comparison of Scenarios with Mitigations and Without Mitigations

S. No	Attributes	Impacts and risks associated with attributes (in Column 2)	Impacts and Risks (Prior Mitigations)			Impacts and Risks (After Mitigation)		
			Low Growth	Medium Growth	High Growth	Low Growth	Medium Growth	High Growth
1	2	3	4	5	6	7	8	9
	Environmental Parameter							
1	**Air Pollution**	Increased industrial activity						0
2		increased traffic movement highways						0
3		Use of cleaner fuel in Industry and advanced Euro-compliant vehicles						+3
4	**Noise Pollution**	Industrial growth						0
5		Increased traffic movement on highway						0
6		Increased Traffic on feeder/LGED roads						0
7		An increased amount of construction works						0
8		Enforcement of Rules and Regulations						+3
9	**Waste Generation**	Solid/Liquid waste generation from growth centers in rural areas						+3
10		Industrial Waste						0
11		Solid/Liquid waste management including Industrial						+3
12		Implementation of Solid Waste Management Rule 2021						+3
13	**Water Pollution**	Wastewater Discharge						+3
14		Saline water ingress						+3
15	**Water Logging**	Cross drainage structure with proper opening						+3
16	**Climate Change and Resilient**	Raised Carriageways, Bridges, and culverts with proper opening						+3
17	**Carbon Emissions**	Vehicles and industrial emissions						+3

Table 5-11: A Comparison of Scenarios with Mitigations and Without Mitigations

S. No	Attributes	Impacts and risks associated with attributes (in Column 2)	Impacts and Risks (Prior Mitigations)			Impacts and Risks (After Mitigation)		
			Low Growth	Medium Growth	High Growth	Low Growth	Medium Growth	High Growth
1	2	3	4	5	6	7	8	9
18	**Land use Pattern**	Permanent change from agricultural land to paved roads or building						+1
19	**Soil Erosion**	Land scaping and Turfing						+3
20	**Loss of Habitat**							+3
21	**Ecology and Biodiversity**	Tree cutting						+3
22	**Policy**	ECR 2023						+3
Cumulative of Environmental Parameters			-42	-34	-28	+14	+32	+43
Social Parameters								
1	**Land Acquisition**	loss of roadside community business and social activity						+1
2		Loss of structures						+1
3		Loss of Agriculture Land						0
4		Loss of Livelihoods						+1
5	**Land disputes**	Record upgradation and Reduce conflicts over the use of land						+2
6	**Traditional Mode of Transport**	Replaced with the modern mode of transport						+2
7	**Social Dynamics and well being**	Better Connectivity						+3
8	**Migration**	Better employment opportunities						+2
9	**Health and Sanitation**	Waste collection and disposal, better facilities						+3
10	**Poverty and Food Security**	Better employment opportunities and a secure working environment						+3
11	**Education**	Access to Higher Education						+3
12	**Cultural Shock**	Special Treatment to Small Ethnic Communities						+3
13	**Gentrification**	Increase in land value, Rental incomes, etc.						+3
14	**Gender Equality and Inclusiveness**	Improve gender equality/women empowerment						+3
15		Better Working Environment and facilities at the working places						+3
	Cumulative Social Impacts and Risks		-28	-24	-21	+8	+28	+33
Economical Parameters								
1	**Growth**	Growth will be in a different field, the agricultural sector, development of economic zones						+3
2	**Industry and Export**	Agro based industry						+3
3	**Employment**	Secured Employment						+3

Table 5-11: A Comparison of Scenarios with Mitigations and Without Mitigations

S. No	Attributes	Impacts and risks associated with attributes (in Column 2)	Impacts and Risks (Prior Mitigations)			Impacts and Risks (After Mitigation)		
			Low Growth	Medium Growth	High Growth	Low Growth	Medium Growth	High Growth
1	2	3	4	5	6	7	8	9
4	**Infrastructure, transport, connectivity and communication**	Improved and increased capacity of roads in rural areas, easy access to urban centers, reduced travel time						+3
5	**Agriculture**	Improvement in agro-logistics						+3
6	**Tourism**	Improvement in tourism and adaptation to prevent and control noise, air and waste generation **Error! Bookmark not defined.**						+3
	Cumulative Economic Impacts and Risks		-13	-7	-7	+3	+11	+18

265. The overall scoring of these three scenarios is presented in **Table 5-12.**

Table 5-12: Total Score of Impacts and Risks Mitigated and Unmitigated of Developed Growth Scenarios

Parameters	Low Growth		Medium Growth		High Growth	
	Impacts and Risks Score					
	Unmitigated	Mitigated	Unmitigated	Mitigated	Unmitigated	Mitigated
Environmental	-42	+14	-34	+32	-28	+43
Social	-28	+8	-24	+28	-21	+33
Economical	-13	+3	-7	+11	-7	+18
Sum	-83	+25	-65	+71	-56	+94

266. After adopting the migration measures, the impacts and risks outweigh the unmitigated score for An exercise in counting the occurrence of scores for different parameters in low-, medium- and high-growth scenarios is presented in Table 5-13**.**

Table 5-13: Scores of Mitigated and Unmitigated Impacts and Risks for Developed Growth Scenarios

Intensity of Impacts	Occurrence of Scores					
	Unmitigated			Mitigated		
	Low Growth	Medium Growth	High Growth	Low Growth	Medium Growth	High Growth
Environmental Parameter						
High	11	2	4	0	5	14
Moderate	2	13	6	3	7	0
Low	5	2	4	8	3	1
Neutral	4	5	8	11	7	7
Social Parameters						
High	3	3	4	0	4	8
Moderate	7	5	3	0	6	3
Low	5	5	3	8	4	3
Neutral	0	2	5	7	1	1
Economical Parameters						
High	2	0	1	0	0	6
Moderate	3	1	0	0	5	0
Low	1	5	4	3	1	0

Table 5-13: Scores of Mitigated and Unmitigated Impacts and Risks for Developed Growth Scenarios						
Intensity of Impacts	**Occurrence of Scores**					
	Unmitigated			**Mitigated**		
	Low Growth	**Medium Growth**	**High Growth**	**Low Growth**	**Medium Growth**	**High Growth**
Neutral	0	0	1	3	0	0
Total Score	43	43	43	43	43	43

267. Further to the analysis of the occurrence of scores of mitigated and unmitigated impacts and risks, a comparison matrix of these two derivatives for the different scenarios is presented . This analysis is based on the following assumption:

- **Environmental Impacts and Risk–Mitigated:** The environmental and social safeguards policies/legal rules (national/international and donor agency) are assumed to have been followed while implementing and operating the projects/program.
- **Environmental Impacts and Risk–Unmitigated:** It is assumed that environmental and social safeguards policies/legal rules have not been adopted in the program/program.

Table 5-14: Comparison of Matrix of Scenario Environmental and Social Risk and Impact Assessment		
Scenario	**Environmental Impacts and Risk Unmitigated**	**Environmental Impacts and Risk – Mitigated**
High growth	In this scenario, industrialization, urbanization, infrastructure development, and road networks will be rapid but without mitigation measures. Thus, the overall situation will worsen, and significant environmental and social risks and impacts are envisaged.	Adopting mitigation measures will make the development environmentally sustainable and enhance achieving socio-economic goals.
Medium growth	This scenario considers growth moderate, but environmental and social impacts still exist. Unmitigated situations will lead to environmentally and socially unsustainable development.	With medium growth, the development will be moderately sustainable.
Low growth	There will be low growth, and the regions will be unable to meet future demand. The environmental and social factors are very much unsustainable.	Since development growth is low, the chances of achieving environmental and social sustainability are neutral.

268. It may be inferred that the mitigated impacts and risks for environmental, social, and economic parameters are greater than those of unmitigated development. Thus, the benefits of the WeCARE program will start from the medium growth scenario when the phase 1 and phase 3 sub-interventions are likely to be completed. However, the situation will improve further during the high growth scenario, with the holistic approach adopted to mitigate the impacts.

6 ENVIRONMENTAL AND SOCIAL IMPACTS, RISKS

269. It is envisaged that between 2023 and 2041, different programs/projects will be executed/developed under the medium- and high-growth scenarios. Each program will have its own environmental and social risks and impacts. Therefore, a cumulative impact assessment (CIA) approach has been adopted to evaluate the macro-level E&S risks and impacts in this section, assuming that all stages of the WeCARE program will be implemented in different timeframes and phases. Therefore, the following subsections discuss potential environmental and social risks and impacts for medium/high growth scenarios.

270. Potential negative impacts from the program interventions have been categorized as low, medium, and high based on the assessment done at the macro-level using banks defined environmental and social standards (1 through 10). Environmental risks and impacts are assessed using the WB group Environmental Health and Safety Guidelines. To determine the potential effects of different program interventions on the existing environmental and social baseline conditions, the activities to be carried out during the program are presented in **Table 6-1**.

Table 6-1: Summary of Program Interventions, Activities, Potential Impact and Risks

Program Intervention	Activities	Potential Impacts	Risks	Funding Agency requirement
Development of National Highways (RHD) Phase -1/Phase -3	Widening and strengthening of National Highways Slow traffic moving lanes. Cross drainage structures Side drains Utility duct Vehicular overpass Pedestrian overpass Flyover/ROB/Elevated Road stretches Intelligent Traffic System	Land use Change Loss of trees Loss of agricultural land Air pollution Noise pollution Loss of land and structures Loss of Income Community Health and safety Occupation Health and Safety Land acquisition of more than 200 ha Labour Influx Sexual Exploitation and Abuse (SEA)/ Sexual Harassment (SH)	High	ESS (1 through 10) of WB/ESS (1 through 3) of AIIB, Red Category requires ECC from DOE ESIA/ESMP and RAP. SEDP (if any)
Upgrading rural roads and enhancing digital connectivity (LGED) Phase -1/Phase-3/Phase -4	Construction and improvement of rural and feeder roads Widening and strengthening of existing feeder roads Landscaping Tree plantation Road Safety Cross drainage structures, Bridges, etc. Road widening requires land acquisition (if required).	Land use pattern (minor) Air pollution Water pollution Noise pollution Soil Pollution Loss of structures Land Acquisition between 100ha and 200ha	Medium	IEE, ESIA, ESMP, LMP, SEP, GBVP, CHSP, OHSP, GRM, SEDP (if any) – NOC/ECC is required from the regulatory authorities (Orange A/B Category)
Developing complementary logistics infrastructure and services (LGED) Phase -1/Phase-3/Phase -4	Development Market infrastructure and logistics will include: Different sheds, Multistorey shopping in congested space Wastewater drainage Cool room/storage where applicable Community space Green space Toilets Water supply and sewerage Internal road Parking space Solid waste management Construction of connecting roads	Land use pattern Social impacts Air pollution Water pollution Noise pollution Soil Pollution Tree Cutting	Low	IEE, ESIA, ESMP, LMP, SEP, GBVP, CHSP, OHSP, GRM, SEDP (if any) – NOC from the regulatory bodies (Orange B), Development of Landfill sites for Solid waste management requires ECC from DOE.

Table 6-1: Summary of Program Interventions, Activities, Potential Impact and Risks				
Program Intervention	**Activities**	**Potential Impacts**	**Risks**	**Funding Agency requirement**
	to local farms and collection centers.			

6.1 POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS AND RISKS

271. Potential environmental impacts and risks are identified based on (ESS 1 through 10) at the macro level, keeping in view the regional settings of the study area. The impacts and risks are briefly discussed in the following subsections on the labor working conditions (ESS2), resource efficiency and pollution prevention and management resource (ESS3), community health and safety, Biodiversity Conservation and Sustainable Management of Living Natural Resources (ESS6), and Stakeholder Engagement and Information Disclosure (ESS10).

6.1.1 IMPACT ON LAND USE PATTERN (ESS6)

272. It is envisaged that the diversion of land for new realignments/bypasses will be required to improve the geometrics of the existing national highways, and that will cause a permanent impact on existing land use patterns. The land use change will be permanent, moving from agriculture to paved roads.

273. At locations in phase 3, the proposal for the bypass has been made to improve the national highway, which will divide the agricultural land and reduce productivity. The design needs to be optimized by adjusting various requirements, adopting state-of-the-art technology measures, and considering rigorous/well-coordinated efforts to reduce the intensity of impacts.

274. There will be low impacts due to the development of rural/feeder roads in phases 1/3 and 4. The program will have low impacts if the interventions do not distort the rural areas' existing field system or landscape, i.e., by cutting obliquely rectangular fields into numerous isolated fields, rendering them non-cultivable or challenging to cultivate.

275. This principle shall be followed strictly while developing LGED roads and growth centers or designing bridges or elevated structures to connect the two LGED roads. Special care throughout the development phases of the program shall be followed, not just in the Chalon Beel area but in all aspects of the program, which is crucial for ensuring a sustainable approach.

6.1.2 ECOLOGY AND BIODIVERSITY (ESS1, ESS6)

276. The development of the national highway in phases 1 and 3 of the program will require the removal of trees/avenue trees to widen the existing alignment. About 20,000 trees in Phase 1 and 24,000 to 30,000 trees in Phase 3 need to be removed to develop national highways. These are the common species such as Rain Tree, Mahogany, Babul, Neem, Mango Jackfruit, Debdaru, Deou, Demur, Gamari, Ipil-Ipil, Jalpai, Jam, Kanthal, Khejure, etc. No endangered/threatened species are being affected by national highway development. Conversely, the tree plantation will be carried out by planting trees in a 1:3 ratio for the trees removed. However, implementing agencies will obtain the necessary permission from the forest department and adhere to all environmental regulations.

277. The surface water bodies, such as Chalon Beel, Baor, and Pakur, are within the study area, in addition to rivers crossing the national highways and LGED roads. During field visits, discussions with locals, and the literature review, it was learned that Baor usually is the dead arms of rivers such as the Ganges and formed due to changes in the course section of the river and subsequent siltation ranges. The length of these Baors is between 500m and a few km and is in an oxbow shape. Baors are more stagnant than Beels and generally have water throughout the year.[66] Baors are fish sources, and fish catching is carried out through a community-based fisheries management system. Villagers cultivate rice/vegetables and use water for irrigation in non-monsoon periods.

278. In Phases 1 and 3, the development of the national highway will not impact any Baor. The development of LGED roads in Jashore and Jhenaidah (Phases 1 and 3) may impact the Baor if the proper mitigation measures are not adopted at these locations. For example, construction materials shall not be stored on the periphery of these water bodies, and construction and demolition waste shall not be disposed of. The labor camps shall be 500m away from the Baor locations.

279. In phases 1 and 3/4, the provision of bridges (new/old) over the rivers and culverts over the drains are proposed. The bridges shall be designed per the Bangladesh Inland Water Transport Authority (BIWTA)

[66] Management and socio-economic conditions of fishermen of the Baluhar Baor, Jhenaidah, Bangladesh, BM Shahriar Abdullah-Bin-Farid, et al. Journal of Fisheries Volume 1 Issue 1 Pages: 30-36 December 2013

guidelines, considering the HFL. However, no blocking of water flow shall be allowed during the construction phase.

280. Chalon Beel is in Phase 4, which gets flooded during the monsoon season and crosses the Hatikumrul to Bonapara sections of the national highway and the number of LGED roads. However, all the roads are above the flood level and have not been submerged recently, per discussions with local/shopkeepers/villagers/farmers. Nevertheless, it is recommended that adequate drainage arrangements be provided to prevent water logging in the Chalon Beel area. Further, during the construction phase of phase 4 feeder roads, it is highly recommended that construction camps, stockyards, etc., shall not be sited in flood plains of Chalon Beel, or construction material shall be removed immediately after the construction is over. No blockage of water flow shall be there. All debris or construction material shall be removed immediately after construction.

6.1.3 AMBIENT AIR QULAITY (ESS1,3,4,6)

281. The air quality of the area will be affected due to the transport of materials, quarry/borrow operations, movement of vehicles on haul roads/construction yards, and fugitive emissions from the construction sites/plant sites. Construction activities contributing to air pollution include land clearing, operation of diesel engines, demolition, loading and unloading of construction materials, movement of material transporting vehicles, and operation of hot mix plant. Construction sites generate dust emissions. Construction dust is classified as PM10 - particulate matter less than 10 microns in diameter.

282. As envisaged in the program, developing national highways will be undertaken during phases 1 and 3. In contrast, developing LGED roads and complementary logistics infrastructure/services will be conducted during phases 1,3 and 4.

283. Emissions of gaseous pollutants and particulate matter (PM10, PM2.5) are expected from implementing various program interventions in the study area. The literature review also shows that the highest levels were reported in locations with significant construction and heavy traffic movement, while the lowest were in areas with persistent traffic.

284. During the construction phase of the program, moderate and short-term air quality impacts are anticipated in the study area. To reduce the intensity of these impacts, the contractor shall use low-emission equipment and vehicles. Tarp shall cover vehicles transporting material.

285. The movement of more vehicles during the operation phase will affect the air quality. The main gaseous pollutant is CO emission from moving sources. Traffic on the national highways is projected to grow at a rate of 6% by 2041. However, according to the simulation models in previous EIA studies, the total impact on CO levels will be below the criteria of the DOE. Vehicles traveling on unpaved shoulders emit particulate matter due to particle resuspension on the ground. Thus, the LGED roads should have paved shoulders in their design, especially in rural/commercial areas.

6.1.3.1 AIR QUALITY MODELLING

286. The baseline air quality monitoring results during the ESIA study are presented in .

Table 6-2: Results of the Ambient Air Quality Tastings

Sl. No.	Name of Location	Land Use	Concentrations (µg/m3)				CO (ppm)	Location
			PM2.5	PM10	NO2	SO2		
1.	Al Hera Intersection	Rural Residential cum Commercial	10.5	19.1	39.2	167.2	0.761	23°31'22.79"N 89°10'9.86" E
2.	Bishoykhali,	Rural Residential cum Commercial	11.9	22.2	22.6	139.8	0.695	23°26'41.08"N 89° 8'19.36"E
3.	Kaliganj	Rural Residential cum Commercial	19.6	33.7	27.4	145.2	0.620	23°24'57.97"N 89° 8'10.82"E
4.	Dulalmundia Bazar	Rural Residential cum Commercial	15.3	29.3	25.4	194.4	0.563	23°22'50.47"N 89° 8'17.33"E
5.	Jamtola-Pirojpur,	Rural Residential cum Commercial	14.1	27.3	22.0	187.6	0.607	23°19'18.33"N 89° 8'47.43"E
6.	Hat Barobazar	Rural Residential cum Commercial	20.2	35.2	33.4	145.9	0.385	23°18'3.32"N 89° 9'16.43"E
7.	Barinagar	Rural Residential cum Commercial	23.0	47.1	31.7	139.1	0.159	23°14'39.09"N 89° 9'59.21"E

Table 6-2: Results of the Ambient Air Quality Tastings

Sl. No.	Name of Location	Land Use	Concentrations (µg/m3)				CO (ppm)	Location
			PM2.5	PM10	NO2	SO2		
8.	Khayertala	Rural - Urban	27.6	48.8	34.8	184.1	0.357	23°11'23.54"N 89°11'4.40"E
9.	Dharmatala Moor, Jashore	Rural-Urban	17.9	38.9	39.4	152.4	0.863	23° 9'52.51"N 89°11'36.39"E
Average Concentration in µg/m^3			17.8	33.5	30.7	161.7	0.637	

287. The baseline sulfur dioxide concentration is reported to be very high due to the burning of domestic cooking fuel in rural areas. Urgent action is required to switch to liquified petroleum gas (LPG).

288. The CALPUFF View Version 9.0 model is used for air quality simulating the air quality in the program area covering the ten districts. This puff model can fully account for hour-by-hour and spatial variations in stability and wind. It performs well at downwind distances from a few kilometers. The current version can also work for Road Sources. Hence, it is applicable for simulating the baseline and future scenarios 2031 and 2041.

289. The chimney, brick kilns and rice mills, land port, and major roads are considered to assess the cumulative impacts. Emission rates have been considered using the SEA report, AP 42 USEPA, and CPCB—India. The model is employed for 200x200km, better representing the program area's terrain, which is not complex.

290. The metrological data is collected for 2023 for the program area's center point (23.49916 N, 89.14893 E). Since the winter season is the most stable meteorological condition, the model is run for the January wind data. The wind rose diagram for the winter season is presented in Figure 6-1 The predominant wind direction is Northwestern (NW).

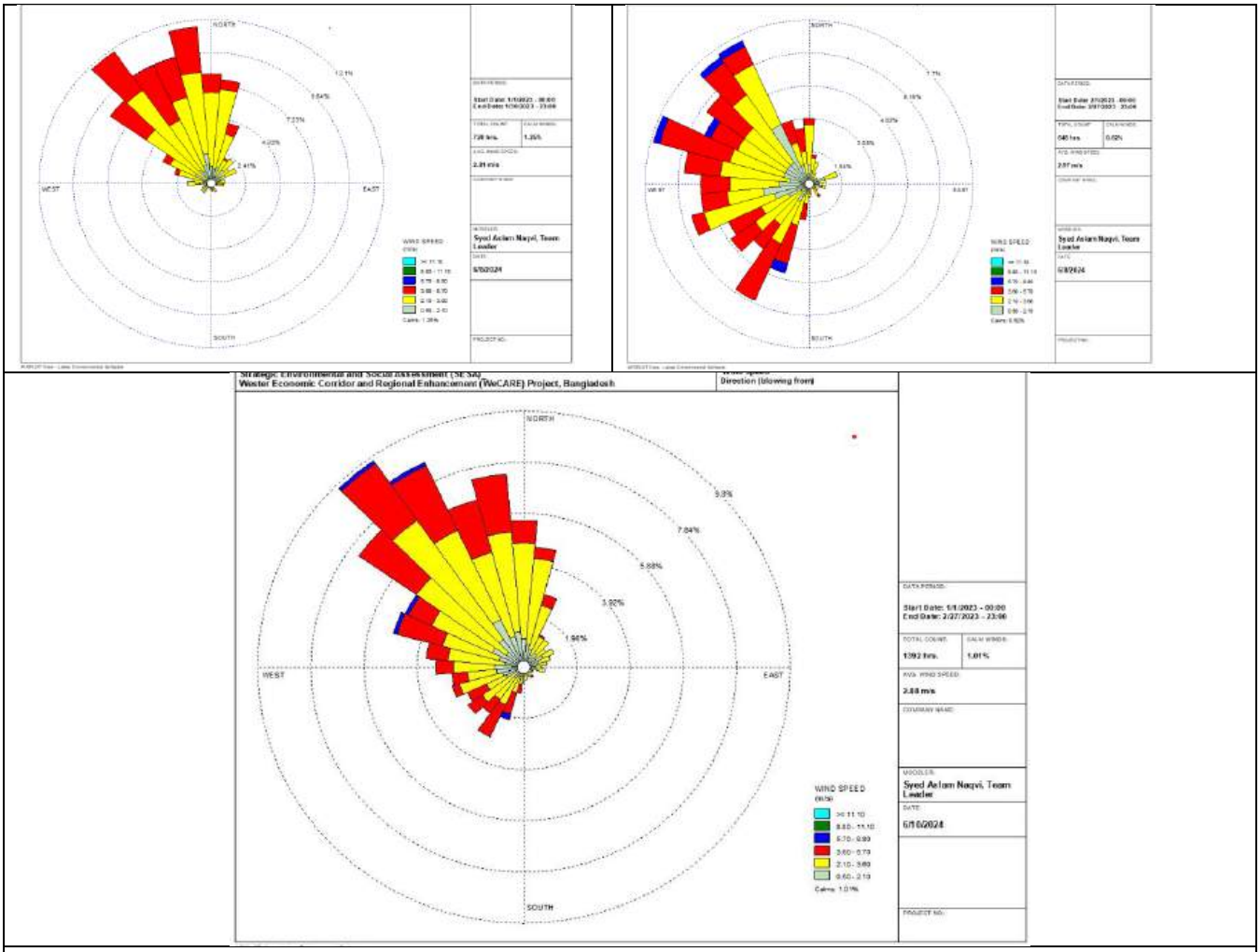


Figure 6-1: Winter Season Wind Rose Diagram

291. The sources include Area sources (Bhomra Land Port, Landfill), Point Sources (Brick kiln), Road Sources (National Highway, Zilla Road, Poursabha Road), and Power Plants (2 No.). There is no coal-based thermal power plant in the program districts. A list of sources used for running the simulation models is presented in **Error! Reference source not found.**. The emission factors are determined using the SEA report for Sundarbans, AP42 (USEPA), and CPCB-India for vehicular exhaust.

Table 6-3: Emission Factors Used for Air Pollution Modelling

Type of Source	Description of source	CO	SO2	PM10	PM2.5	NOx	X in m	Y in m
ROAD	Western Corridor	0.0055	0.0001818	0.000022	7.7E-06	0.000141	701212.3	2507122
POINT	Brick Kiln		7.15	6.44	2.12	0.214	724812.6	2602160
POINT	Brick Kiln		7.15	6.44	2.12	0.214	724597.9	2602168
POINT	Brick Kiln		7.15	6.44	2.12	0.214	725240.5	2601838
POINT	Brick Kiln		7.15	6.44	2.12	0.214	725637.3	2605838
POINT	Brick Kiln		7.15	6.44	2.12	0.214	719609	2581618
POINT	Brick Kiln		7.15	6.44	2.12	0.214	719096	2582721
POINT	Brick Kiln		7.15	6.44	2.12	0.214	739369.5	2601671
POINT	Brick Kiln		7.15	6.44	2.12	0.214	705908.9	2602493
POINT	Brick Kiln		7.15	6.44	2.12	0.214	702879.8	2603195
POINT	Brick Kiln		7.15	6.44	2.12	0.214	695169.4	2599732
POINT	Brick Kiln		7.15	6.44	2.12	0.214	706176.5	2623546
POINT	Brick Kiln		7.15	6.44	2.12	0.214	706083.8	2623077
POINT	Brick Kiln		7.15	6.44	2.12	0.214	704656.7	2622357
POINT	Brick Kiln		7.15	6.44	2.12	0.214	704905.9	2622821
POINT	Brick Kiln		7.15	6.44	2.12	0.214	697139.9	2582344
POINT	Brick Kiln		7.15	6.44	2.12	0.214	695564.9	2583214
POINT	Brick Kiln		7.15	6.44	2.12	0.214	713047.5	2580983
ROAD	zilla road	0.0007	0.0000013	1.1E-06	0.000001	2.58E-05	720478.4	2577103
ROAD	zilla road	0.0002	0.00000108	0.000022	7.7E-06	0.000125	718217.3	2590500
ROAD	zilla road	0.001	0.00000108	0.000022	7.7E-06	0.000125	720209	2623890
ROAD	zilla road	0.0001	0.00000108	0.000022	7.7E-06	0.000125	695879.2	2611473
ROAD	zilla road	0.0001	0.00000108	0.000022	7.7E-06	0.000125	723641.4	2605012
ROAD	zilla road	0.0001	0.00000108	0.000022	7.7E-06	0.000125	742557	2588915
ROAD	zilla road	0.0028	0.00009089	2.86E-05	1.01E-05	7.06E-05	726106	2564660
ROAD	Benapole Bhanga Road	0.0028	0.00009089	2.86E-05	1.01E-05	7.06E-05	693219.8	2549809
AREA	Bhomra Land Port	0.0001	3.9662E-06	0.000168	0.000153	3.08E-06	700429.6	2508162
POINT	Brick Kiln		7.15	6.44	2.12	0.214	707785.5	2510318
POINT	Brick Kiln		7.15	6.44	2.12	0.214	707785	2510278
POINT	Brick Kiln		7.15	6.44	2.12	0.214	693804	2644710
POINT	Brick Kiln		7.15	6.44	2.12	0.214	713353.8	2650147
POINT	Brick Kiln		7.15	6.44	2.12	0.214	715466.9	2639353
POINT	Brick Kiln		7.15	6.44	2.12	0.214	721150.6	2653544
POINT	Brick Kiln		7.15	6.44	2.12	0.214	723827.4	2656197
POINT	Brick Kiln		7.15	6.44	2.12	0.214	729458.2	2652167
POINT	Brick Kiln		7.15	6.44	2.12	0.214	728550.8	2651801
ROAD	zilla road	0.0028	0.00009089	0.000025	8.3E-06	7.06E-05	671256.2	2629798
ROAD	zilla road	0.0009	0.0000303	0.000032	1.27E-05	2.35E-05	681371.9	2652358
ROAD	zilla road	9E-05	3.0297E-06	0.000007	3.2E-06	2.35E-05	682100.4	2656555
ROAD	zilla road	9E-05	3.0297E-06	9.23E-05	9.23E-05	9.23E-05	714480.4	2516078

Table 6-3: Emission Factors Used for Air Pollution Modelling

Type of Source	Description of source	CO	SO2	PM10	PM2.5	NOx	X in m	Y in m
ROAD	zilla road	9E-05	3.0297E-06	0.000018	5.6E-06	2.35E-05	723925.5	2521490
ROAD	zilla road	9E-05	3.0297E-06	0.000018	5.6E-06	2.35E-05	731993.2	2561041
POINT	Brick Kiln		0.02	0.19	0.19	6.2	705194.5	2661080
POINT	Brick Kiln		4.8	1.6	1.6	25.6	705207.6	2661214
POINT	Brick Kiln		7.15	6.44	2.12	0.214	736340.7	2612903
POINT	Brick Kiln		7.15	6.44	2.12	0.214	736340.7	2612903
POINT	Brick Kiln		7.15	6.44	2.12	0.214	736340.7	2612903
POINT	Brick Kiln		7.15	6.44	2.12	0.214	736340.7	2612903
AREA	Bus terminal at Benapol border	0.0001209	0.0001	3.9662E-06	0.000168	0.000153	693240	2549060
AREA_POLY	Border Parking Benapol	0.0001209	3.9662E-06	0.000168	0.000153	3.08E-06	692801.7	2548586

292. The simulation model is employed for determining the criteria pollutants such as Carbon Monoxide (CO), Sulfur dioxide (SO_2), Nitrogen Dioxide (NO_2), PM_{10}, and $PM_{2.5}$ for point, area, and road sources for the current year 2023. The predicted maximum concentration of criteria pollutant results for the year 2023 using the emissions factors are summarized in **Table 6-4.**

Table 6-4: Predicted Concentration of Criteria Pollutants for 2023

Air Pollutant	Time Weighted Average	Maximum of predicted Concentration in Ambient Air (µg/m³) using CALPUFF	UTM Coordinates		National Ambient Air Standards (µg/m³)	Remarks
			X in Km	Y in Km		
PM10 µg/m³	24 hr	20.47	691.943	2547.920	150	
PM 2.5 µg/m³	24 hr	18.41	691.943	2547.920	65	
NO2 µg/m³	24 hr	23.01	701.943	2607.920	80	
SO2 µg/m³	24 hr	14.33	716.943	2632.920	80	
CO mg/m³	1 hr	1.686	701.943	2607.920	20	

293. It is observed that there is not much variation in monitored concentrations of pollutants in ambient air and modelled predicted results. The isopleth for the program is shown in the following .

Figure 6-2: Isopleths of Predicted Concentration of Criteria Pollutants in Ambient Air 2023

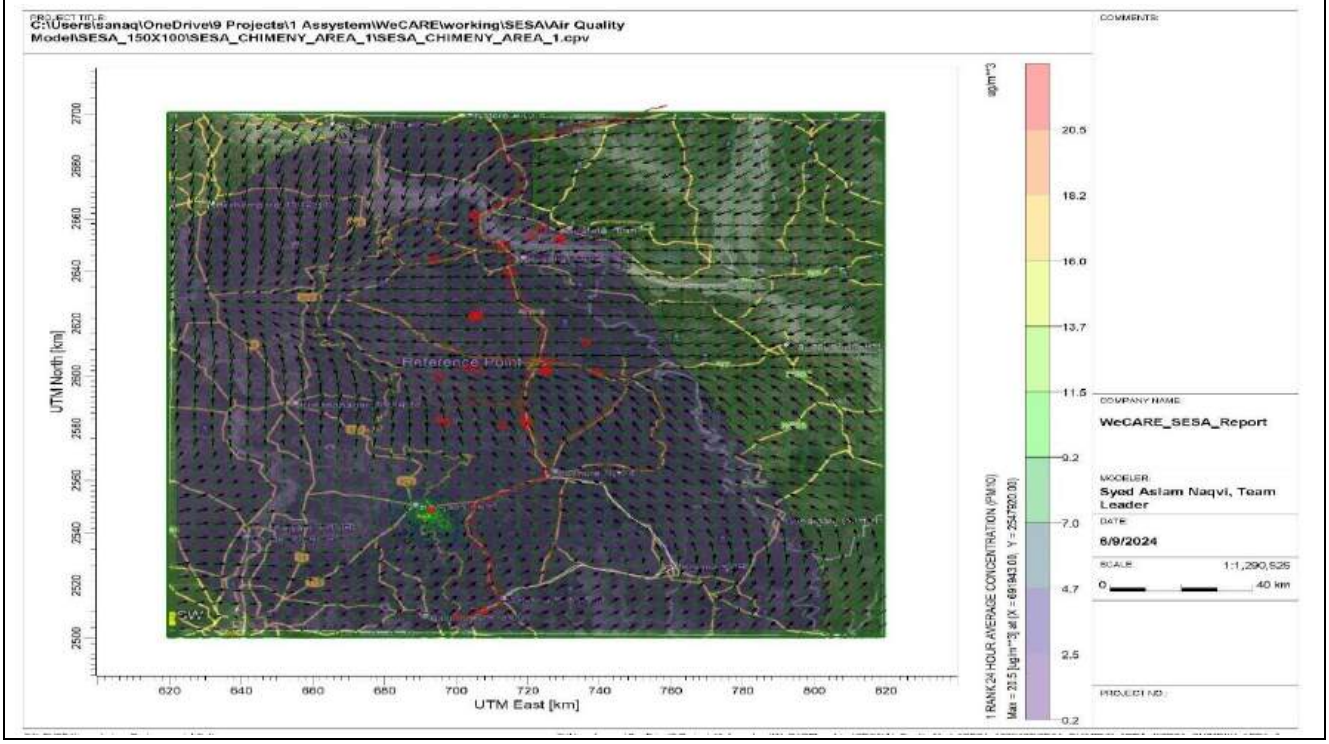
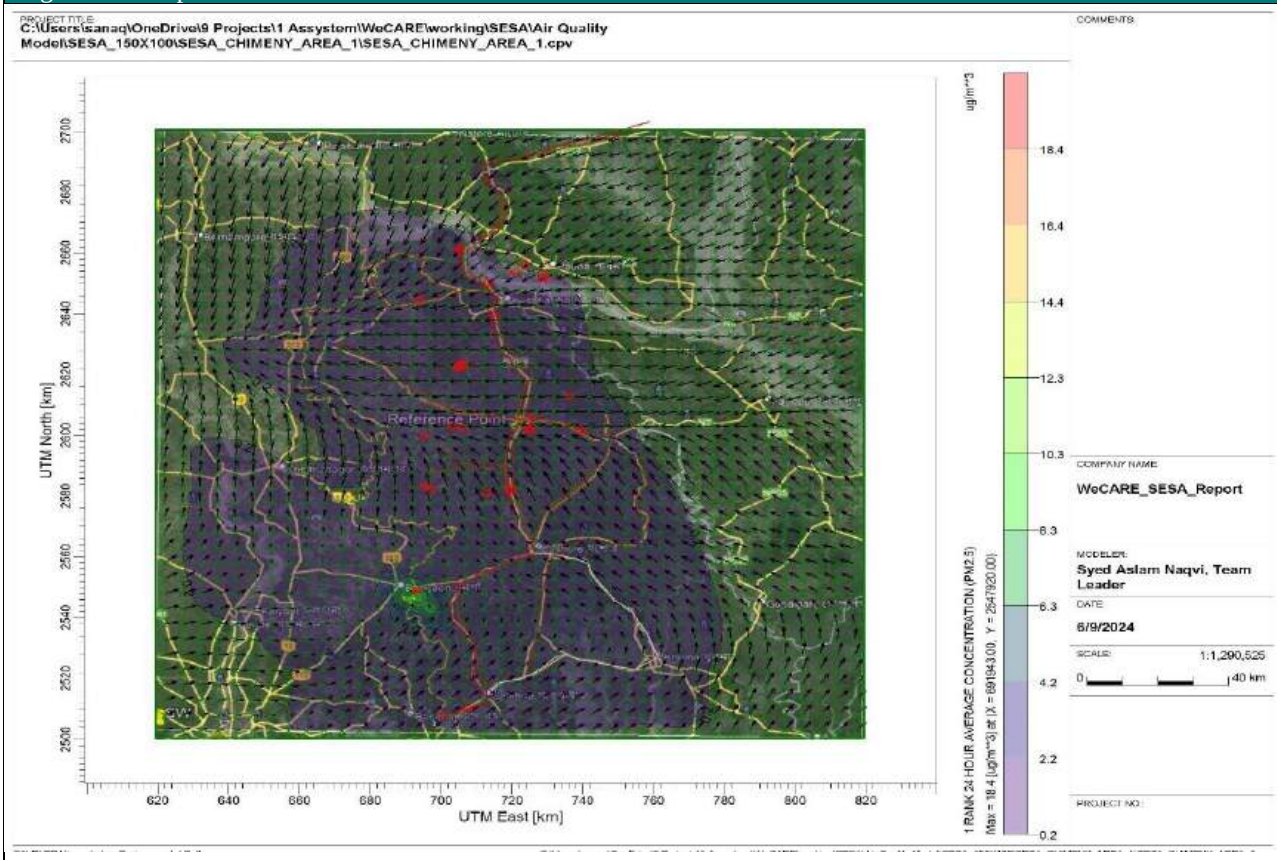


Figure 6-2: Isopleths of Predicted Concentration of Criteria Pollutants in Ambient Air 2023



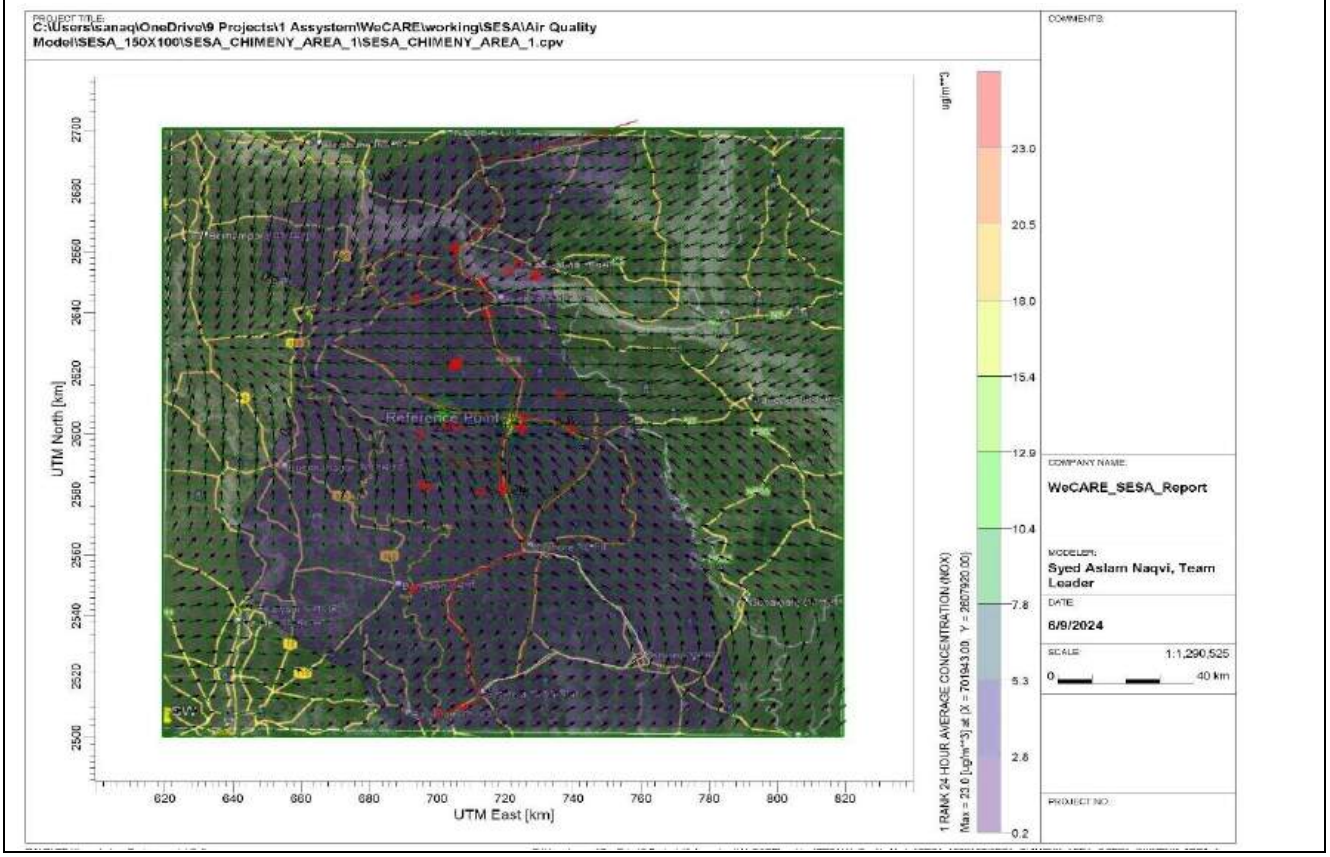
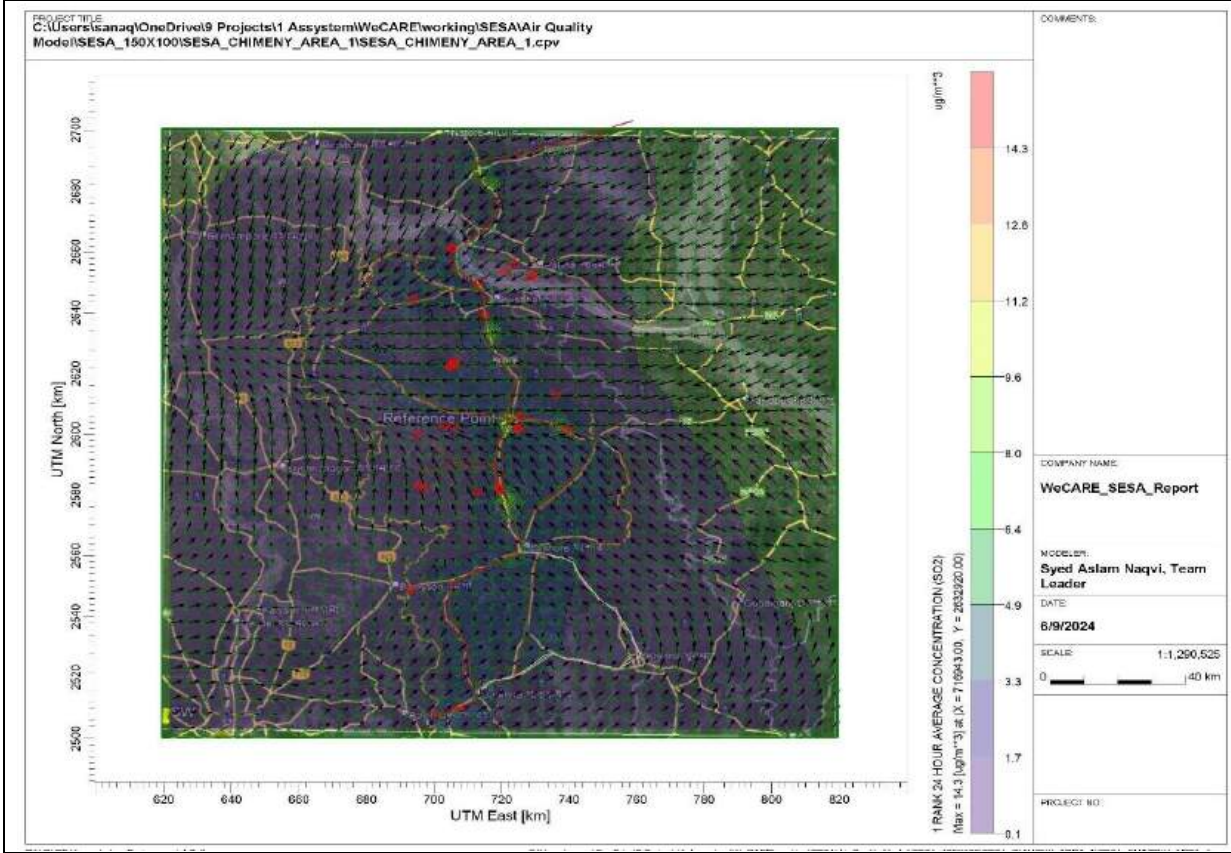
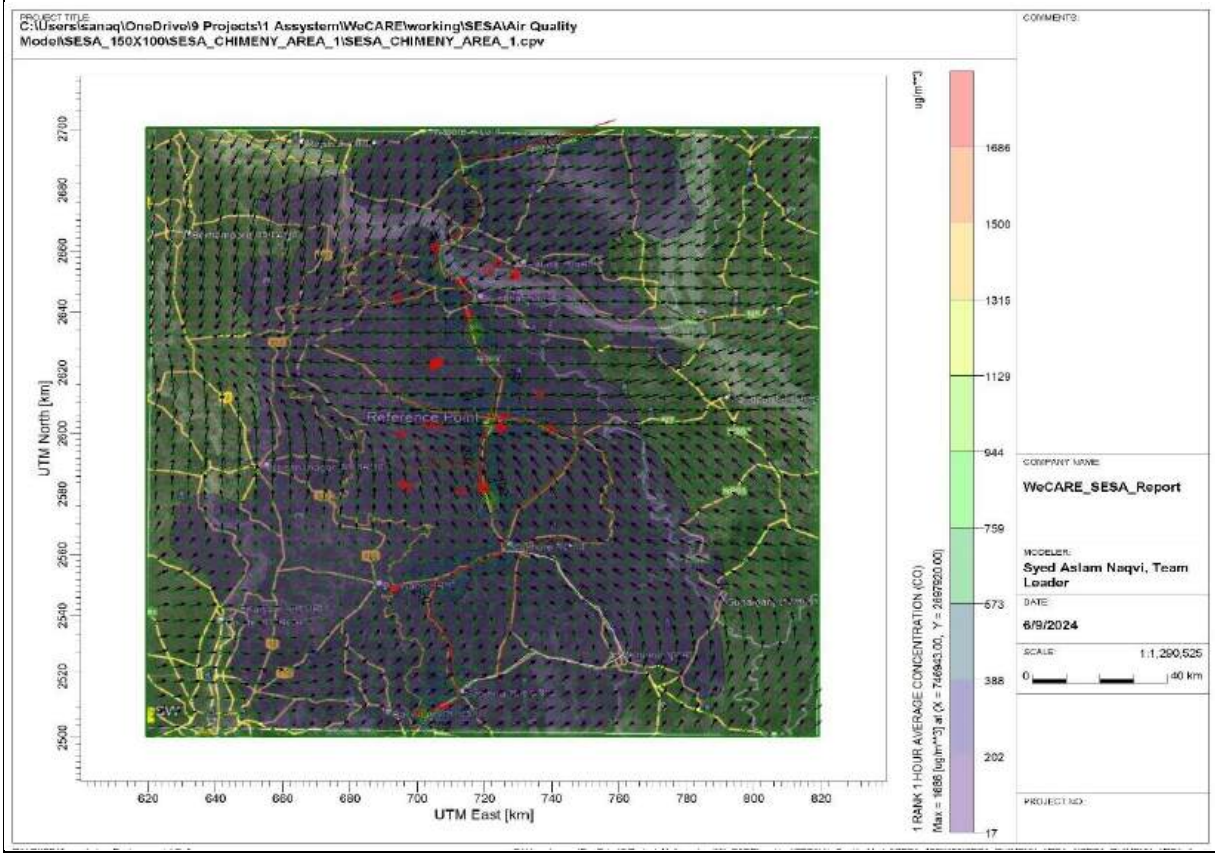


Figure 6-2: Isopleths of Predicted Concentration of Criteria Pollutants in Ambient Air 2023





294. The a**ir quality model is carried out for 2031** by increasing the emissions factor twice and incorporating more road and two area sources, such as the potential Special Economic Zone of BEZA. The predicted results are summarized in .

Table 6-5: Predicted Concentration of Criteria Pollutants for 2031

Air Pollutant	Time Weighted Average	Maximum of predicted Concentration in Ambient Air using CALPUFF	UTM Coordinates		National Ambient Air Standards ($\mu g/m^3$)	Remarks
			X in Km	Y in Km		
PM10 $\mu g/m^3$	24 hr	30.7	691.943	2547.920	150	49.97
PM 2.5 $\mu g/m^3$	24 hr	27.7	691.943	2547.920	65	50.46
NO2 $\mu g/m^3$	24 hr	34.6	701.943	2607.920	80	50.36
SO2 $\mu g/m^3$	24 hr	25.0	671.943	2612.920	80	74.45
CO mg/m^3	1 hr	3.1774	766.943	2652.920	20	88.45

295. It is to be noted that there is an increase in the concentration of criteria pollutants in ambient air by about 50%. The concentration of sulfur dioxide is increasing by 75%, and Carbon monoxide is increasing by 88.45%—the concentration of pollutants in ambient air increases due to development activities and traffic volume growth. However, the predicted values are within the permission limits. However, control measures must be adopted to control particulate matter. The isopleth for the program is shown in .

Figure 6-3: Isopleths of Predicted Concentration of Criteria Pollutants in Ambient Air 2031

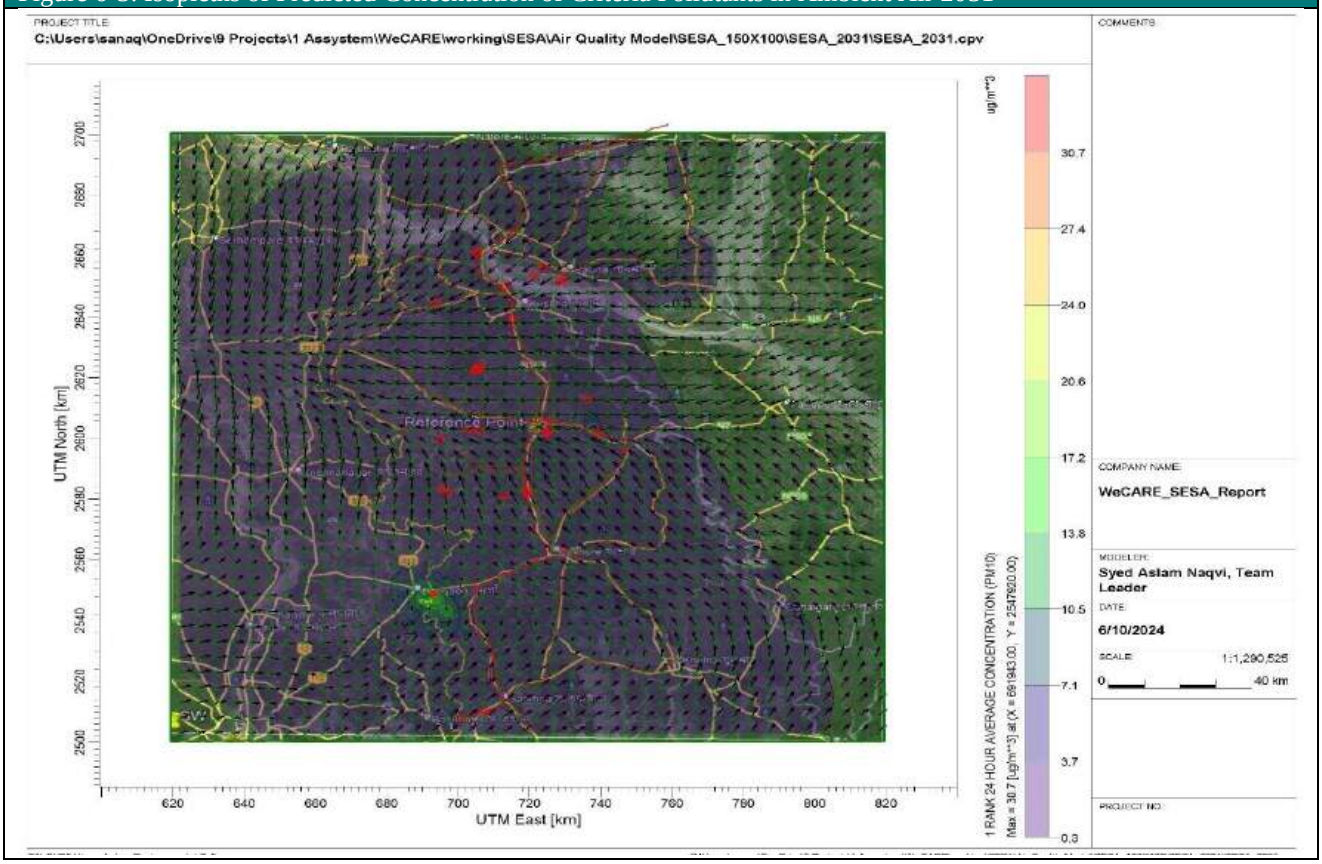
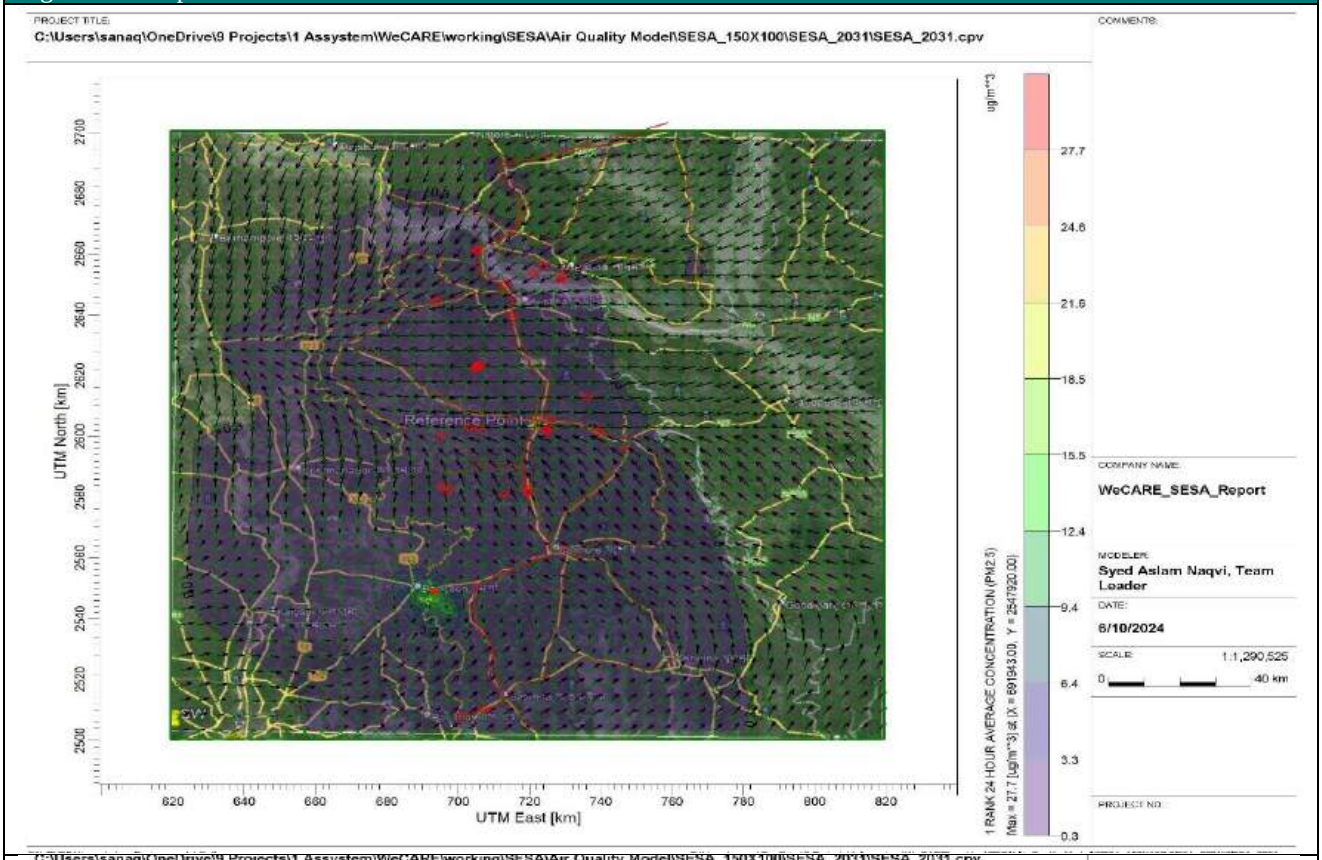


Figure 6-3: Isopleths of Predicted Concentration of Criteria Pollutants in Ambient Air 2031



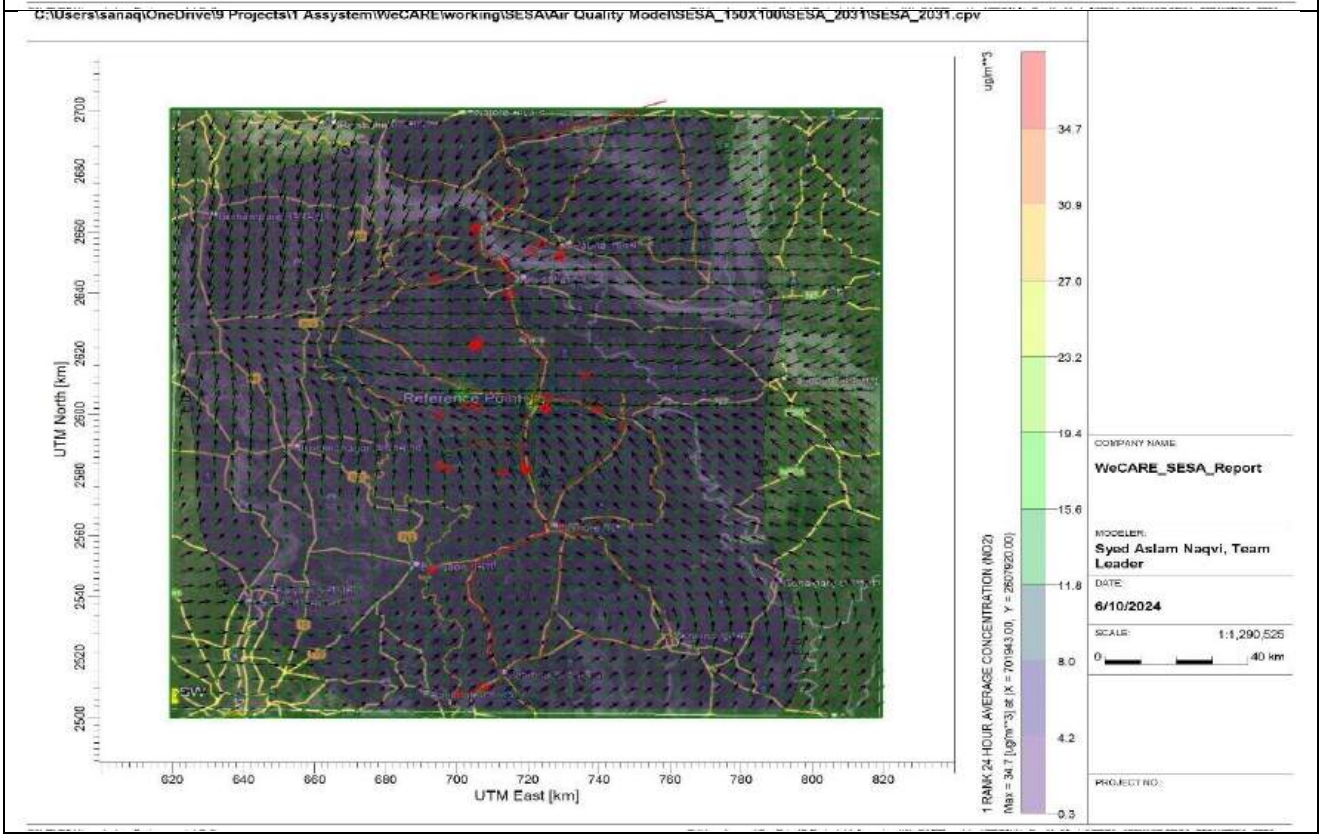
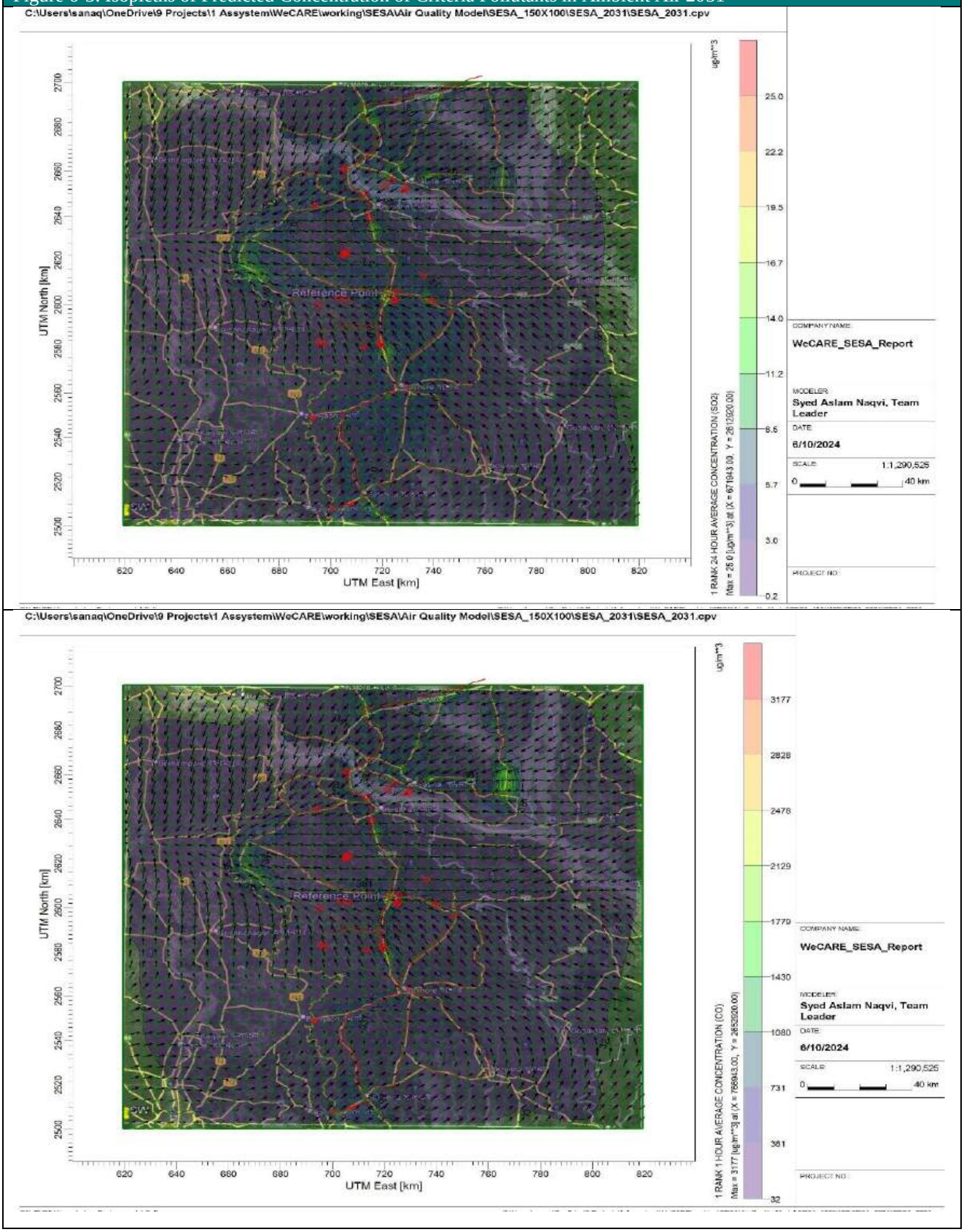


Figure 6-3: Isopleths of Predicted Concentration of Criteria Pollutants in Ambient Air 2031



296. The a**ir quality model is carried out for 2041** by increasing the emissions factor twice and incorporating more road and two area sources, such as the potential Special Economic Zone of BEZA. The predicted results are summarized in .

297.

Table 6-6: Predicted Concentration of Criteria Pollutants for 2041						
Air Pollutant	**Time Weighted Average**	**Maximum of predicted Concentration in Ambient Air using CALPUFF**	**UTM Coordinates**		**National Ambient Air Standards**	**Remarks**
			X in Km	**Y in Km**		
PM10	24 hr	41 µg/m^3	691.943	2547.920	150 µg/m^3	
PM 2.5	24 hr	36.9 µg/m^3	691.943	2547.920	65 µg/m^3	
NO2	24 hr	46.2 µg/m^3	716.943	2632.920	80 µg/m^3	
SO2	24 hr	34.8 µg/m^3	716.943	2632.920	80 µg/m^3	
CO	1 hr	3.385mg/m^3	746.943	2697.920	20 mg/m^3	

298. It is to be noted that there is an increase in the concentration of criteria pollutants in ambient air. are within the permission limits in the year 2031. However, control measures must be adopted to control particulate matter. The isopleth for the program is shown in .

Figure 6-4: Isopleths of Predicted Concentration of Criteria Pollutants in Ambient Air 2041

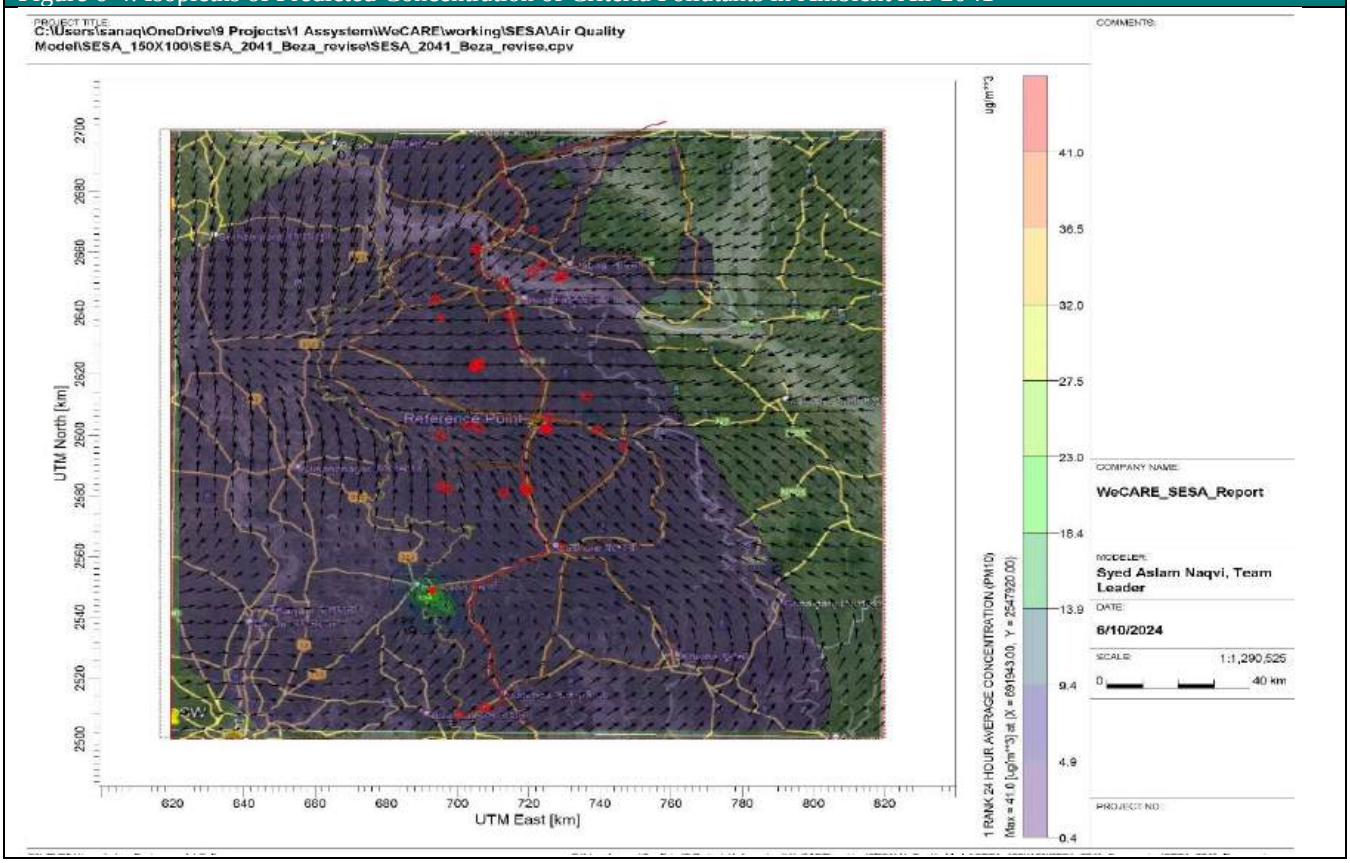
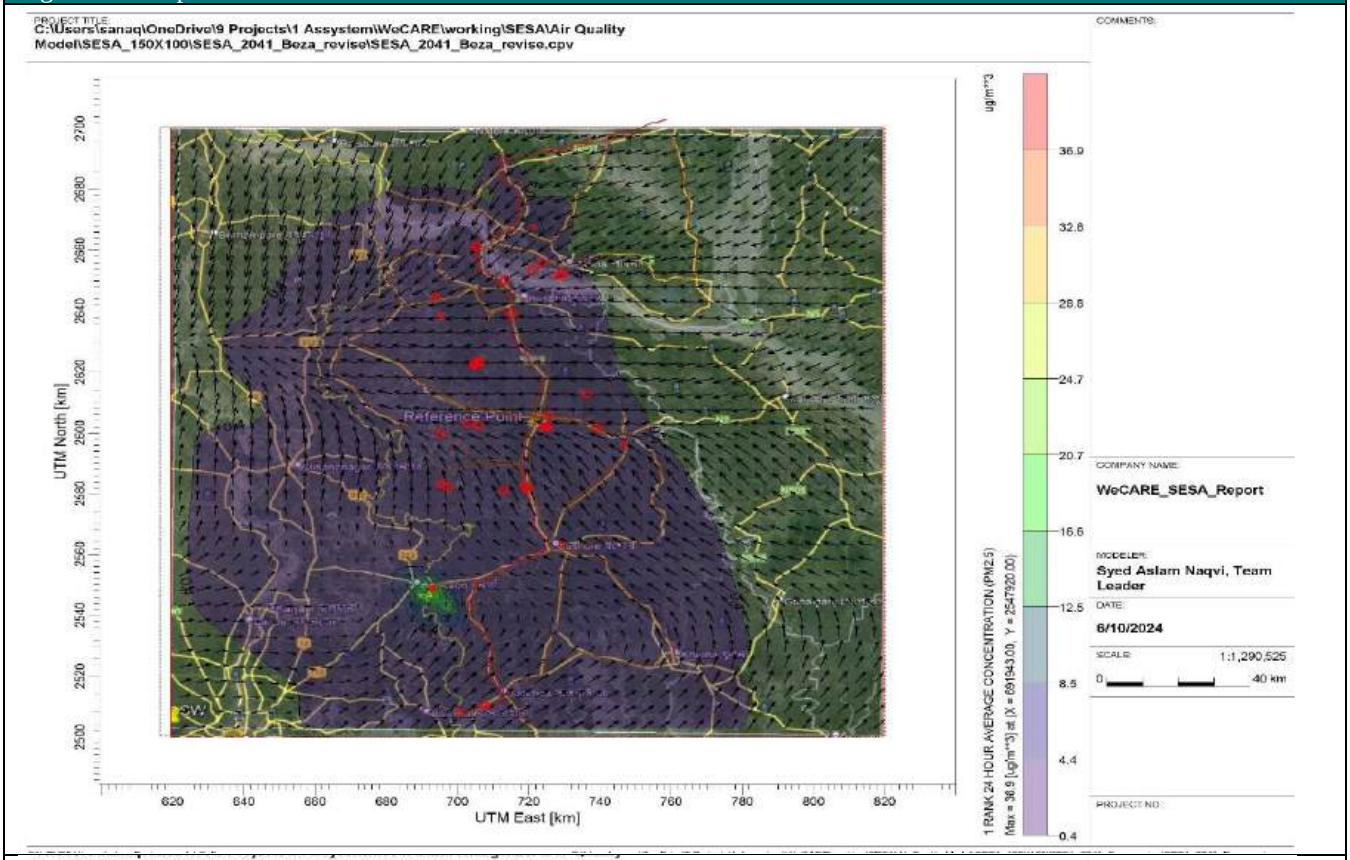


Figure 6-4: Isopleths of Predicted Concentration of Criteria Pollutants in Ambient Air 2041



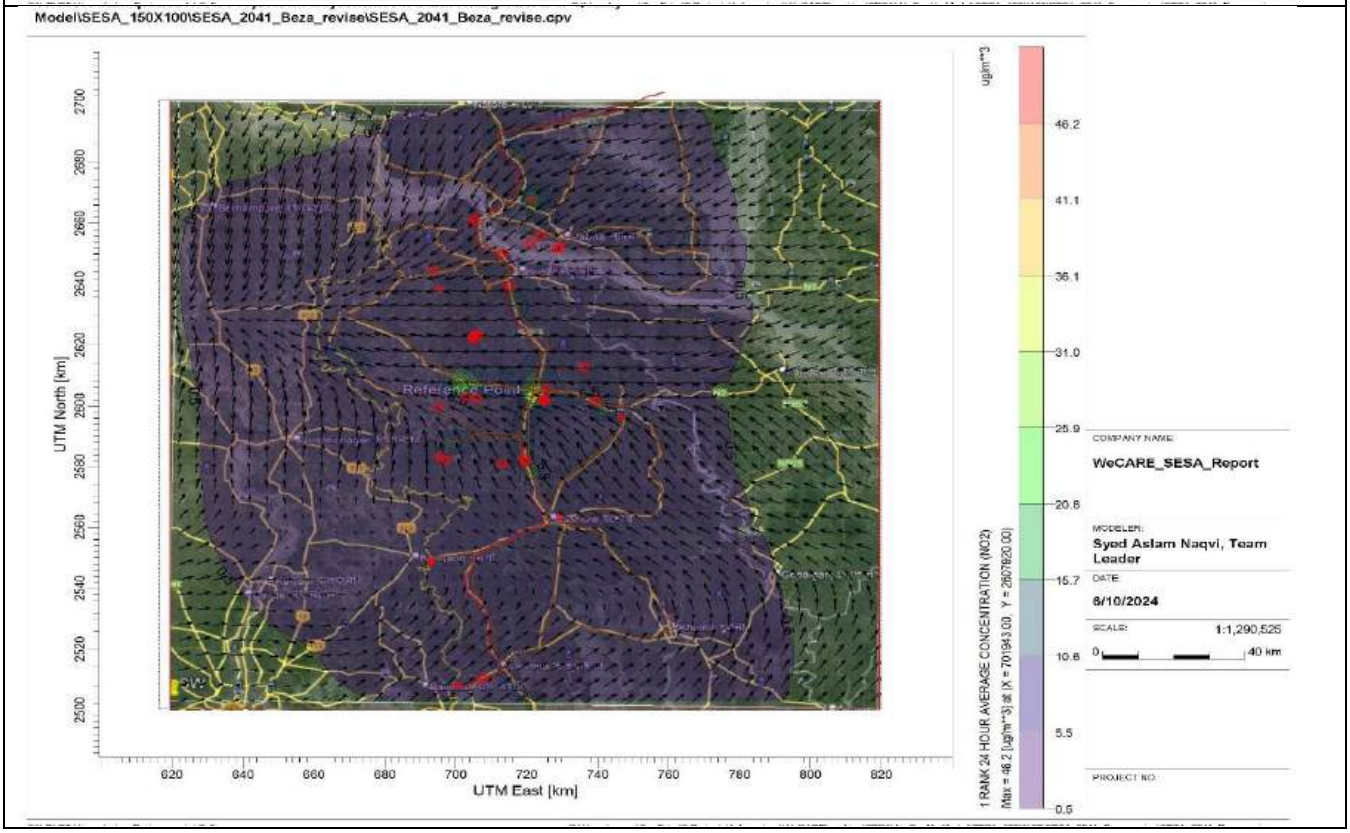
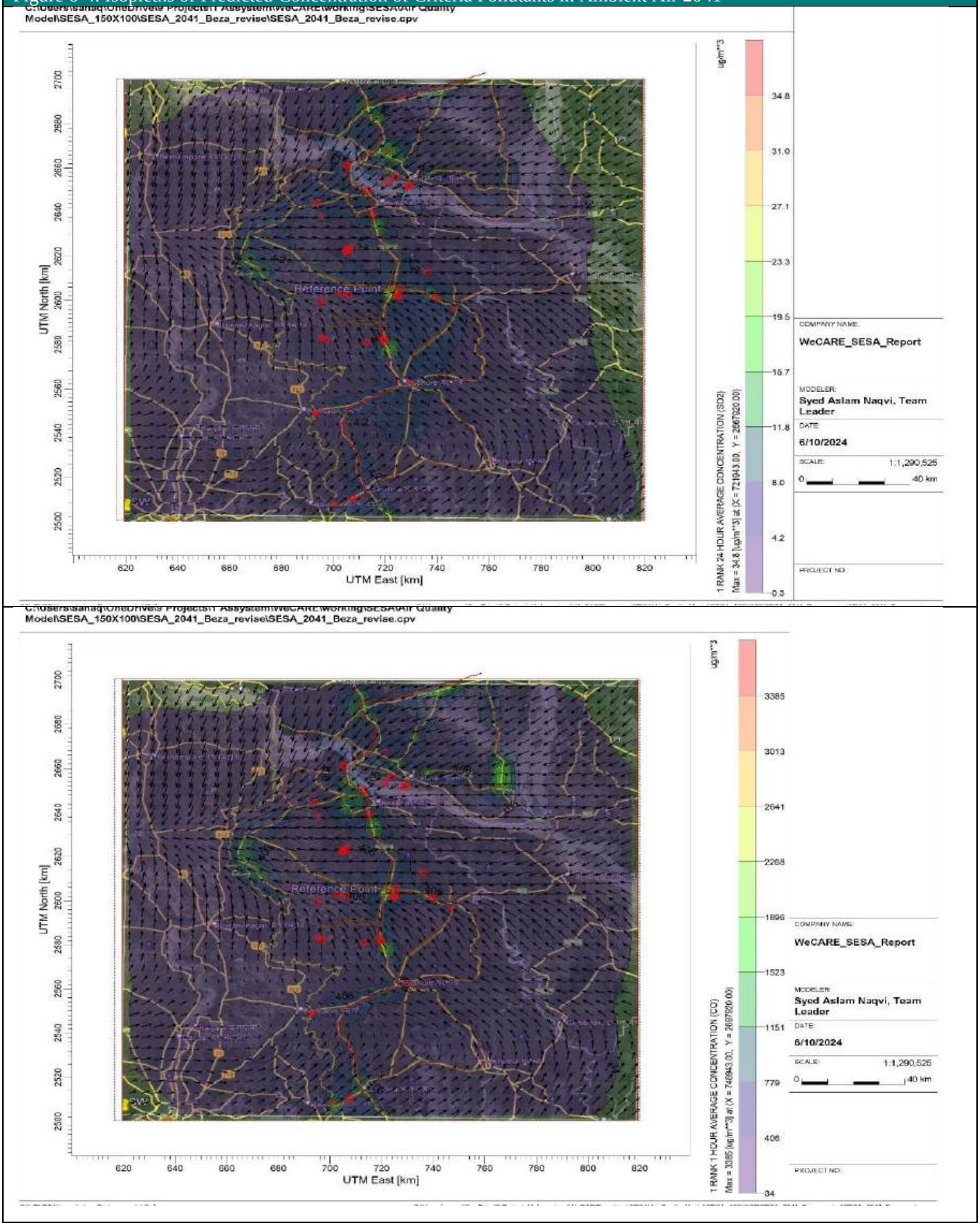


Figure 6-4: Isopleths of Predicted Concentration of Criteria Pollutants in Ambient Air 2041



299. There is a steady increase (refer to the **Table 6-7**) in the concentration of pollutants in the ambient air, which can be noted over time. This is apparent because the program interventions and other projects, such as the economic zone, will be implemented by 2041. However, the concentrations are within the National Ambient Air Standards prescribed by the DOE.

Table 6-7: Predicted Concentration of Criteria Pollutants in 2023, 2031, 2041						
Air Pollutant	**Time Weighted Average**	**Maximum of predicted Cumulative Concentration in Ambient Air using CALPUFF**			**National Ambient Air Standards (µg/m^3)**	**Remarks**
		2023	**2031**	**2041**		
PM10	24 hr	20.47	30.7	41	150	
PM 2.5	24 hr	18.41	27.7	36.9	65	
NO2	24 hr	23.01	34.6	46.2	80	
SO2	24 hr	14.33	25.0	34.8	80	
CO	1 hr	1.686	3.1774	3.385	20	

6.1.3.2 Carbon Savings With the Program Intervention

300. The country faces high risks from global warming and climate change. Therefore, any development planned for this country must be both environmentally sustainable (climate-resilient) and economically feasible. Greenhouse gases from vehicles contribute to global warming. Reducing annual greenhouse gas emissions will help mitigate global warming. In the long term, this would have environmental benefits at both national and global levels.

301. The Table 6-8 indicates lower carbon emissions in the future year due to the program intervention implementation. This means that the program interventions help lower carbon emissions.

Table 6-8: Year Wise Carbons Emission				
Year Wise	**Carbon Emission (Kg) with program**	**Carbon Emission (Kg) Without Program**	**Difference (Kg)**	**In Tons**
2022-2023	124087.333	165153.9006	41066.56759	41.06657
2023-2024-	132301.4683	176057.7719	43756.30357	43.7563
2024-2025-	141052.4431	187679.0505	46626.60744	46.62661
2025-2026-	150417.9449	200115.502	49697.55712	49.69756
2026-2027-	165204.1277	219672.3165	54468.18881	54.46819
2027-2028-	182024.3809	241927.8732	59903.49232	59.90349
2028-2029-	201685.9063	267926.7817	66240.87546	66.24088
2031-2032-	249036.6897	330697.8255	81661.13576	81.66114
2036-2037-	366626.8564	486489.9673	119863.1109	119.8631
2041-2042-	511517.1939	678283.6994	166766.5054	166.7665
2046-2047-	670866.5464	889116.9557	218250.4093	218.2504
2051-2052-	846010.7151	1120704.186	274693.4713	274.6935

6.1.3.3 NOISE ENVIRONMENT (ESS1,3,4)

302. The program's implementation will increase the noise levels in and around the study area due to increased traffic movement. The noise generated by the program implementation will be primarily from the vehicle's engines/honking, friction noise between the road pavement and tires, type of vehicles, etc.

303. Operation of equipment/machinery or other activities, such as piling, excavation, etc., at the construction site/camp will be the primary source of increased sound levels in and around the area. The noise levels from the construction equipment depend on different factors such as type of equipment, condition of equipment, the operations undertaken at the site, duration of the operation of equipment, and specific equipment model[67]. The equivalent sound level (L_{eq}) of the construction activity also depends on the fraction of time that the equipment is operated over the time of construction.[67] Diesel engines are the primary source of noise from the equipment when used without protection. The construction equipment is expected to produce noise levels in the 74 - 101 dB (A) range at the construction site, as presented in **Annex 6.1.**

304. With a point source of a strength of 95 dB (A) at a reference distance of 2m, the noise produced will not exceed 45 dB (A) beyond 250 m from the boundary of the construction yard (the drop-off rate will be 6 dB (A) for doubling the receptor distance from a point source).

[67] Transit Noise and Vibration Impact Assessment, FTA

305. Localized versions (unauthorized) of lorries (Nosimon, Korimon, Bhotbhoti, etc.) transport agriculture products to growth centers and construction materials to local areas. Their operation on the LGED roads creates more engine noise, and corrective measures to reduce them shall be enforced.

306. The construction phase of the program will generate increased sound levels due to the movement of heavy construction machinery and vehicles. These will be short-term activities that are intermittent and localized. However, noisy equipment/machinery use shall be restricted to daytime or after proper consultation with the local champions. Since rural areas are relatively calm, the noise levels would be within the prescribed limits. Thus, an increase in noise levels will impact noise quality in rural areas.

307. The impact on the noise environment will be inevitable due to the program, as the motor movements are inherently noisy. However, the intensity of impact on the noise environment will be highly variable and differ with the individual roads and sensitivity of the receptors, such as schools, hospitals, nursing homes, clinics, courts, etc. Further, speed is one factor of the sound emission from vehicles' movement, and the lowest sound emissions arise when the vehicles move smoothly between 30 and 60 Km/hr.[68] Thus, it is expected that there will be much lower impacts on ambient noise quality due to fewer vehicle movements on rural roads than vehicles on the proposed western corridor.

308. The simulation modeling results show that the noise levels are expected to increase by 5 to 10 dB(A) along the national highway. However, the intensity of impacts on noise quality can be offset/reduced by providing barriers, which will help reduce noise along the sensitive receptors.

Noise Modelling for Selected Sections of Proposed Western Corridor

309. soundPLAN is a compact noise model that simulates the noise level impact due to various sources such as roads, railways, industry, etc. The country's noise modeling standards are built to simulate the effects of noise levels. This study uses the Traffic Noise Model (TNM2.5) of the US Federal Highway Authority (USFHWA) to determine incremental noise levels.

310. Different Vehicle**Error! Bookmark not defined.** types produce different levels of noise.[68] In general, heavy vehicles such as transport trucks make more noise than light cars; they tend to have more wheels in contact with the road and often use engine brakes while decelerating. The TNM 2.5 considers vehicles such as passenger cars, medium trucks, heavy trucks (multi-axles), Buses, and Motorcycles.

The following is US FHWA noise equation 1 as follows:

$L_{eq}(h)_I = L_{oei} + 10\log[N_i/(S_i \times T_i)] + 10\log(15/d)(1+\alpha) + S_o - 13$----------Equation 1

Where,

$L_{eq}(h)_i$ = Leq at hour h for i^{th} vehicle type

L_{Oei}= The reference mean energy level for the i^{th} vehicle type

N_i = The number of i^{th} class vehicles passing during the time T

S_i= The average speed of the ith class vehicles, km/hr

T = The duration for which Leq is desired and must correspond to N_i, the count of vehicles during the time T. Normally, T has been considered one hour, but it could be longer or shorter.

D = The perpendicular distance, in meters, from the centreline of the traffic lane to the location of the receptor, i.e., the location of the noise level desired

α = The factor that relates to the absorption characteristics of the ground cover between the roadway and the receptor

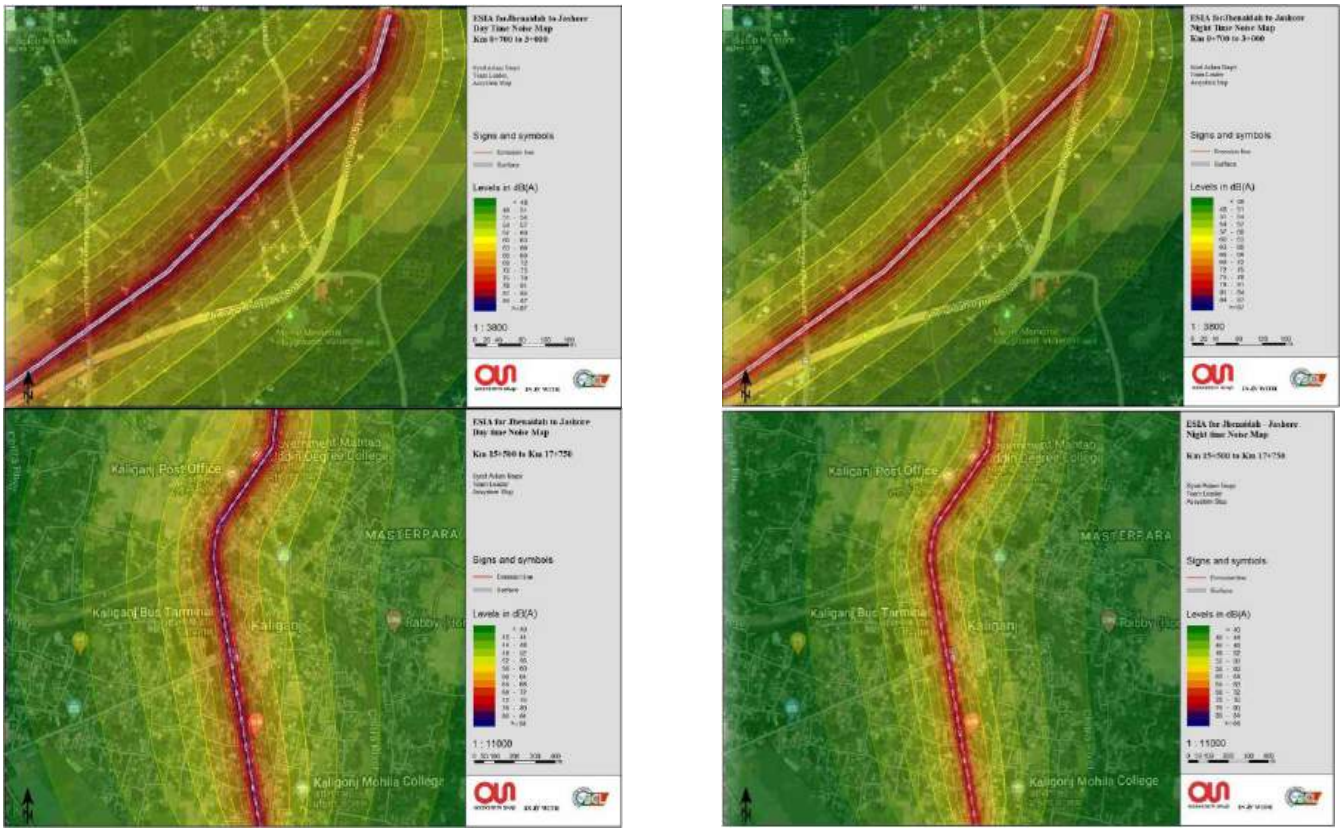
S_o = The shielding factor provided by a noise barrier, if present.

311. The incremental noise levels at different distances from the road edge for HS1 and HS2 are presented in **Figure 6-5.**

[68] Polak, K.J.. Noise Pollution and Its Control (p. 739). CBS Publishers & Distributors Pvt Ltd, India.

Figure 6-5: Incremental Noise Levels at different distance (m)

312. It is observed that incremental noise levels near the edge of the road, i.e., 50m to 80m, are more than daytime and nighttime noise level standards of ECR 23. However, the incremental noise levels are reducing as the distance from the road edge increases. It can be visualized from the noise level maps which are presented in **Figure 6-6** for daytime and nighttime for the project year 2041. The highest incremental noise levels have been added to the baseline monitoring results to study the impacts discussed in the following subsections.



Day time Nighttime

Figure 6-6: Incremental Noise Level

Cumulative Impacts

313. The cumulative impacts due to incremental noise levels due to increased traffic volume on the improved road alignment have been worked out and are presented in the following **Table 6-9.**

Table 6-9: Cumulative Noise Levels

S. No.	Baseline Noise Levels	Incremental noise Levels	Cumulative Noise Levels at a 50m distance from road	Remarks
1	68.2	66.4	70.4	► Noise levels are increased by 3dB(A) -4 dB(A) ► Existing noise levels are higher than the prescribed limits.
2	64	64.9	67.5	

314. A solid wall of concrete or polycarbonate sheets (>6mm thickness) is an effective noise barrier at the sensitive receptors, provided sufficient funds are available. However, a 100m wide three-tier tree plantation along the sensitive receptors could be provided when funds are limited, given that space is available.

6.1.3.4 WATER ENVIRONMENT (ESS1,3,4, 6)

315. Rivers, Beels, and Baors are the major water bodies within the study area. There are about 18 Baors, mainly in Jashore and Jhenaidah districts. Chalon Beel is in the districts of Natore, Pabna, and Sirojgonj, and there are rivers, e.g., Padma, Jamuna, Attrai, Naboganga, and Gomani rivers. The Chalon beel and Baors are rich aquatic species sources.

316. It is learned during the discussions with locals during the field visit to the Baor that it gets water from the surrounding catchment areas in the monsoon season.

317. During the monsoon, the Baor receives runoff from the surrounding areas, and similarly, Chalon Beel gets flooded due to excess water in the Jamuna River. In the non-monsoon season, vegetables are grown, especially mustard fields, which are monotonous in the Chalon Beel area when the consultant team visited. It is reported in the literature that the farmers are growing IRRI-Boro, Aman, and maize, in addition to mustard[69].

318. Since the phase-4 areas get flood water during the monsoon season, proper drainage structures should be provided considering the highest flood data. Further, the design of LGED road improvement along the Baor (Phase-1 and Phase 3) should be such that it does not cause any impact on the existing aquatic ecology of these water bodies. Baor gets filled, especially in the monsoon season, as they receive surface runoff from the surrounding catchment areas.

319. The program will promote agricultural activities in the study area. Considering the points mentioned above, it is essential to adopt mitigation measures for the use of pesticides suggested in the Pest Management Plan prepared by the Ministry of Agriculture in 2014.

320. There is a chance that the pollutants, including chemicals, fuels, oil and grease, and heavy metals from industries, will pollute the water bodies and river systems. Further, the expansion of aquaculture (shrimp/fish cultivation) in the area will be a source of water pollution to the water bodies. In the previous study, water quality modelling was carried out, and the results showed that impacts on the water quality would not affect the existing baseline conditions. Furthermore, industries should install effluent treatment plants, and the Department of Environment shall stringently enforcement of the provision of ECR 2023.

321. To prevent water from logging along the roads or damaging the structures, lined side drains shall be provided along with the sump or up to the nearest disposal point.

6.1.4 CLIMATE CHANGE ADAPTATION (ESS1,6)

322. The WeCARE program will improve the national highways and feeder roads to connect the rural areas/growth centers, including logistics support.

323. According to Multi-Hazard Risk Assessment reports by the Bangladesh Ministry of Disaster and Relief (MRVAM), more than 50% of all road types are exposed to different levels of flooding. To increase resilience, there is a need for a transformational shift towards policies and institutions that enable climate-resilient investments.

324. To meet the challenges posed by climate change, the following are adaptation measures suggested.

- Adaptation to flooding by providing additional road embankment height to combat climate change-induced flooding.
- Additional freeboard for bridges to combat climate change-induced floods. However, as per the GOB requirement, sufficient bridge height is provided in the design.
- Adequate number of cross-drainage structures
- Engineering design considerations
- Tree plantation as per the greenbelt development

6.1.5 IMPACT DUE TO SOLID WASTE (ESS1, 6, 10)

325. The waste generated from the program interventions will be solid or liquid. The waste generated during the construction will be biodegradable and non-biodegradable, including construction and demolition waste.

326. The construction and demolition waste from developing the national highway and LGED roads/growth centers will increase in phases 1 and 3. Developing LGED roads or growth centers in phase 4 will also generate solid waste.

[69] https://bangladeshpost.net/posts/bumper-mustard-cultivation-expected-in-chalan-beel-region-101981

327. The operation of the growth centre market will be a source of solid/liquid waste generation since the activities primarily revolve around selling and buying agricultural produce, including farmers' markets, poultry markets, butcher shops, grocery stores, meat/fish shops, etc. Thus, most of the solid waste is biodegradable. During the field visit, it was observed that waste management in the growth centers is poor, i.e., improper collection and disposal. Improper collection and disposal of waste are sources of emission of odors, etc. It is recommended that a Solid Waste Management Study be undertaken under this program along with developing the growth centers. Prima facie, there is an urgent need for collection bins, vans, compactor trucks, transfer stations, etc., to dispose of the waste at landfill sites or the compost plant at an identified location through stakeholder consultations and approval of the DOE.

328. Using localized unauthorized motor vehicles on the feeder roads will be a source of oils, fuel, and grease.

6.1.6 SOIL QUALITY (ESS 1,6)

329. Soil is an essential component of the natural environment. It is a primary medium for many biological and human activities, including agriculture. The program interventions will impact topsoil, i.e., the upper layer of soil 12 to 15 cm, which usually has the highest concentration of organic soil and microorganisms[70]. The quality of the soil may be impacted due to the movement of construction vehicles, machinery, and equipment, siting of construction camps and workshops, contamination due to inappropriate disposal of liquid/solid waste, borrowing of the earth for construction of road embankments, etc.

330. The increased movement of vehicles will be a source of pollution to the soil quality due to the settling of pollutants along the roadside soils. These impacts will be secondary, localized, and low due to the proposed program, especially the development of LGED roads or GCMs.

331. Constructing bypasses or realignments on national highways will impact productive soil more, and the loss of arable soil will cause a reduction in the productivity of the area. These impacts will be moderate and permanent, especially in Phase 3 of the RHD component.

6.1.7 IMPACT DUE TO LAND ACQUISITION (ESS1, 5, 10)

332. The development of highways will require additional land to improve geometrics, widening, and strengthening. The additional land requirements will be through the land acquisition, which will have social risks and impacts on locals in the form of physical displacement (relocation, loss of residential land, or loss of shelter), economic displacement (loss of land, assets, or access to assets, leading to loss of income sources or other means of livelihood), or both[71]. Livelihoods include the full range of means that individuals, families, and communities utilize to make a living, such as wage-based income, agriculture, fishing, foraging, other natural resource-based livelihoods, petty trade, and bartering.

333. There will be social impacts due to land acquisition for widening and strengthening the existing highways. It is envisaged that a 60m wide proposed right of way (ROW) is required to improve the geometrics, including side drains, slow-moving traffic lanes, etc.

334. Under the WeCARE program, the expected land acquisition requirement is given .

Table 6-10: Land Acquisition Details

Intervention	Length (km)	Funding Agency	Land Acquisition	Remarks
Hathikamrul-Bonpara-Ishwardi (NH)	84.04	AIIB Funding	477 acres	Need ECC RAP has yet to prepare
Kushtia – Jhenaidah NH	66.66	AIIB Funding	TBD	
Jhenaidah to Jashore (NH)	47.48	WB Funding	304 acres	RAP prepared
Navaron – Satkhira- Bhomra Road (NH)	55	WB Funding	840 acres	RAP to be prepared. Need ECC

[70] Roads and the Environment: A Handbook, The World Bank
[71] ESS3, The World Bank

Table 6-10: Land Acquisition Details

Intervention	Length (km)	Funding Agency	Land Acquisition	Remarks
Feeder Roads and GC - LGED		WB Funding	Land acquisition is 279.94 acres, and the budgetary cost for LA is 33592.68 lakhs BDT.	
Source: Past EIA reports and ESMF for LGED				

335. The socioeconomic impacts of land acquisition will cause the loss of houses and businesses. In this case, the ESS5 will be triggered, and a Resettlement Action Plan (RAP) needs to be prepared as a standalone document considering the entitlement matrix given in the approved RPF for National Highways and LGED subprojects interventions of the program.

336. The Land acquisition cost may be between 12% and 20% of the civil construction cost, possibly even higher.

337. The rural development will be carried out within the existing available land. This will prevent the LGED from acquiring private land, and involuntary resettlement will not occur. However, encroachers/squatters, etc., will be affected. The provisions mentioned in the entitlement matrix shall be adopted to reduce the intensity of impacts.

338. The contractor will acquire temporary land to establish contractor facilities and pay rent to the landowners on a willing buyer-willing seller basis under mutually agreed-upon conditions.

339. The resettlement Policy Framework (RPF) is for the LGED subproject intervention. Accordingly, site-specific RAPs need to be developed if necessary.

340. The RAP will ensure the proper calculation and recording of the involuntary displacement impacts, identification of the affected people, and mitigation measures for their losses and impacts.

341. Resettlement options shall be studied, e.g., a) adequate replacement housing or cash compensation and (b) relocation assistance suited to each group of displaced persons' needs.

342. New resettlement sites will offer living conditions at least equivalent to those previously enjoyed or consistent with prevailing minimum codes or standards, whichever set of standards is higher.

343. The type of structures that will be affected by the proposed WeCARE program are either made of brick and cement mortar (Pucca Structures), Walls of Brick-cement mortar and roof is Tin – Semi Pucca, tin, or Kaccha. The type of ownership is either title holder or non-titleholder, etc.

Some of the measures are as follows:

- The Land Acquisition Plan is to be prepared, and the cutoff date and its promulgation among the PAPs will be fixed.
- The Entitlement matrix shall be used to fix the compensation.
- RAP, as per the approved entitlement matrix and ESS5, must be prepared and implemented.
- Livelihood restoration plan shall be part of RAP.
- Identification of Vulnerable Groups and Special communities such as Bede Community, Urai, Das, Mahto, etc.
- Stakeholders' engagement and consultation meet the requirements of ESS 10.
- Engagement of the implementing non-governmental organization to facilitate the RAP.

6.1.8 IMPACTS ON STRUCTURES (ESS1, 5,10)

344. Upgrading national highways requires additional land, which will cause social impacts and risks as the structures falling within the proposed right of way (ROW) will be shifted. The union/upazila roads or feeder roads have enough width to accommodate the strengthening measures per the Road Design Standards of LGED. Thus, there will be low impacts on the structure relocation due to the strengthening of rural/feeder roads. However, the leading social risks and impacts on squatters will arise due to the development of growth centers because of losing business during construction. The breakup of data on squatters is as follows in :

Table 6-11: Data Squatter

Intervention	Length (km)	Funding Agency	Number of structures being affected	Remarks
Hatikumrul-Bonpara-Ishwardi (NH)	84.04	AIIB Funding	44 CPRs: 44 Residential/Commercial: 1494 Non-titleholder (Squatters): 1079	Need ECC RAP has yet to prepare
Kushtia – Jhenaidah NH	66.66	AIIB Funding	TBD	
Jahenaidah to Jashore (NH)	47.48	WB Funding	CPRs: 59 Structures (residential /commercial): 1909 Non-titleholders (Squatters): 1236 Encroachers: 108	RAP prepared
Navaron – Satkhira-Bhomra Road (NH)	55	WB Funding	TBD	RAP to be prepared. Need ECC
Feeder Roads and GC - LGED	Phase 1	WB Funding	Primary Structures: 592 (454 are squatters), Secondary Structures: 65	
	Phase 3		TBD	
	Phase 4		TBD	
Source: ESIA reports, RAP, and ESMF for LGED				

345. Potential social risks and impacts due to implementation are as follows:

- Loss of permanent/temporary business establishments/entities due to additional RoW for NH roads and work area requirements for growth centers.
- Loss of residential and rented structures for highway development to meet the requirement of additional land.
- Business losses during the program's implementation phase will most impact squatters in phases 1, 3, and 4.
- Preparation of RAP in consultation with the stakeholders

6.1.9 IMPACTS ON INDIGENOUS PEOPLE (ESS7)

346. It is to be noted that there are no indigenous people or communities in the study area. Thus, ESS7 does not apply to this program. Small ethnic communities (SECs) are in the study area. Since they are in a vulnerable segment of society and deprived of many benefits, they should be treated in a particular category and discussed while fixing the compensation in RAP.

347. Bede (about 30) in Phase -1 along the Jashore – Jhenaidah section of the National Highway has been considered in the SECs, and special provisions were made in the RAP after discussing with them. Similarly, Das (low caste), Mahto, Urai, and Santhal communities in the districts of Natore, Pabna, and Sirajgonj in Phase 4 shall be treated as small ethnic communities if accosted during the implementation or preparation of the ESIA or RAP.

348. During the FGD with the community representatives/members from Bagholbari-more, Chatmohaor informed the team that their current priority is education because the community is primarily landless and works mainly as laborers. The community representatives from the Chatmohor and Natore areas appreciated the program's purpose because better connectivity would provide them with more avenues for their skill development, education, and employment.

349. One of their concerns, as well as consultation with NGOs, e.g., BRAC, who is running the program for developing these communities in Rajshahi district, is that their safety must be assured during the implementation phase of interventions.

350. Other concerns were mainly focused on providing income-generating support to the affected persons and employment opportunities for the local people during the construction phase. The overall perception was that the proposed program would not hamper them, and they also opined that it would help secure day work during the

implantation of the feeder roads or growth centers. Based on the discussions, it is recommended that the labor camps or construction camps must be at least 1000m away from the rural residential areas.

6.1.10 CULTURAL HERITAGE OR CULTURAL PROPERTY RESOURCES (ESS1, 5, 8)

351. There are mosques, temples, and graves/graveyards along the program intervention, which will be affected by development, especially national highways. These structures need to be identified and will be included in the RAP. Chance Find Procedures need to be included in the ESMP, and the chance find clause will be included in works contracts requiring contractors to stop construction if cultural heritage is encountered during construction. The project proponent must also notify and closely coordinate with the relevant mandated country authority to salvage and restore cultural property resources/Heritage sites.

352. While carrying out the ESIA study, an IOL survey will be conducted to assess the impacts on cultural property relocation or partial damage to these structures and their premises, which will cause annoyance and stress among the communities. Based on the field visits and discussions with locals, it is recorded that the program's implementation will impact no cultural heritage properties in the study area.

6.1.11 COMMUNITY HEALTH AND SAFETY (ESS2,4,5)

353. The risks and adverse impacts on the community's health and safety (CHS) will be due to various activities during the implementation of the interventions, including the establishment of construction camps/labor camps, water logging, accidents, the influx of labor, child labor, HIV and AIDS, etc.

354. Potential risks for community health could be exposure to water-based, water-related, vector-borne, and communicable and non-communicable diseases if the cross-drainage structures in the program are not designed properly. For example, the lined side drains in urban/rural areas, adequate cross-drainage structures, and their outlet will reduce the health impacts of water-borne vector disease carriers.

6.1.11.1 TRAFFIC AND ROAD SAFETY RISKS (ESS2)

355. Since the proposed program will strengthen the existing national highways/feeder roads and Growth Centres Markets (GCM), their rehabilitation or structural changes/improvements may create traffic and road safety risks. Indirect traffic flow or volume changes on haul roads will also create risks due to increased traffic speeds. Further bisection of communities will impact the cohesion of communities, precisely due to the construction of new bypasses to improve geometrics along existing national highways.

356. The chance of bisection or fragmentation of communities due to the improvement of existing LGED roads or the feeder roads or construction of GCM is envisaged to be the minimum and low intensity. Nevertheless, improving traffic speed will pose risks to pedestrians in rural communities and will be addressed by providing proper road safety measures per international practices during construction and operation.

357. As appropriate, safety measures will be incorporated into the design of the program interventions for community health and safety. Such measures will include specific safety measures and traffic management plans, for example, measures necessary to manage traffic speeds or provide controls for single-lane two-way traffic to address noise and control dust and drainage issues during the program implementation and for the operation phase in the design.

358. Appropriate or authorized vehicles with fitness certificates shall be allowed to ply/move, and drivers must have valid licenses to drive the vehicles/equipment, etc. Compliance with speed limits, seatbelt use, and helmet use for motorcycle riders shall be enforced stringently.

6.1.11.2 INFLUX OF LABOR (ESS2,3,4,5)

359. There will be potential negative impacts due to the outside population/ workforce influx, especially in rural and small communities. Potential risks due to labor influx include increased demand and competition for local social and health services, goods, services, etc., which may cause price hikes and crowding places. They sometimes could create conflicts of interest. Unhygienic conditions resulting from the day-to-day activities of workers during construction may spread various diseases. Other risks and impacts associated with the labor influx are sexual exploitation and abuse (SEA)/sexual harassment (SH), occupation health, and safety; to reduce the intensity of impacts, the labor-management procedure prepared for the program must be followed.

360. From the consultations with the ethnic community members during the visit of phase 4 of the program, it is suggested that the labor camps/contractors' facility shall be kept away from the residential areas, and public

consultations are a must to address the potential risks. Public consultations will help keep locals updated about the developments in the area.

361. The intensity of impact and risks due to labor influx may be reduced by employing a local workforce, especially non-skilled workers.

6.1.11.3 HIV AND STD (ESS2,4,5)

362. Due to the influx of workers in the study area, AIDS/HIV may spread in the local community. Different diseases related to infectious diseases need to be controlled during the program's implementation. Some of the mitigation measures[72] are as follows.

Mitigation Measures

- Awareness campaigns on HIV/AIDS/STD
- HIV/STD voluntary counseling, testing, and treatment.
- Ensuring that construction workers have access to condoms.
- Provision of vending machines at the identified location
- Monitoring of outcomes in collaboration with National HIV/AIDS Authorities

6.1.11.4 SEXUAL EXPLOITATION AND ABUSE/SEXUAL HARASSMENT (ESS2,4,5)

363. The sexual exploitation and abuse/Sexual Harassment (SH) risks may cause impacts on the social spectrum when there is an influx of male workers from outside the area. Incoming workers in the pursuit of social contact, typically with female members of the local community, can lead to unacceptable and illicit behavior, ranging from unwanted aggressive advances and sexual harassment to gender-based violence (GBV) against women and children. The gender disparity can be attributed to structural barriers, including women's domestic burden, employer discrimination, restricted mobility, limited access to training, lack of female-friendly facilities at sites, sexual harassment at work, and limited childcare provisions. These issues need to be mitigated, as well as SEA/SH issues in the ESIA and RAP program interventions of LGED and RHD.

6.1.11.5 CHILD LABOR(ESS2,4,5)

364. Potential social risks due to the employment of child labor during the implementation of the program may jeopardize their health, safety, and morals and hence need to be mitigated by adopting government rules and regulations and labor Management Procedures, which will include worker codes of conduct, training programs on HIV/AIDS, Workers' Camp Management Plan, etc.

6.1.11.6 OCCUPATIONAL HEALTH AND SAFETY ASPECTS (ESS2)

365. Without Occupational Health and Safety (OHS) procedures, workers risk temporary and sometimes permanent physical injuries such as hearing and sight loss, limb damage, etc. Due to continuous exposure to activities like lifting heavy tools and tackles, construction equipment, and cabling of electrical wires, the workers may suffer from various physical problems, stresses, and risks, such as carpal tunnel syndrome, tendonitis, back pain, muscle soreness and nerve damage, chest pains, etc. These risks could create long-term impacts on the health and safety of the construction workforce.

366. The program will follow the Banks' ESS to address the grievances related to (i) Labor Health and Safety, will facilitate smooth labor management through redressing any complaint/grievance raised by laborers/against any laborer, and (ii) Gender Based Violence (GBV). These issues will be redressed by the approved Grievance Redressal Committee (GRC) through the Grievance Redressal Mechanism (GRM). Sexual Exploitation and Abuse/Sexual Harassment (SH), if any, will also be addressed through GRM. The program will follow the national legislation, and the Labor Management Procedures (LMP) prepared shall be followed along with ESMP, including worker codes of conduct to be signed by all the workers to prevent such issues.

367. One good example of OHS procedures adopted in the country is presented in Box 6.1.

[72] FIDIC | HIV-AIDS in the Construction Sector | International Federation of Consulting Engineers

6.2 CASE STUDY

Box 6.1: Example of Good OHS Practices During Implementation

First Dhaka Elevated Expressway: China Exim Bank

The good OHS practices at the construction site at First Dhaka Elevated Expressway. This elevated expressway is 46.73 km long, connecting Hazrat Shahjalal International Airport to Kutubkhali on the Dhaka-Chittagong Highway and traversing through Kawla, Kuril, Banani, Mohakhali, Tejgaon, Moghbazar, Kamalapur, Sayedabad and Jatrabari. Proper OHS tools are being adopted. The contractor at the site is conducting toolbox training before the start of work, and workers are using Personal Protection Equipment such as helmets, Safety Shoes, etc. Further construction sites are demarcated using refractory tapes and cones.

Toolbox Training at camp[73]

PPEs (Helmets & safety shoes)

PPE and Community Safety

Complete Barricading of the construction site at the busiest intersection at Malibagh in Dhaka

368. Preparation of the Contractors' Environmental Management Plan, deployment of the HSE team from the contractor side, and the Environmental Engineer from clients have helped ensure the implementation of Safety and OHS measures at the site. The following measures are being implemented regularly at the site, and the number of reported incidences has decreased since 2020.

1. Proper use of OHS and CHS measures helps reduce or minimize untoward incidences at the site.
2. Toolbox training, Stringent use of PPEs at site.

369. The Lesson learned from the above example is that it is possible to adopt a good OHS at a construction site, even in a congested area of Dhaka, the country's capital.

6.2.1 POTENTIAL POSITIVE IMPACTS OF THE PROGRAM

370. The proposed program will enhance regional connectivity, economic integration, and development of the Western Region in the current and post-Padma demand scenario. The program will benefit not only the Western Region but also the whole country by addressing the transport sector challenges such as the following:

- The program will reduce congestion and provide a safe road network, reducing the excessively high logistical costs and helping the country, particularly the western region, leverage its strategic geographical position as a major trade and transit hub for South and Southeast Asia.
- The program will reduce post-harvest losses, especially among small farm families in rural areas, as it will provide good connectivity, market access, and Agro-logistics facilities.
- The program will support improving logistics infrastructure, such as storage facilities, collection points, and warehouses, to help stimulate the local economy along the corridor.
- The program will improve the weak road sector management in terms of planning, implementation, and operation maintenance.
- The program is aligned with the World Bank Group's South Asia Regional Strategy, which recognizes regional cooperation and integration as critical strategic objectives. It highlights the importance of easing policy, structural, and capacity constraints to cross-border connectivity, with trade and transport among the

[73] Source: Collection of Environmental Engineer, BCL Associates

priority areas.

- The program will help the country meet the development and climate objectives by mainstreaming climate resilience in planning and investments in connectivity infrastructure and institutions.
- It is envisaged that the operation phase will have mainly positive impacts on the economy and the safety of communities with improved safety features of the widened roads.
- During the field visits, stakeholders also concluded that the proposed program would benefit the study area positively.

6.3 CUMULATIVE IMPACTS (ESS1)

371. The projects finished by 2023 are considered to evaluate the cumulative impacts, showing the study area's baseline environmental and social conditions. The projects/programs that are in progress or will likely be finished by 2024 and 2030 are the medium-growth scenarios, and future projects that are expected to arise by 2031 and 2041 are the high-growth scenarios. These programs/projects are listed in .

Table 6-12: Programs are Summarized per their status

Completed -till 2023	On-going (2024-2030)/Future Commissioning	Future (2031-2041)
1 Padma Multipurpose bridge	1 Padma Railway Bridge	1 2nd Padma Bridge
2 Bhomra Land port	2 Ruppur Nuclear Power Plant	2 Natore Agro Based Economic Zone
3 Bheramara Power station	3 WeCare project -Phase 1 (RHD)	3 Kustia EZ
	4 WeCARE Project -Phase 3 (RHD)	4 WeCARE Phase 4
	5 Hatikumrul to Jhenaidah Section of Western Corridor (AIIB funding)	5 Kushtia to Jhenaidah road corridor (AIIB funding) Phase 2
	6 Hatikamrul Intersection-(SASEC)	6 WeCARE 2 – Under Discussion

372. The projects/programs of the medium and high-growth scenarios have been assessed for their cumulative impacts since they align with the pace and requirements of the country's Vision 2041 to become a High-income Country. The cumulative impacts (both positive and negative) of key environmental and socioeconomic factors have been assessed on a scale of low, medium, and high, as presented in .

Table 6-13: Intensity of Impacts

- ve			Neutral	+ ve		
High	Medium	Low		Low	Medium	High

373. Following the above scale, an analysis of the cumulative impact assessment for different environmental and socioeconomic attributes is provided Table 6-14. Six (6) programs have been considered for assessing the cumulative impacts of the ongoing/completed/ future programs and projects between 2023 and 2041.

374. To determine the occurrence of impacts, the cumulative impacts are given in **Error! Reference source not found.**.

Table 6-14: Cumulative Impact Assessment

Sl.#.	Parameters	RHD	LGED				Power Plants	Tourism	Industry			BEZA
		Phase 1 & 3, AIIB // SASCS & Road Projects	UP/Union Feeder Roads (Phases 1,3, & 4)	Bridges	GCM	Other Facilities			Agro-based Industry	Shrimp and Fish Cultivation	Other Industry	
1	**PHYSICAL PARAMETERS**											
1.1	Land Use Pattern											
1.2	Air Quality											
1.3	Noise Quality											
1.4	Drainage Congestion/ Water Logging											
1.5	Erosion and Siltation											
1.6	Soil Quality											
1.7	Water Pollution											
1.8	Waste (Liquid/Solid) Generation											
1.9	Climate Change Adaptation											
1.10	GHG emissions											
1.11	Carbon Emissions											
1.12	Loss of Topsoil of Agricultural Lands											
1.13	Safety											
2	**ECOLOGY AND BIODIVERSITY**											
2.1	Aquatic Ecology											
2.2	Terrestrial Ecology (Tree Cutting)											
2.3	Wildlife and Biodiversity											
2.4	Eutrophication//Pukur or Baor											
2.7	Tree Plantation											
3	**SOCIAL RISKS AND IMPACTS**											
3.1	Population Growth											
3.2	Land Disputes											

Table 6-14: Cumulative Impact Assessment

Sl.#.	Parameters	RHD	LGED				Power Plants	Tourism	Industry			BEZA
		Phase 1 & 3, AIIB // SASCS & Road Projects	UP/Union Feeder Roads (Phases 1,3, & 4)	Bridges	GCM	Other Facilities			Agro-based Industry	Shrimp and Fish Cultivation	Other Industry	
3.3	Land Acquisition											
3.4	Loss of Agriculture Land											
3.5	Loss of Livelihood											
3.6	Loss of structures											
3.7	Social Dynamics and well being											
3.8	Out Migration Rate (Reduced)											
3.9	Health and Sanitation											
3.10	Poverty and Food Security											
3.1	Education/ Literacy											
3.12	Rural Development											
3.1	Gender Equality and Inclusiveness											
3.1	SEA/SH and Human Trafficking											
3.15	Marginalized/Special Ethnic Community											
4	**ECONOMICAL RISKS AND IMPACTS**											
4.1	Growth											
4.2	Industry and Export											
4.3	Employment											
4.4	Infrastructure and Transport											
4.5	Connectivity and communication											
4.6	Tourism											
4.7	Agricultural Development											

375. The frequency of occurrence of impacts has been jotted down to study the impacts on different E&S attributes.

Table 6-15: Frequency of Cumulative Impacts on different E&S attributes in the Study area

Sl.No.	Parameters	Occurrence of Impacts						
		(- ve) High	(- ve) Medium	(- ve) Low	Neutral	(+ve) Low	(+ve) Medium	(+ve) High
1	PHYSICAL PARAMETERS							
1.1	Land Use Pattern	6	3	2				
1.2	Air Quality		5	3	1	1		
1.3	Noise Quality	1	5	3				
1.4	Drainage Congestion/ Water Logging		2	6		3		
1.5	Erosion and Siltation		2	4	1	2		
1.6	Soil Quality	2	2	4	3			
1.7	Water Pollution	2	2	5	2			
1.8	Waste (Liquid/Solid) Generation	3	5	3				
1.9	Climate Change Adaptation		2	1	2	2	4	
1.10	GHG emissions			7	2		1	
1.11	Carbon Emissions		2	4	2		3	
1.12	Loss of Topsoil of Agricultural Lands	3	3	2	3			
1.13	Safety		2	4			3	2
	Total Occurrences of Impacts	**17**	**35**	**48**	**16**	**8**	**11**	**2**
2	ECOLOGY AND BIODIVERSITY							
2.1	Aquatic Ecology		1	5		1		
2.2	Terrestrial Ecology (Tree Cutting)		2	1	2			
2.3	Wildlife and Biodiversity			2	2			
2.4	Eutrophication of Water Body (Baor/Pukur)		1	4	1			
2.5	Tree Plantation					1	2	4
	Total Occurrences of Impacts		4	12	5	2	2	4
3	SOCIAL RISKS AND IMPACTS							
3.1	Population Growth					1		
3.2	Land Disputes	2	4	4				
3.3	Land Acquisition	3	5	2				
3.4	Loss of Agriculture Land	5	2	2				
3.5	Loss of Livelihood	1	2	6	1			
3.6	Loss of structures	1	1	6				
3.7	Social Dynamics and well being			1		2	7	1
3.8	Out Migration Rate (Reduced)			1		2	4	
3.9	Health and Sanitation			1			6	4
3.10	Poverty and Food Security			1		1	5	1
3.11	Education/ Literacy			1			4	6
3.12	Rural Development					2	3	5
3.13	Gender Equality and Inclusiveness			1		2	7	1
3.14	SEA/SH and Human Trafficking		1	5	2	1		
3.15	Marginalized and Special Ethnic Community		2	9				
	Total Occurrences of Impacts	12	17	40	3	21	36	18
4	ECONOMICAL RISKS AND IMPACTS							
4.1	Growth						2	5
4.2	Industry and Export						2	5
4.3	Employment						2	5
4.4	Infrastructure, transport, connectivity and communication						2	5
4.5	Tourism						2	5
4.6	Agricultural Development						2	5
	Total Occurrences of Impacts						12	30

376. The table shows the changes in the E&S attributes due to the risks and impacts of the programs/projects in the study area. There will be major changes in land use patterns because of roads, industrial buildings,

settlements, or shrimp/aquaculture farming. Waste generation from the growth of Agro-based industry/industrialization/power plants or the creation of growth centers and tourism will also significantly affect the environment.

377. The main source of social impact is land acquisition, which includes the loss of buildings and income sources, among others. However, social attributes have more positive impacts than negative ones. Also, the region has more economic advantages. The total score of risk and impacts on Environmental and socioeconomic attributes are as follows in **Table 6-16.**

Table 6-16: Scoring of Cumulative E&S Risks and Impacts in the Study Area

Parameters	Occurrence of Impacts						
	(- ve) High	(- ve) Medium	(- ve) Low	Neutral	(+ve) Low	(+ve) Medium	(+ve) High
Environmental and Natural Resources	17	39	60	21	10	13	6
Socioeconomic	12	17	40	3	10	48	48

378. The total environmental and natural resource impact score is 100, while social risk and impacts are lower at 69. The total score for beneficial social impacts is 106. There is a trade-off between growth and environmental impacts because the socio-economic benefits outweigh the negative impacts.

379. Therefore, the appropriate institution should intervene to reduce/offset/mitigate the negative environmental and social risks and impact.

7 ENVIRONMENT AND SOCIAL MANAGEMENT STRATEGY

380. This section discusses the Environmental and Social Management Strategy (ESMS) in driving environmentally sustainable development. The mitigation measures suggested in this section will significantly reduce the identified environmental and social risks and impacts that may arise from the program interventions, as in Section 6. This underscores the unwavering commitment to sustainability from the outset, inspiring confidence in the approach.

381. The preparation of the ESMS involves a meticulous review of the World Bank (WB)/AIIB's environmental and social standards (ESSs) and the existing national legal and institutional framework (Refer to Section 2). This comprehensive approach ensures that the potential project activities' medium—and long-term environmental and social risks/impacts are effectively mitigated. The strategy for managing the environment and society primarily focuses on strengthening the institutional arrangement to address environmental and social challenges and effects, thereby ensuring a robust institutional framework (Refer to section 8).

382. The ESMS will help the program:

383. The ESMS is pivotal in steering the program towards adopting the best international environmental and social sustainability practices.

384. Adopting the environmental and social requirements of national and multilateral funding agencies is a crucial step towards ensuring sustainable development. The proposed strategy for managing environmental and social issues is firmly based on international/national standards and the World Bank's ESS 1 through 10. This demonstrates the program's commitment to following the appropriate laws and guidelines, instilling confidence in the approach.

7.1 GENERAL STRATEGY FOR MITIGATION OF ENVIRONMENT AND SOCIAL IMPACTS AND RISKS

385. This SESA document evaluates the cumulative environmental and social impacts and risks of possible projects that could come up during the WeCARE program in Section 6. This subsection of the ESMS proposes a broad strategy to address these impacts and risks. The generic strategy for all the programs and projects is suggested as follows.

386. Implementation of the national environmental and social safeguards policies/Acts/Rules, including the enforcement of penalties[8] for non-compliance with the laws/regulations etc.

387. Ensure that all projects and programs comply with Environmental Conservation Rule 2023 and have an Environmental and Social Impact Assessment and Environmental Social Management Report.

388. The AIIB will support parallel financing, and there is a risk of non- or under-implementation of Environmental and Social standards[74]. It is envisaged that AIIB finance section will be prepared to meet the requirements of ESF and the WB due diligence. The WB will review the terms of reference (TOR) and other Environmental and Social Instruments. s

7.2 SUGGESTED MITIGATION ACTION PLAN FOR PROJECT/PROGRAM LEVEL

389. Sections 3 and 5 of this SESA report present the findings of the baseline conditions and outcomes of the scenarios considering the program's alternative activities, respectively. The environmental and social concerns

[74] Concept Environmental and Social Review Summary, 2019, P169880 (For the Bonpara to Hatikumrul road, which will be financed in parallel by AIIB, a common approach will be adopted for which AIIB will rely on meeting the requirements of the ESF and the World Bank's due diligence. TORs and E & S instruments will be reviewed and cleared by the Bank, as agreed with AIIB.)

are assessed. Based on that assessment, an environment and social management action plan is suggested in for project/program interventions to be undertaken in this program and at the regional level.

Table 7-1 Mitigation Actions and Responsibility Matrix

Sl. #	Environmental and Social Issues	Mitigation Action	Responsibility	Time frame
At Project Level				
1.	Assessment and Management of Environmental and Social Risks and Impacts	▶ Prepare an environmental and social impact assessment and identify key environmental and social risks and impacts, as well as mitigation measures to reduce/eliminate potential impacts, and prepare an environmental and social management plan to implement the mitigation measure.	Project Implementing Agencies	Design Stage
2.	Labor and Working Conditions	▶ The project-specific ESMF will address preparing a Labor Management Plan, Grievance Redressal Mechanism, Development of the Code of Conduct to prevent SEA/SH issues, and Measures to improve occupational health and safety.	Project Implementing Agencies	Design Stage
3.	Resource Efficiency and Pollution Prevention and Management	▶ Establishment of Baseline Environmental Conditions and regular environmental pollution monitoring at the project level and program level ▶ Reutilization of reusable material and waste minimization strategy to be adopted. ▶ Measures for improving efficient consumption of energy, water, and raw materials, as well as other resources ▶ Avoid the release of pollution and the generation of hazardous waste. ▶ Approach to be adopted for integrated pest management and ensure that all pesticides used will be manufactured, formulated, packaged, labeled, handled, stored, disposed of, and applied according to relevant international standards and codes of conduct, as well as the EHSGs	Project Implementing Agencies	Design and Implementation Stage
4.	Community Health and Safety	▶ effective measures to address emergency events avoid adverse impacts on the health and safety of project-affected communities during the project life cycle ▶ Traffic and road safety and Public Access to the community ▶ ESMF will address the relevant issues for the respective program interventions. ▶ Water logging shall not be allowed at the program sites to prevent the spread of vector-borne diseases. ▶ Sexual exploitation, abuse and sexual harassment risk mitigation and management	Project Implementing Agencies	Implementation Phase
5.	Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	▶ Involuntary Resettlement due to Land Acquisition, SEA/SH, Census survey of Affected Persons, ▶ Prepare the Resettlement Action Plan as per the approved RPF. ▶ Formation of Grievance Redressal Mechanism	Project Implementing Agencies	Project Design Stage
6.	Indigenous Peoples/Sub-Saharan African Historically Underserved	▶ There are no indigenous people in the program area. ▶ Identification of Small Ethnic minorities, and preparation of a framework for them if a significant population about5% is affected due to the program intervention or projects.		

Table 7-1 Mitigation Actions and Responsibility Matrix

Sl. #	Environmental and Social Issues	Mitigation Action	Responsibility	Time frame
	Traditional Local Communities	▶ GRM needs to be adjusted to take into consideration of Ethnic Group, if they are getting affected due to the program intervention		
7.	Cultural Heritage	▶ The ESIA process will include identifying any legally protected areas the project impacts as part of the environmental and social assessment. ▶ Chance-finding procedures shall be included in the ESMP	Project Implementing Agencies	Project Design Stage
At Regional Level				
8.	Air Pollution	▶ There is a need to expand Continuous air Monitoring Stations in the program districts for spatial coverage and reliable data source for predicting air quality modeling.	MOEFCC (DOE)	lifecycle of the program
9.	Noise Pollution	▶ Noise Monitoring	Ministry of Road Transport and Bridges (BRTA), MOEFCC (DOE)	lifecycle of the program
10.	Carbon Emission	▶ Promoting energy efficiency in the industry by investing in Resource Efficiency and Cleaner Production. ▶ The Afforestation and green belt development programs will be undertaken to create a carbon sink in the study area. ▶ Promotion of renewable energy production	Ministry of Industry Ministry of Power, Energy, and Mineral Resources (MPEMR) Ministry of Road Transport and Bridges (BRTA, RHD) MoEFCC (DOF)	lifecycle of the program
11.	Water Pollution	▶ Establishment of the effluent treatment plant in the industrial units. ▶ Adequate drainage systems in rural-urban areas along with low-cost treatment systems. ▶ Regular surface water quality monitoring is crucial in water resource development and management strategy. It not only helps us identify potential issues early but also allows us to take prompt action, ensuring the health and safety of our water resources. This, in turn, underscores the need for Integrated Water Resources Management. ▶ Enforcement of provision of environmental conservation Rules (2024)	MOEFCC (DOE)Ministry of Water Resources	lifecycle of the program
12.	Waste Management	▶ Preparation and implementation of a Solid Waste Management Plan for collection, transportation, treatment, and disposal system ▶ hazardous waste management (HWM) facilities, hazardous wastes, including industrial, bio-medical, electronic, Plastic waste ▶ Campaign for Awareness of Recycling of waste at the source and mobilizing public support	MoEFCC. Ministry of Planning Ministry of Urban Development Ministry of Housing and Public Works	lifecycle of the program

Table 7-1 Mitigation Actions and Responsibility Matrix

Sl. #	Environmental and Social Issues	Mitigation Action	Responsibility	Time frame
13.	Land Use and Land Disputes	▶ Preparation and upgrading of Master Plans and town planning. ▶ Updating the Land Records	Ministry of Planning Ministry of Urban Development Ministry of Housing and Public Works Ministry of Land Ministry of Local Government, Rural Development and Co-Operatives (LGED)	lifecycle of the program
14.	Water logging	▶ Provision of Cross Drainage structures	Ministry of Local Government, Rural Development and Co-Operatives (LGED), Ministry of Road Transport and Bridges (RHD, BBA)	lifecycle of the program
15.	Flora and Fauna	▶ Greenbelt Development in place of affected due to program interventions/project activities in a 1:3 ratio ▶ Adapting good practices/optimizing the design of program interventions/projects. ▶ Developing a biodiversity conservation plan for each program district is necessary. ▶ Promote nursery development with Indigenous species, e.g., neem, Arjun, haritaki, Behera, amloki, tetu, etc. ▶ Planation of local species such as Golapattt, Keora, Coconut, Palimera Palm, Date Plam, Hizol, Barun, Karz, and Pidali and Jarul in the water-logged area, especially in Satkhira. ▶ Water quality monitoring parameters (nitrogen, phosphorus, Dissolved Oxygen, Oil and grease) during pre-monsoon and post-monsoon season to assess the aquatic biodiversity. ▶ Development of nesting/feeding/resting places for birds, especially in the Chalon Beel area, which migratory birds usually visit yearly. ▶ Hunting. Angling and poaching shall be prohibited. ▶ Awareness will be undertaken regarding the importance of trees (native species), medicinal herbs and shrubs, and Boars for preserving aquatic fauna. ▶ Identification of establishment of biocultural areas ▶ Guidelines for visitors visiting the Baors and Chalon beel area. ▶ Mobilizing adequate funds for biodiversity conservation and training nursery development staff in	MoEFCC (DOF, DOE)	lifecycle of the program

Table 7-1 Mitigation Actions and Responsibility Matrix

Sl. #	Environmental and Social Issues	Mitigation Action	Responsibility	Time frame
		modern nursery techniques, e.g., grafting, layering, cutting for regeneration, etc.		
16.	Loss of Acquisition and Resettlement	▶ Household census survey and loss inventory (Structures/businesses/affected agriculture plot/trees etc.) ▶ Livelihood assessment survey and Gender assessment survey ▶ Avoid forced eviction ▶ Inventory of community property structures ▶ Information Disclosure, Participation, Consultation (ESS10) ▶ Stakeholders and community consultation with affected persons/Upazila/Union/district administration ▶ Engagement of NGO ▶ information on small minority ethnic/or vulnerable households for whom special provisions shall be made in the Resettlement Action Plan (RAP) ▶ Preparation of RAP as per approved Resettlement Framework and ESS5 ▶ Grievance Redress Mechanisms	Ministry of Road Transport and Bridges (RHD) Ministry of Local Government, Rural Development and Co-Operatives (LGED) Ministry of Land	lifecycle of the program intervention
17.	Livelihood Restoration	▶ When the program intervention affects livelihoods or income generation, a livelihood restoration plan will be prepared during the RAP preparation to mitigate the impacts by allowing affected persons to improve or at least restore their incomes or livelihoods. ▶ The plan will be based on the entitlements as per the approved RPF, which the WB has accorded for the program interventions. ▶ Meaningful stakeholder consultation with affected persons or interested parties will be conducted to assess the livelihood restoration requirements of the project-affected persons or to provide them continued access to affected or alternative resources with equivalent livelihood-earning potential, and accessibility options. ▶ Special attention is to be given to vulnerable persons such as marginalized workers, women-headed households, economically downtrodden households, and small ethnic minority communities if they are affected. ▶ Alternative income-generating opportunities include credit facilities, skills development training (, business start-up assistance, employment opportunities, cash assistance in addition to compensation for assets lost, etc. ▶ Engagement of NGO, ▶ Grievance Redressal Mechanism	Ministry of Road Transport and Bridges (RHD) Ministry of Local Government, Rural Development and Co-Operatives (LGED) Ministry of Land	lifecycle of the program intervention

Table 7-1 Mitigation Actions and Responsibility Matrix

Sl. #	Environmental and Social Issues	Mitigation Action	Responsibility	Time frame
18.	Small Ethnic & Vulnerable Community (SEVC)	▶ Household census survey and loss inventory of assets, occupation, and sources of income, ▶ Stakeholders and community engagement of SEVCs with equal representation of all genders and age groups; customary group leaders; traditional/conventional SEVC organizations ▶ Special Provision for SEVC after discussion with them in RAP. ▶ An appropriate action plan of measures to avoid, minimize, mitigate, or compensate when potential adverse effects on small ethnic communities are identified. ▶ It is be assured that small ethnic are not excluded from any benefits and that there is equity in the benefits, especially from other capacity building activities.	Ministry of Road Transport and Bridges (RHD) Ministry of Local Government, Rural Development and Co-Operatives (LGED)	lifecycle of the program intervention

7.3 SUGGESTED MITIGATION ACTION PLAN FOR DIFFERENT SECTORS

390. As noted in section 6, the high growth scenarios will sustainably bring the program area's development when mitigated appropriately. The sector-wise environmental and social risks and impacts are summarized in Table 7-2 [28].

Table 7-2: Environmental and Social Management Strategy for Different Sector

Sl. #	Sector	Environmental and Social Risks and Impacts	Mitigation Measures	Responsible Agency
1.	Power and Energy	▶ Air Pollution: Gaseous emissions NO_x, CO, SO_2, Particulate (PM_{10}) and Trace Heavy Metals, etc. ▶ Water Pollution: Oil spills, degreasers, cooling system inhibitors, detergents ▶ Noise Pollution from turbines, compressors, boilers, and fans. ▶ Solid Waste Generation (Industrial/Municipal) ▶ Change in land use pattern from agriculture to built-up area. ▶ Land acquisition ▶ Occupational Health and Safety Issues ▶ Community Health and Safety ▶ Air Pollution from Solid Cooking fuels for cooking	▶ Pollution standards, either IFC or national standards, whichever is stringent, shall be followed. ▶ Introduction of energy efficiency measures in both production and consumption of energy. ▶ Increased use of renewable energy production. ▶ Implementation of Energy efficiency measures ▶ Support switching from the traditional cooking method to using LPG or electricity. ▶ Improved capture, treatment, and recycling. ▶ Emergency Preparedness Plan ▶ A proper solid (municipal/industrial) waste Management system shall be in place. ▶ Effluent treatment plants shall be installed and maintained. ▶ Conduct ESIA and prepare ESMP for all projects as per ECR 2023. ▶ Continuous Ambient Air Quality Monitoring shall be carried out. ▶ Power Plants shall submit the quarterly environmental compliance report to the district DOE office. ▶ Local skilled people shall be given priority in jobs.	Ministry of Power
2.	Development of National Highways (RHD) Phase -1/Phase -3	▶ Air pollution (Gaseous emission, mainly CO), Particulate Matter Emission. ▶ Land Use change from Agriculture to Paved Roads ▶ Noise Pollution ▶ Social Impacts due to land acquisition)	▶ Conversion to green vehicle fleet (i.e., electric and hybrid cars/lorries). ▶ Regular Maintenance of Road and Highways ▶ Resettlement Action Plan ▶ Loss of Land and structures and livelihood ▶ Conduct ESIA and prepare ESMP for all projects as per ECR 2023.	Ministry of Transport, Road and Bridges (BRTA, RHD, MOL)
3.	Upgrading rural roads and enhancing digital connectivity (LGED) Phase -1/Phase-3/Phase -4	▶ Land Use pattern will be changed ▶ Noise and air pollution are due to the increase in vehicle movement. ▶ Social Risks due to Land Acquisition	▶ Conversion to green vehicle fleet (i.e., electric and hybrid cars/lorries). ▶ Regular Maintenance of Road and Highways ▶ Resettlement Action Plan ▶ Loss of Land and structures and livelihood ▶ Provision of an adequate number of	Ministry of Local Government, Rural Development and Co-Operatives (LGED)

Table 7-2: Environmental and Social Management Strategy for Different Sector

Sl. #	Sector	Environmental and Social Risks and Impacts	Mitigation Measures	Responsible Agency
			cross-drainage structures ▶ Preparation of ESIA and ESMP ▶ Resettlement Action Plan for the loss of structures/land/livelihoods as per the approved RPF ▶ Identification of small ethnic minorities and impacts	
4.	Developing complementary logistics infrastructure and services (LGED) Phase -1/Phase-3/Phase -4	▶ Water Pollution from the growth centers ▶ Biodegradable and Inert solid Waste generation ▶ Clogging of drains due to littering of waste ▶ Increase in plastic waste and e-waste due to expected lifestyle changes. ▶ Loss of livelihoods during the construction period of market centers.	▶ Master Planning to optimize the land and prevent land degradation ▶ Conduct ESIA for all projects as per ECR 2023. Prepare ESMP as per the WB requirement. ▶ Conduct study for landfill sites and solid waste management	Ministry of Local Government, Rural Development and Co-Operatives (LGED)
5.	Aquaculture	▶ Agricultural land is being affected due to conversion to ponds (Shrimp/fish cultivation). ▶ Water pollution by agro- and bio-chemicals used on increased use for aquaculture farms. ▶ Increase in soil salinity due to rapid and haphazard growth of shrimp cultivation.	▶ A sector-wide Environmental and Social study shall be carried out to assess the E&S risks and impact of converting agricultural land to shrimp farms. ▶ Stricter enforcement of regulations and control of illegal fishing and poison fishing, as well as maintaining mesh size of gears. ▶ Stricter enforcement of regulations on shrimp fry collection and net fishing. ▶ Limit chemicals and bio-additives in shrimp farms and aquaculture. ▶ Promote reclamation of salinized land by encouraging the use of saline-tolerant rice varieties. ▶ Conservation of natural breeding grounds. ▶ Public awareness campaigns on environmental and social impacts and risks shall be undertaken. ▶ Master planning for controlling the proliferation of aquaculture farms and strict enforcement of master plan zoning. ▶ Collection and proper disposal of biodegradable liquid and solid disposal to identified areas.	Ministry of Fisheries
6.	Flora	▶ Loss of Trees. ▶ Loss of nesting grounds for avifauna.	▶ Issuance of " No-objection certificate" for tree removal ▶ Greenbelt development inside the plant boundary (33% of the plant area shall be compulsorily planted with trees) ▶ In place of one lost tree, three trees shall be planted (tree plantation of 1:3)	MOEFCC (Department of Forests)

Table 7-2: Environmental and Social Management Strategy for Different Sector

Sl. #	Sector	Environmental and Social Risks and Impacts	Mitigation Measures	Responsible Agency
			▶ Enforcement of forestry rules to prevent illegal felling of mature trees. ▶ Afforestation of degraded forests to increase the carbon sink in the region and the country.	
7.	Industry	▶ Air pollution (PM, NOx, and SO_2) ▶ Carbon Emissions. ▶ Conversion of agricultural land for industrial development.	▶ Pollution standards should be reviewed and tightened, where necessary, to improve towards WHO standards. ▶ The introduction of energy and material-efficient technologies should be supported. ▶ Industries located in new economic zones in the SW region should adopt technologies that produce minimum or no NOx and SOx emissions. ▶ Brownfield sites should be used wherever possible, and industrial development should be concentrated in industrial zones with approved overall EMPs. ▶ ESIA and ESMP shall be conducted for the respective projects. ▶ Continuous monitoring of criteria pollutants shall be carried out. ▶ Quarterly submission of environmental compliance report to respective ESMC for submission to DOE.	Ministry of Industries
8.	Water resources	▶ Low dry season freshwater flow in Distributary Rivers. ▶ Freshwater flooding and waterlogging following excessive rainfall in the wet season (mostly in upstream areas).	▶ Dredging rivers to enhance dry season flow. ▶ Prevention of solid disposal to water bodies. ▶ Construction of diversion structures to augment dry season flow and control flooding. ▶ Conduct ESIA per ECR 23 requirement. ▶ Improvements to drainage network/system infrastructure and management.	Ministry of Water Resources
9.	Tourism	▶ Noise and water pollution. ▶ Tourist carrying capacity of the Sundarbans & its biodiversity conservation.	▶ Tourists, local tour operators, boat owners, and other stakeholders should follow updated eco-tourism guidelines. ▶ The use of plastics is strictly prohibited in tourist spots. ▶ The waste management system, which has interministerial arrangements (Ministry of Tourism, Ministry of Urban Development, MOEFCC, Ministry of Local Government, etc.), shall be properly designed to prevent littering. ▶ The feasibility of the packaged wastewater treatment plant at a tourist spot shall be studied.	Ministry of Tourism

Table 7-2: Environmental and Social Management Strategy for Different Sector

Sl. #	Sector	Environmental and Social Risks and Impacts	Mitigation Measures	Responsible Agency
			▶ Ban/restrict tourism in sensitive protected areas to conserve biodiversity. ▶ Continuous monitoring of criteria pollutants shall be carried out. ▶ Conduct ESIA study as per ECR 2023 and prepare ESMP ▶ Quarterly submission of environmental compliance report to respective ESMC for submission to DOE.	
10	Agriculture	▶ The development of Agro-based industry will be a source of water pollution from Agro-chemicals.	▶ Education/training on appropriate use of agro-chemicals. ▶ Promote increased use of bio-fertilizers. ▶ Promote balanced agricultural practices, e.g., optimum fertilizer use, water, etc. ▶ Use of compost shall be emphasized, and a public awareness campaign is required for its adaptability	Ministry of Agriculture
11	Urban	▶ Unsafe disposal of liquid and solid waste and pollution of water bodies. ▶ Air pollution and associated health hazards from traffic. ▶ Land use Planning is lacking	▶ Improved management, treatment, and recycling of liquid and solid waste. ▶ Conversion to green vehicle fleet (i.e., electric and hybrid cars/lorries). ▶ Improved public transport system – to reduce urban vehicle numbers. ▶ Preparation of Master Plans and waste management system ▶ Conduct ESIA study as per ECR 2023 and prepare ESMP	Ministry of Urban Development.
12	Livelihood Restoration	▶ The program will bring about improvement in the road sector on the one hand. In contrast, the land acquisition for the development of national highways will significantly impact due to the loss of businesses/loss of workdays. Marginalized or vulnerable groups such as women, youth, elderly, disabled, minority, and ethnic groups who are landless will be exposed further due to land acquisition. They will be impacted more if the program is implemented without taking appropriate mitigation measures.	▶ The program interventions must carry out a Social Impact Assessment (SIA) of the project-affected people. The SIA will be based on the census survey, inventory loss, etc. ▶ A Resettlement Action Plan (RAP) must be prepared and implemented before implementing the program intervention. ▶ RAP must include the Income and Livelihood Restoration Plan (ILRP). ILRP at the program intervention level must consist of the provision for Income Generating Training for the PAPs, Creation of Employment in Civil Works, Creation of opportunities for employment in roadside tree plantation and nursing ▶ At the macro level, the concerned authorities may	Program Implementation Authorities.

391. The MoEFCC is the apex body for all matters relating to National Environmental Policy and regulatory issues, including EIA. Its principal role is in planning, reviewing, monitoring, and ensuring the proper addressing of

environmental initiatives/issues at the national/regional level. The MoEFCC supervises the DoE and can play a major role in coordinating with other ministries, as detailed in Table 7-3 .

Table 7-3: Management Action for Addressing the Environmental and Social Risks and Impact at the Regional Level

Issue	Key Activities to be performed:	Action Plan	Responsible Agency
Environmental and Social Safeguards	▶ Review of the ESIA/EIA studies per ECR 2023 and environmental management, pollution control, natural resources management, etc. ▶ A detailed review of the social safeguards included in the assessment, such as involuntary resettlement, conflict resolution, gender, labor, SEA/SH etc., provides a comprehensive view of the project's social impact and risks. ▶ Issuance of Environmental Clearance Certificate. ▶ Establishment of a continuous air pollution monitoring network in the program area. ▶ Carry out environmental audit reports from different sectors. ▶ Review the Environmental Compliance reports of different sectors. ▶ Imposition of penalties as per ECR 2023 for non-compliance ▶ Implementation of environmental and social safeguards during the initial phase of ESMS implementation. ▶ Livelihood Improvement—tie up with several programs funded by Banks, such as the Resilience, Entrepreneurship and Livelihood Improvement (RELI) project, Accelerating and Strengthening Skills for Economic Transformation (Asset), Resilience, Entrepreneurship and Livelihood Improvement Project, etc.	To address the social safeguards at the regional level, the following relevant ministries shall be involved: ▶ Gender: Ministry of Women and Children Affairs (MoWCA); Department of Women Affairs (DoWA); ▶ Employment, Labour and working conditions: Ministry of Labour and Employment (MoLE); Department of Labour (DoL); ▶ Community, occupational health and safety: Ministry of Health and Family Welfare (MoHFW); Ministry of Local Government, Rural Development and Co-operatives (MoLGRDC); Department of Public Health Engineering (DPHE); ▶ Land acquisition, restrictions on land use and involuntary resettlement: Ministry of Land (MoL); Deputy Commissioner of the District. (DC); ▶ Indigenous peoples /minorities: Ministry of Cultural Affairs (MoCA); ▶ Cultural heritage: Ministry of Civil Aviation and Tourism (MoCAT); Bangladesh Parjatan Corporation(BPC); ▶ Stakeholder engagement: Ministry of Social Welfare (MoSW) and respective concerned organization; ▶ Information disclosure: Ministry of Information and Broadcasting (MoIB); Directorate of Mass Communication.(DoMC); ▶ Social security (vulnerable and destitute people): Ministry of Social Affairs, (MoSA); ▶ Social Development Fund (Autonomous Body of Ministry of Finance) ▶ Technical and Madrasah Education Division (TMED). Ministry of Education	MOEFCC (DOE) in coordination with the identified ministries.

Notes: Parameters adopted from Updated Draft Final SEA Report, DOE

8 CONCLUSION AND RECOMMENDATIONS

392. The SEASA attempts to assess the potential E&S risks of the WECARE program. This takes into account various growth scenarios in the south-western region of Bangladesh and as well as relevant linked infrastructures (e.g. Padma Bridge, macro-economic stability of the country, etc) and
393. WeCARE, a ten-year initiative of GOB, is a step towards improving the roads, highways, growth centers, and rural/feeder roads. This will improve connectivity and enhance the quality of life along the western corridor. The program will help meet the future traffic demand, considering the construction of Padma Bridge and the improvement of the Hatikumrul-Rangpur national highway under ADB funding. Overall, the program will have beneficial impacts and improve the economic activity in the western region.

394. The primary beneficiaries[75] will include road users, tradable goods and services consumers, owners and employees of firms producing tradable goods and services, and local communities and smallholders along the Program Corridor, which extends to 10 districts with a combined population of over 20 million. Small and medium-sized farmers and enterprises who typically suffer from inefficiencies (because of the high unit costs of their shipments) are likely to benefit most from improved market access and facilities.
395. Program beneficiaries will also include women and youth, all expected to have increased access to socioeconomic and job opportunities. Given the program's regional importance, beneficiaries will extend beyond Bangladesh to road users, traders, and consumers from India and, in the longer term, Nepal, Bhutan, and the Northeastern region of India.
396. The assessment of different growth scenarios shows that the program's interventions considered in phases 1 and 3 will meet the requirement of the medium growth scenario and seamlessly transfer the benefits to high-growth scenarios where it is expected that phase 4 will be in the implementation phase.
397. The development of Phase 4 LGED roads will surely help the government plan to develop the economic zones in Pabna, Natore, Shirajgonj, and Kushtia. It is because of the timing of the completion of Phase 4. It will help generate more employment in the north-western part of the study area.
398. The scenario analysis also stipulates that the mitigated impacts in medium—and high-growth scenarios outweigh the unmitigated negative impacts. Thus, mitigation measures must be adopted to maximize the benefits of these scenarios.
399. The potential negative impacts of medium and high growth scenarios are as follows:

- Moderate increase in air pollution
- Increase in noise pollution.
- Increase in Waste (solid/liquid)
- Loss of trees
- Increase in CO2 emissions from industry and thermal power plants or brick kilns
- Loss of habitat for human/wildlife/aviafuna
- Land use changed either to paved roads or industrial buildings.
- Loss of Agricultural/Structures/Livelihoods
- land disputes among farmers, shrimp or fish cultivators, or industrial lobby.

400. The simulation model results show that PM2.5, CO, or other gaseous emissions will increase but remain within DOE standards. Pollution control equipment such as baghouse filters, electrostatic precipitators, or scrubbers should be compulsory for new industrial or power units or retrofitted in the existing pollution-generating industry.
401. It is recommended that the air quality network in the program districts be developed. This will improve the quality of the base air quality data used to predict the impacts and develop the air shed management plan.
402. Similarly, a surface water and groundwater quality monitoring network is recommended to be established in the program district to make early policy decisions.
403. Using unauthorized modes of transport (nosimon, karimon, bhotbhoti, etc.) on rural roads shall be discouraged through proper public transport or public awareness campaigns. Since wage-earners will lose their wages from the plying of these unauthorized transport, a study is recommended to assess the social risks and impacts on wage-earners and the restoration of their livelihoods. The phasing out of these unauthorized vehicles shall be carried out in a planned/coordinated phased manner. Non-governmental organizations shall be involved. The reduction of these vehicles will reduce the problem of noise.

[75] Western Economic Corridor and Regional Enhancement Program (P169880), The world Bank

404. A carbon sink needs to be generated by planting more local species of trees through social forestry. As per the government of Bangladesh policy, three trees shall be planted instead of 1 tree removed. A greenbelt development of about 33% of the plant-building area in thermal power plants and industries shall be developed. It is recommended that DOE place a condition in the environmental clearance certificate.
405. The afforestation program shall be undertaken on the degraded forest.
406. Industrial development and agro-based industrialization require the proper collection of solid waste and transportation and disposal systems. Further, the solid waste generated from the growth center markets should be collected and disposed of in identified locations. It is recommended that the Solid Waste Management Study be undertaken, as there is a need for compost plants and landfill sites. A public awareness campaign on waste segregation at source is recommended. A study of compost plants using wind row methods shall be considered for biodegradable waste. The compost plant will reduce the dependency on the inorganic fertilizers.
407. A public awareness campaign is a must for the use of compost material, and a market survey shall be conducted to assess the feasibility of using compost material in farming. The public awareness campaign may be a joint effort of the Ministry of Urban Development, the MOEFCC, and LGED. The use of compost material will reduce the land requirement for landfill sites.
408. Wastewater treatment shall be considered, and a proper drainage and collection system is needed. A feasibility study on wastewater treatment is recommended.
409. Common waste (solid/liquid) treatment options may be studied during the solid waste management study. There is an urgent need for waste treatment. Installation of waste-to-energy options may also be studied. A waste management hierarchy is suggested in Figure 10-1.

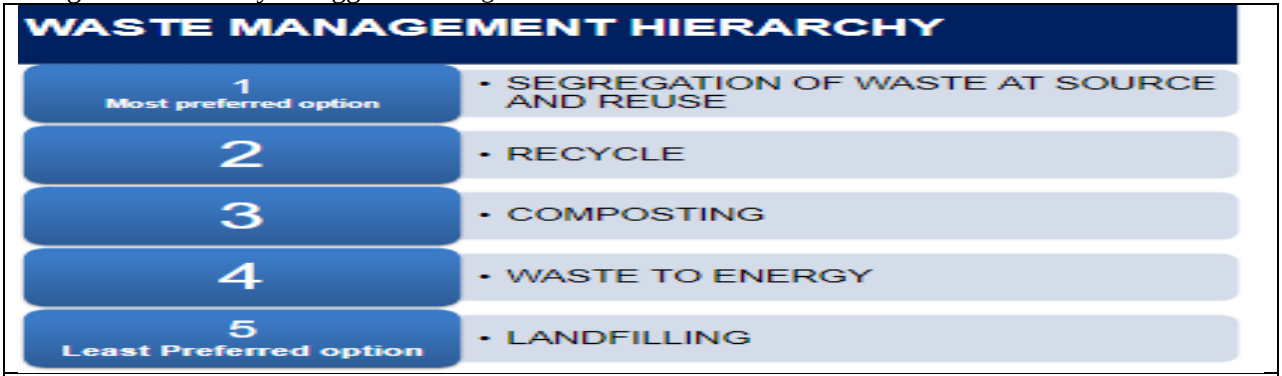


Figure 8-1: Hierarchy for Waste Management

410. To reduce the land disputes, a land use planning and master plan study shall be undertaken for the ten districts. Further land record update programs shall be undertaken. A land use survey and impact assessments of all ten (10) districts covering Upazila and unions and villages should be undertaken.
411. Direct and indirect users will also benefit from efficient transportation, logistics infrastructure, and services and trade services that are provided at a lower cost and reach higher levels of social services in a shorter time.
412. In terms of gender analysis, the specific anticipated outcomes for women and the socially excluded in the program areas include improved opportunities for skilled employment and infrastructure design to accommodate their requirements, such as service lanes and crossings to reduce exposure to heavy traffic.
413. Small Ethnic and Disadvantaged Communities Development Framework for the program shall be developed to mitigate the social risks and impacts of development.
414. A technical assistance study is recommended to study the pros and cons of the Final (Draft) Common Entitlement Matrix (2022) prepared by the RHD for multilateral funding projects. Its applicability to LGED program interventions may also be studied. This will help harmonize the government entitlement matrix with the Banks ESS5. This study will reduce the time to prepare the resettlement action plan and the conflict between the implementing and funding agencies' schools of thought.
415. The ESIA report shall be prepared to meet the requirements of funding agencies. ESMP shall be devised and added to the contractor's contract to make it obligatory to take necessary measures to adopt ESMP and to make it a legal requirement according to the contract for implementation.
416. The WeCARE program will help sustainably and systematically grow the agricultural sector, the backbone of the country's economy. These provisions will make the project environmentally sustainable during the operation phase.

417. Lastly, it is recommended that another WeCARE-2 program, which is currently in the preliminary stage, be implemented to cover more regional roads/rural roads to cater to the needs of high-growth scenarios.

418.

419. The potential negative impacts of medium and high growth scenarios are as follows:

- ►Moderate increase in air pollution
- ►Increase in noise pollution.
- ►Increase in Waste (solid/liquid)
- ►Loss of trees
- ►Increase in CO2 emissions from industry and thermal power plants or brick kilns
- ►Loss of habitat for human/wildlife/aviafuna
- ►Land use changed either to paved roads or industrial buildings.
- ►Loss of Agricultural/Structures/Livelihoods
- ►land disputes among farmers, shrimp or fish cultivators, or industrial lobby.

9 Institutional Arrangement

420. This section discusses the institutional arrangement for SESA and additional hiring to augment internal E&S capacities of the relevant agencies or more sweeping changes such as reorganization of units or agencies and redefinition of roles and responsibilities. Other E&S instruments, including capacity assessment and staffing within RTHD/RHD, CSC, and contractors, are also discussed herein. The minimum EHS staffing of RHD Environment and Social Circle, Contractor, and the CSC has also been worked out and presented.

421. Coordinating and managing environmental and social risks and impacts within the program is paramount for its sustainable development. Accordingly, an Environmental and Social Cell (ESMC) at a higher level is also discussed. The ESMC approach aims to enhance program effectiveness by fostering coordination among implementing agencies and other stakeholders while bolstering their capacity to address environmental and social risks and impacts at the system level.

9.1 RECOMMENDATIONS FOR AUGMENTATION OF ENVIRONMENTAL AND SOCIAL CAPABILITIES AT THE IMPLEMENTING AGENCY LEVEL

422. Section 2 discusses the existing administration setup of implementing agencies. RHD and LGED have environmental and social structures in their organograms, though capacity-strengthening actions are required to meet the World Bank's Environmental Social Framework (ESF) requirements. The following subsections discuss recommendations to augment the environmental and social strengths of the implementation agencies (RHD and LGED).

9.1.1 RECOMMENDATIONS FOR RHD INSTITUTIONAL ARRANGEMENTS AT HEADQUARTER LEVEL

423. It is learned that the RHD's SEC (RSEC) needs to be strengthened to review and monitor the interventions funded by the WB. A recent development in the Banks' environmental and social safeguards is introducing the Environmental and Social Framework comprising ESS (1 through 10). It sets out the requirements for development projects/program interventions.

424. Considering the requirement of Banks' ESF, thus, the following subject-matter specialists/experts are suggested to be hired/engaged on a contract basis to assist the RSEC's staff with the proposed program.

- ► Environmental Specialist (2No)
- ► Resettlement and Rehabilitation Specialist (2No)
- ► Social Development Specialist for Small Ethnic Community –(1No)
- ► Social Development Specialist (2No)

- Gender Action Plan specialists (2No)
- Occupational Health and Safety Specialist (2No)

425. The proposed organogram for RSEC at the HQ level is presented in Figure 9-1RSEC requires logistic support at the HQ level and the proposed subject matter experts. Logistics arrangements to augment the strength, such as vehicles (2No.), computers (10No.), etc., should be provided.

Figure 9-1: Organogram for Existing RSEC

9.1.1.1 PROPOSED INSTITUTIONAL ARRANGEMENTS FOR LGED

426. MLGRDC is the central agency of the GOB responsible for the planning and development, maintenance, and management of rural roads, including bridges and culverts. The ministry coordinates with the other ministries to finalize budget allocation for project development in rural areas through the local government and the Rural Development and Co-operatives Division. It is responsible for housing and building, regional and rural policy, municipal and city administration and finances, and elections.

427. LGED functions under MLGRDC and is an implementing agency for rural/union/feeder roads and growth centers. The department is also responsible for planning, surveying, and supervising the program developing rural/feeder roads. It is involved in strengthening the rural economy through developing rural transportation and improving rural markets and growth centers across the country.

428. In LGED, it is recommended that the headquarters and divisional/regional offices be strengthened with environmental and social subject matter specialists to monitor and evaluate the environmental and social risks and impacts of program interventions such as LGED rural roads/feeder roads, growth centers, bridges, culverts, drains, sheds, or other street lighting, etc. The upazila offices have a coordinator position that will be integrated into the environmental and social unit at the district/regional level. However, they will be reporting to the sub-divisional engineer (SDE).

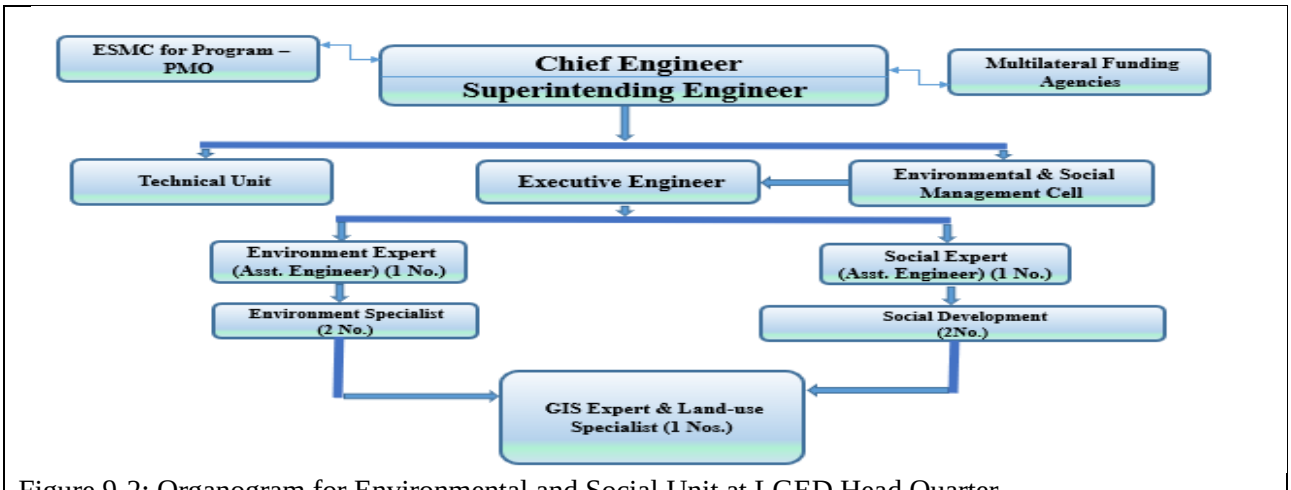


Figure 9-2: Organogram for Environmental and Social Unit at LGED Head Quarter

429. The headquarters and divisional/regional office organogram are suggested as in Figure 9-2

430. Thus, the headquarters of LGED will have a team of subject matter experts comprising environmental/social experts of the Assistant Engineer cadre (1 number each), environmental and social specialists (2 number each), and one GIS and land use expert. This unit will be headed by the superintending engineer, whom an executive engineer will assist. The chief engineer will be the highest body in the hierarchy in the LGED office and will attend the proposed Environmental and Management Cell in the Prime Minister's Office (PMO), as discussed in the subsequent sections.

431. The recommended Environmental and Social Unit at the district/regional level is shown in Figure 9-3. to

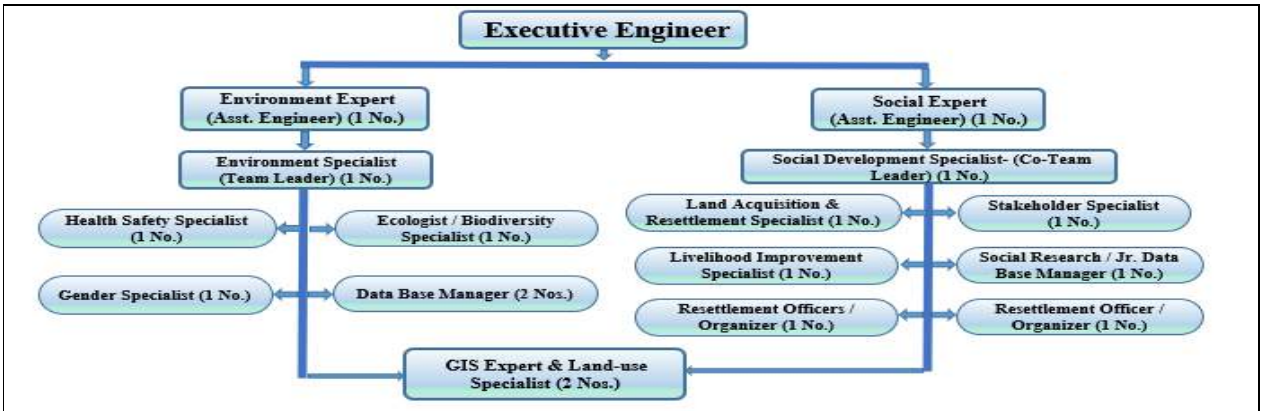


Figure 9-3: Organogram for Environmental and Social Unit at LGED District/Regional Level

monitor and evaluate environmental and social risks and impacts.

9.2 MONITORING AND EVALUATION PLAN AND FORMATION OF ENVIRONMENTAL AND SOCIAL MANAGEMENT CELL

432. Given the program's multi-program approach (MPA) and 10-year initiative, multiple implementing agencies and stakeholders are involved in executing development initiatives, each with their mandates and priorities, an apex body shall monitor the environmental and social risks and impact mitigation. This decentralized approach and fragmented efforts will cause duplication of resources and inadequate attention to crucial environmental and social risks and impacts. By centralizing coordination through an ESMC, these challenges can be addressed comprehensively.

433. Thus, it is imperative to establish an Environmental and Social Management Cell (ESMC) at the Prime Minister's Office level. The ESMC will serve as an apex body for managing environmental and social aspects across program intervention. The recommended structure of the ESMC at PMO is presented in Figure 9-4.

434. Establishing an ESMC will represent a proactive approach to addressing multifaceted environmental and social management challenges of development programs. By serving as a focal point for coordination, the ESMC enables more effective governance, stakeholder engagement, and risk management, ultimately contributing to sustainable development goals.

Figure 9-4: Recommended Environmental and Social Management Cell for WeCARE Program

435. The ESMC will be headed by the Secretary in PMO, who will directly report to the principal secretary, as shown in the figure above. The ESMC will be supported by technical people, two executive engineers, and environmental and social subject matter experts. The list of staff and logistics support in the ESMC will be as follows:

- Principal Secretary – Chairman
- Secretary – Head of ESMC
- Assistant Chief Engineer (2 No) – One each on deputation from RHD and LGED
- Executive Engineers (4No)
- Environmental Subject Matter expert – 2 No.
- Social Expert with Land Acquisition and RAP background – 4No
- Support Staff – (Computer Operator, 3 No and office Boys 4 Nos)
- Computer Machines (Desktop 4 Nos and Laptops – 6Nos)
- Communication Network
- Vehicles (5 Nos) on a man-month basis

9.2.1 REPORTING

436. The ESMC will submit annual reports on environmental and social risks and impacts based on the monthly reports submitted by the respective program intervention implementing agencies. The Annual Environmental and Social report will contain the following:

- Executive Summary (2/3 pages)
- Introduction (1/2 pages)
- Program Interventions Progress discussed in the ESMC meeting (2/3pages)
- Environmental and Social Issues containing General Progress of Implementation, Key performance indicators such as root causes of issues, performance of pollution abatement and prevention measures, Resolution of Inter-department issues, Resolution results on social issues, Results of Livelihood Restoration measures with special focus on vulnerable group and severely affected, Gender Inclusiveness due to the program intervention, resolution of Land disputes amicable through GRM, etc. (up to 10 pages)
- Conclusion and Recommendations (1 page)
- Annual Meeting Schedule (2/3 pages)

437. The annual report prepared by the ESMC will be disclosed on the program website.

9.3 ENVIRONMENTAL AND SOCIAL MANAGEMENT CELL AT PROJECT LEVEL

438. The suggested institutional arrangement at the PIU level is given in **Error! Reference source not found.**The implementing agencies must follow this institutional arrangement for managing environmental and social risks and impacts for future projects of AIIB and the WB, namely, the Hatikumrul to Jhenaidah stretch sub-interventions at and for the Phase 3 Navaron-Satkhira-Bhomra section of the Highway and LGED sub-intervention.

9.3.1 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

439. The environmental and social impact assessment shall be studied from the program interventions, per the DOE and banks' requirements (ESS 1 through 10). An ESMP shall be devised for the program interventions. Since all the program interventions will go through the construction phase, the following shall be prepared and implemented for sustainable development in the study area.

9.3.2 RESETTLEMENT ACTION PLAN

440. A standalone and separate resettlement action plan, especially for national highways where land acquisition is to be done to meet the design requirement, considering the ESS5 to reduce potential social impacts. It is envisaged that feeder road development will not require land acquisition. A resettlement policy framework 2020 containing an entitlement matrix is prepared for national highway development.

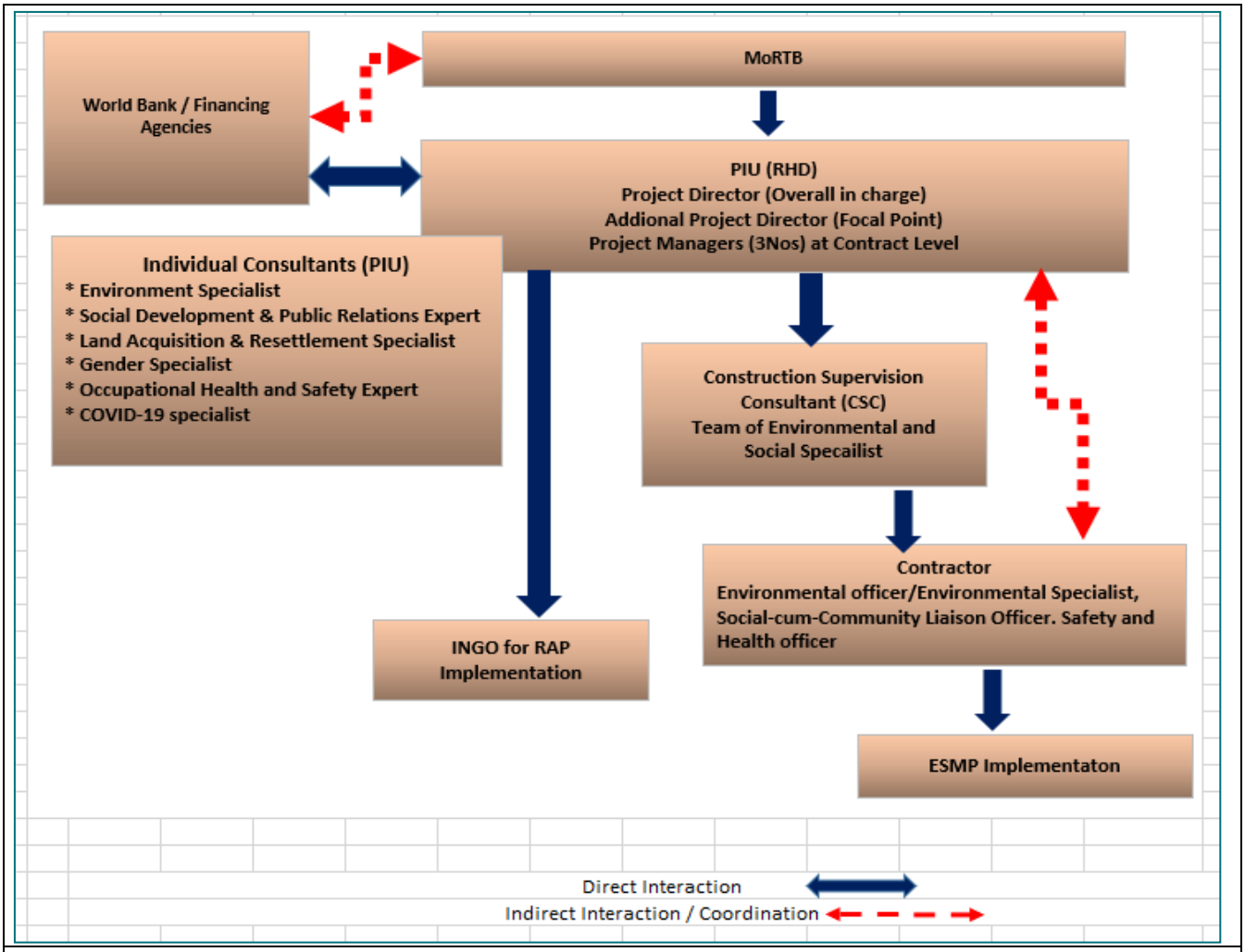


Figure 9-5: Organogram of ESMC at Project Level

9.4 TRAINING OF ESMC AND RHD/LGED

441. Since the ESMC, RSEC, and LGED staff will be deputed, their technical know-how is commendable in their respective engineering aspects; training to supervise the WB's environmental and social standards (ESS) for properly implementing mitigation measures is recommended. Staff capacity will be strengthened regarding the program's environmental and social risks and impacts. The following training, as suggested in the Table 9-1, per the Environmental and Social Commitment Plan (ESCP) requirements shall be arranged for the ESMC, RSEC/LGED staff.

Table 9-1: Training Schedule and Proposed Module

Target Group	Subject(s)	Method	Time Frame
ESMC Cell Training (6 Numbers) in Dhaka RSEC Staff (4 No) in Dhaka LGED staff (10 No)	▶ Environmental and Social Standards Overview ▶ Environmental regulations and national standards, ▶ Scoping and Screening, ESIA report, Pollution Abatement, and Prevention Measures ▶ Monitoring and Evaluation of Key Environmental and Social Performance Indicators (Land disputes and resolution, Resettlement Grievance Redressing Mechanism (GRM) and SEA/SH related GRM, Redressing Mechanism) for various investments	Lectures	Once

10 CONCLUSION AND RECOMMENDATIONS

442. WeCARE, a ten-year initiative of GOB, is a step towards improving the roads, highways, growth centers, and rural/feeder roads. This will improve connectivity and enhance the quality of life along the western corridor. The program will help meet the future traffic demand, considering the construction of Padma Bridge and the improvement of the Hatikumrul-Rangpur national highway under ADB funding. Overall, the program will have beneficial impacts and improve the economic activity in the western region.

443. The primary beneficiaries[76] will include road users, tradable goods and services consumers, owners and employees of firms producing tradable goods and services, and local communities and smallholders along the Program Corridor, which extends to 10 districts with a combined population of over 20 million. Small and medium-sized farmers and enterprises who typically suffer from inefficiencies (because of the high unit costs of their shipments) are likely to benefit most from improved market access and facilities.

444. Program beneficiaries will also include women and youth, all expected to have increased access to socioeconomic and job opportunities. Given the program's regional importance, beneficiaries will extend beyond Bangladesh to road users, traders, and consumers from India and, in the longer term, Nepal, Bhutan, and the Northeastern region of India.

445. The assessment of different growth scenarios shows that the program's interventions considered in phases 1 and 3 will meet the requirement of the medium growth scenario and seamlessly transfer the benefits to high-growth scenarios where it is expected that phase 4 will be in the implementation phase.

446. The development of Phase 4 LGED roads will surely help the government plan to develop the economic zones in Pabna, Natore, Shirajgonj, and Kushtia. It is because of the timing of the completion of Phase 4. It will help generate more employment in the north-western part of the study area.

447. The scenario analysis also stipulates that the mitigated impacts in medium—and high-growth scenarios outweigh the unmitigated negative impacts. Thus, mitigation measures must be adopted to maximize the benefits of these scenarios.

448. The potential negative impacts of medium and high growth scenarios are as follows:

- Moderate increase in air pollution
- Increase in noise pollution.
- Increase in Waste (solid/liquid)
- Loss of trees
- Increase in CO2 emissions from industry and thermal power plants or brick kilns
- Loss of habitat for human/wildlife/aviafuna
- Land use changed either to paved roads or industrial buildings.
- Loss of Agricultural/Structures/Livelihoods
- land disputes among farmers, shrimp or fish cultivators, or industrial lobby.

449. The simulation model results show that PM2.5, CO, or other gaseous emissions will increase but remain within DOE standards. Pollution control equipment such as baghouse filters, electrostatic precipitators, or scrubbers should be compulsory for new industrial or power units or retrofitted in the existing pollution-generating industry.

450. It is recommended that the air quality network in the program districts be developed. This will improve the quality of the base air quality data used to predict the impacts and develop the air shed management plan.

451. Similarly, a surface water and groundwater quality monitoring network is recommended to be established in the program district to make early policy decisions.

452. Using unauthorized modes of transport (nosimon, karimon, bhotbhoti, etc.) on rural roads shall be discouraged through proper public transport or public awareness campaigns. Since wage-earners will lose their wages from the plying of these unauthorized transport, a study is recommended to assess the social risks and impacts on wage-earners and the restoration of their livelihoods. The phasing out of these unauthorized vehicles shall be carried out in a planned/coordinated phased manner. Non-governmental organizations shall be involved. The reduction of these vehicles will reduce the problem of noise.

453. A carbon sink needs to be generated by planting more local species of trees through social forestry. As per the government of Bangladesh policy, three trees shall be planted instead of 1 tree removed. A greenbelt development of about 33% of the plant-building area in thermal power plants and industries shall be developed. It is recommended that DOE place a condition in the environmental clearance certificate.

[76] Western Economic Corridor and Regional Enhancement Program (P169880), The world Bank

454. The afforestation program shall be undertaken on the degraded forest.
455. Industrial development and agro-based industrialization require the proper collection of solid waste and transportation and disposal systems. Further, the solid waste generated from the growth center markets should be collected and disposed of in identified locations. It is recommended that the Solid Waste Management Study be undertaken, as there is a need for compost plants and landfill sites. A public awareness campaign on waste segregation at source is recommended. A study of compost plants using wind row methods shall be considered for biodegradable waste. The compost plant will reduce the dependency on the inorganic fertilizers.
456. A public awareness campaign is a must for the use of compost material, and a market survey shall be conducted to assess the feasibility of using compost material in farming. The public awareness campaign may be a joint effort of the Ministry of Urban Development, the MOEFCC, and LGED. The use of compost material will reduce the land requirement for landfill sites.
457. Wastewater treatment shall be considered, and a proper drainage and collection system is needed. A feasibility study on wastewater treatment is recommended.
458. Common waste (solid/liquid) treatment options may be studied during the solid waste management study. There is an urgent need for waste treatment. Installation of waste-to-energy options may also be studied. A waste management hierarchy is suggested in Figure 10-1.

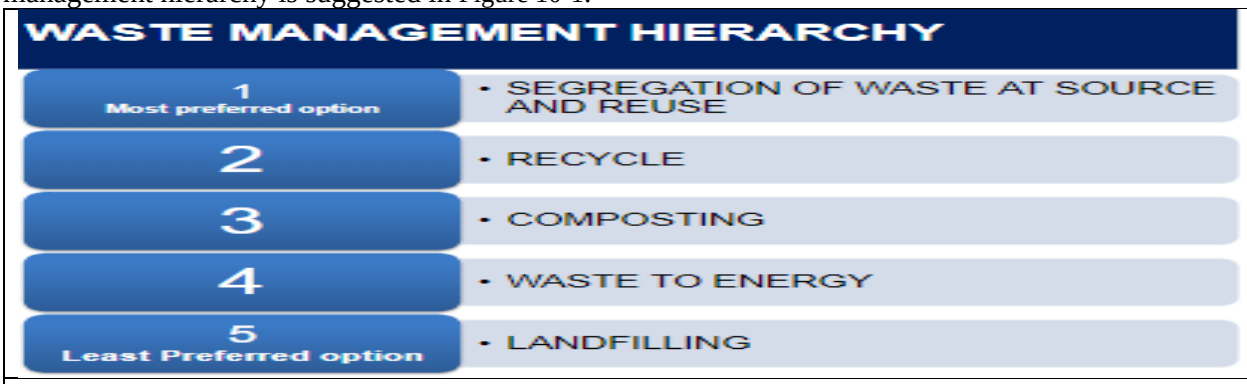


Figure 10-1: Hierarchy for Waste Management

459. To reduce the land disputes, a land use planning and master plan study shall be undertaken for the ten districts. Further land record update programs shall be undertaken. A land use survey and impact assessments of all ten (10) districts covering Upazila and unions and villages should be undertaken.
460. Direct and indirect users will also benefit from efficient transportation, logistics infrastructure, and services and trade services that are provided at a lower cost and reach higher levels of social services in a shorter time.
461. In terms of gender analysis, the specific anticipated outcomes for women and the socially excluded in the program areas include improved opportunities for skilled employment and infrastructure design to accommodate their requirements, such as service lanes and crossings to reduce exposure to heavy traffic.
462. Small Ethnic and Disadvantaged Communities Development Framework for the program shall be developed to mitigate the social risks and impacts of development.
463. A technical assistance study is recommended to study the pros and cons of the Final (Draft) Common Entitlement Matrix (2022) prepared by the RHD for multilateral funding projects. Its applicability to LGED program interventions may also be studied. This will help harmonize the government entitlement matrix with the Banks ESS5. This study will reduce the time to prepare the resettlement action plan and the conflict between the implementing and funding agencies' schools of thought.
464. The ESIA report shall be prepared to meet the requirements of funding agencies. ESMP shall be devised and added to the contractor's contract to make it obligatory to take necessary measures to adopt ESMP and to make it a legal requirement according to the contract for implementation.
465. The WeCARE program will help sustainably and systematically grow the agricultural sector, the backbone of the country's economy. These provisions will make the project environmentally sustainable during the operation phase.
466. Lastly, it is recommended that another WeCARE-2 program, which is currently in the preliminary stage, be implemented to cover more regional roads/rural roads to cater to the needs of high-growth scenarios.

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Annex 1.1 TOR

Section 7. Terms of Reference

Government of the People's Republic of Bangladesh

Roads and Highways Department (RHD)

TERMS OF REFERENCE
TO HIRE
AN ENVIRONMENTAL AND SOCIAL CONSULTANCY FIRM
TO PREPARE ENVIRONMENT AND SOCIAL ASSESSMENTS&
MANAGEMENT PLANS AND RESETTLEMENT ACTIONS
PLAN UNDER PACKAGE-SP-06 (RHD)

OF
WESTERN ECONOMIC CORRIDOR AND REGIONAL ENHANCEMENT (WeCARE) PROGRAM

MAY 2021

Roads and Highways Department (RHD)
Road Transport and Highways Division (RTHD)

The Consultant firm/ NGO will also be responsible for finalization of the draft RAP based on inputs received from different reviewers/ stakeholders, holding consultations/ workshops for select disclosure, translation of relevant portions of RAP into local dialect/ language and support to implementing agency (RHD) for RAP finalization and its public disclosure.

vi) Co-ordination with RAP Consultant of AIIB

Since WeCARE program is under a parallel financing arrangement with work on certain alignments being financed by World Bank and others by AIIB, the E&S Firm will have to closely work with the RHD-PIU and through them with Consultants hired under AIIB support to ensure consistency in approaches and entitlements across the Western Corridor in the RAP preparation. The AIIB financed sections of the Highway will be considered as the associated facilities and the RAP for those sections should be materially consistent with provisions of ESS5 and hence such coordination will be crucial.

3.2. 3 Deliverables

There will be the specific deliverables under the task as mentioned below:

i) Detailed Work plan and Inception Report highlighting its Approach & Methodology and Tentative Work Schedule.
ii) Draft RAP (two sets) for review and comments of the RHD and the World Bank.
iii) Final version of the RAP (two sets) incorporating feedback received from LGED and the World Bank including Bangla version of the reports in a comprehensible format
iv) DVD of video filming (two copies) would be submitted to RHD within 30 days of capturing video of the road alignment. The video filming will cover all structures within the right of way/selected area and would be edited as per instruction of the RHD.
v) All database of the survey output would be delivered to the RHD with user friendly menu driven software.
vi) All documents relating to surveys, census, and consultation meetings etc would be submitted to RHD as and when required.
vii) Automated Land Management System (ALMS) software installed at PMU, WeCARE, RHD computer systems along with Operation Manual and maintenance log book. The PMU and RHD relevant operatives will be trained by the E&S consultant on the operation and maintenance of the software. The Consultant will use the PMU supplied ALMS software (that was used during training sessions) so that there is harmony in the result outcome.

Any other documents relating to RAP have to be provided in a standard acceptable to RHD and the World Bank.

For specific deadline for key deliverables, please refer to the timeline of this ToR in section 6.

3.3. Task 3: Preparation of the Strategic Environmental and Social Assessment (SESA) for the WeCARE Program

The task 3 will be to carry out a Strategic Environmental and Social Assessment (SESA) of the WeCARE Program and l cover all the four phases of the WeCARE program and all the components to be implemented by RHD and LGED under both the World Bank and AIIB support. While the SESA is slightly delayed and may not inform the E&S approaches of Phase I, all activities proposed under the remaining three phases of WeCARE will be guided by its recommendations and proposed E&S measures. [8]

[8] Ideally this SESA needs to be done alongside the ESIA of phase I so that it is in place well in time to inform the activities under Phase II and especially Phase III.

SESA is a systematic examination of macro level environmental and social risks and impacts, and issues, associated with a policy, plan or program, typically at the national or regional level. In this case, it will be regional in scope, focusing on the Western districts of Bangladesh, where this program will be implemented. It involves a strategic assessment of the full range of broad environmental and social characteristics of the Western region that are likely to be impacted as a result of the investment activities planned under the project and identification of system level response/ plans needed for mitigating or managing those risks. It is the stepping stone to a more site or project-specific E&S risks and impacts assessment and management. It will also inform the upstream decision making with respect to environmental and social sustainability of the WeCARE program.

3.3.1 Objective of the SESA

The objective of this SESA is to scope and identify the potential positive as well as negative E&S impacts and risks associated with the various investments included in this MPA/WeCARE Program, assess various alternatives, the robustness of the policy framework and capacity of institutions to manage such issues and based on this assessment recommend policy, institutional and high level measures for addressing the relevant E&S related gaps at the broader and at the project level. Given its strategic nature, the SESA will be inclusive in nature and would be applicable to the entire WeCARE program across implementing agencies (RHD & LGED) and phases including those components that are being supported/ financed by AIIB and other agencies.

The SESA of WeCARE will guide the World Bank and AIIB supported interventions as well as RHD and LGED in deciding their investment strategies, type and modalities of interventions along the entire western corridor that are environmentally and socially sustainable, identify the positive and negative impacts of proposed investments to be able to priorities those E&S actions that maximize positive impacts and avoid/ minimize those that lead to adverse ones. It will also take into account the opportunities and limitations represented by the existing environment and social conditions and will assess ongoing and planned activities in the catchment areas of the corridor. This means that the SESA will have to be carried out and recommendations drawn before commencing Task 4 of this TOR to inform the ESIA of phase 3 of this MPA.

The SESA would also assess the cumulative impacts of all past, ongoing and foreseeable development interventions in the western corridor that could have cumulative as well as longitudinal impacts on the identified ecosystems and communities/ habitations. This will be based on IFC Good Practice Handbook on Cumulative Impact Assessment (CIA), ESS1 and other relevant guidelines.

The SESA will also assess the prevailing regulatory framework for E& S management relevant to the road/ transport sub-sector and analyze the capacity of key institutions involved in implementing them.

It is important to mention that the expansion of the highway from two lanes to four lanes will be on the existing road alignment and thus, SESA findings will be mainly be useful in designing the LGED components under Phase 2 and RHD components under Phase 4 (Road Maintenance Financing; and Strengthening Road Sector Management & Institutional Capacity).

3.3.2 Scope of the SESA

The overall scope of the assignment will include scoping of issues[9] to be assessed, identification of stakeholders to be consulted for SESA preparation, review of the legal, regulatory and institutional framework within which the road / transport sector operates in the country/ region and broad assessment of the key E&S characteristics that are likely to be impacted by the project investments across all phases of the program. Based on this initial assessment, the key E&S risks and impacts will

[9] In case the SESA assessment finds the presence of associated facilities (apart from the road sections that are already being funded by AIIB in parallel as mentioned in this ToR) that are relevant to the present program, then as per the ESF the firm will have to include those related investments or convergence programs within the scope of the present SESA.

be identified along with policy and high level measures and steps that could avoid, reduce or mitigate those impacts. If adverse impacts of the investments are found to be higher than benefits, then the SESA will be expected to recommend alternative to avoid or reduce risks-impacts where the positive E&S impacts far outweigh the adverse impacts.

It will then identify steps to ensure adequacy of the regulatory framework to implement the SESA, apart from additional E&S capacities required within key institutions operating in the road/ transport sector for managing those risks. Finally, it will recommend additional measures for strengthening the regulatory environment for the road sector, measures for capacity development within key institutions, measures to be in place for screening E&S impacts under the project, the E&S instruments to be developed based on the risk assessment and its final disclosure and consultation with the stakeholders initially identified for discussion, strengthening, approval and finalization.

In terms of specific activities, the preparation of SESA for the WeCARE will involve the following:

- Reviewing the current portfolio of RHD and LGED projects in the WeCAREprogram area/western corridor to group them by financing types and geographies especially from the perspective of existing management of environmental and social impacts and risks;
- Creating a broad baseline or an overview of the environmental and social conditions prevailing within the study area/region (Western part of Bangladesh), which is key to making reliable impact assessments, benchmarking and monitoring social and environmental changes over the multiple phases planned under the program;
- Identifying key stakeholders[10] relevant to the WeCARE program and holding a series of public consultations/ external stakeholder meetings across western Bangladesh for scoping the E&S issues, risks and impacts associated with the program/MPA.
- Hold consultations with internal stakeholders within RHD and LGED and their execution arms (LGED and RHD) for scoping the work, seeking their inputs for strategic assessment and mitigation measures, and also for assessing their institutional capacities to manage the E&S Risks;
- Analyzing existing relevant secondary data and information – spatial, temporal and clinical analysis, ecological assessment social research methods like participatory appraisal, and case studies for identification of relevant E&S issues of ecosystems / groups requiring critical attention.
- Developing possible future scenarios (pessimistic to optimistic) of the program keeping in mind key E&S issues. Highlight implications of alternative development and management pathways and recommend options based on E&S implications on the Program going forward.
- Long-listing of all potential E&S impacts of the planned program investments.
- Assessing critical institutional, legal, regulatory, policy and capacity gaps underlying the key environmental and social issues around the road/ transportation identified through the above analysis.
- Assessing cumulative impacts of the program when combined with past, ongoing and future development interventions in the western corridor that would have cumulative impacts on prioritized valued ecosystem component/s.
- Based on analysis of strategic issues and options, identifying key strategic areas of work (such as information management, institutions, policy, resources) to achieve the desirable scenarios from the current situation. The strategic areas should help mainstream the work of SESA into future phases of WeCARE. It should also help establish frameworks for systematic handling of the E&S issues for mitigation of adverse impacts, and enhancement of positive ones.

[10] These will include local communities, technical institutions (private and public) operative in the road/ transportation sector, organizations from affiliated sectors, players from collaborating institutions, supporting sectors and sourcing industries, non- governmental/ civil society organizations, national and district level government agencies, academic and research institutions, development partners, regulatory bodies

- Prioritizing key E&S issues emerging from the analytical assessment, based on their overall impact and influence on the proposed/ planned outcomes of the program and measures for mitigating them so that the risks and impacts are within manageable limits.
- Describing arrangements for implementing these measures or additional activities, including any changes in policies and regulations being proposed based on the assessment or changes in procedures like (i) measures for screening and assessment of site, region, ecosystem or community, group, gender specific environmental and social impacts; (ii) preparation of time-bound action plans for reducing, mitigating, and/or offsetting any likely adverse impacts;
- The SESA also needs to spell out measures for monitoring time-bound implementation of these action plans/measures, propose an outline of the capacity building measures for key institutions responsible for implementation and E&S management and provide an estimation of the budget required for its implementation.
- The E&S consultant will also provide recommendations for RHD and LGED in strengthening their E&S related planning process through greater participation and increased transparency, thereby eliminating decisions/ processes that might be environmentally and socially damaging for program implementation in the long run;
- Since WeCARE is a multi-phase project, the SESA will provide phase wise recommendations on strengthening preparation and implementation of proposed activities for each phase and also recommend the E&S systems and processes needed to be in place to enhance positive impacts and minimize adverse ones. It will also offer recommendations for strengthening the regulatory framework, additional capacity building support required by different institutions, special measures required for vulnerable groups/ communities present in the region so that the distributional impacts of the project is spread equitably throughout.

The E&S Consultant Firm will also develop a detailed methodology and work plan in its inception report, which will be discussed and agreed with the client. Apart from the 2 implementing agencies-RHD & LGED, the team members will also closely work with World Bank and AIIB for the purpose of this assignment.

3.3.3 Environmental and Social Management Strategy

Based on the findings, the SESA shall propose recommendations for strengthening the environmental and social management for the WeCARE program, apart from augmentation of the institutional capacities of RHD and LGED on E&S Management in the long term. The plan would include: (a) systems level measures to ensure that any medium or long term environmental and social impacts of the potential project activities are adequately mitigated; (b) general guidelines for long-term environmental and social monitoring; and (c) a long term plan for supporting institutional strengthening of key players in the sector/ sub-sector.

Mitigation: SESA can be an effective tool for identifying, at an early stage, projects that will require special mitigation measures. SESA may also suggest broad solutions for reducing negative impacts on important regional environments and social milieu and develop mitigation guidelines for specific activities. Finally, the SESA can be an effective vehicle for recommending mitigation measures that can only be implemented at the regional level for regulatory or economic reasons.

Monitoring: The SESA should provide general guidelines for long-term environmental and social monitoring to ensure adequate implementation of the program or set of projects and evaluate progress. The baseline data should be used to measure progress over the course of implementation.

Institutional strengthening: The SESA (building on the capacity assessment conducted by the World Bank during the preparation of the phase 1) shall recommend training or additional hiring, or more sweeping changes such as reorganization of units or agencies, and redefinition of roles and responsibilities. This section might also include recommendations on policy and regulatory instruments for environmental and social management in the region.

3.3.4 Deliverables

There will be three specific deliverables under the task:

a) Detailed Work plan and Inception Report highlighting its Approach & Methodology and Tentative Work Schedule for Task 3 (SESA).
b) Draft SESA report
c) Final SESA report including Bangla version of the reports in a comprehensible format

For specific deadline for each deliverable, please refer to the timeline of this ToR in section 6.

3.4 Task 4: Conduct an Environmental and Social Impact Assessment and Prepare an Environmental and Social Management Plan for Upgrading Bhomra-Satkhira –Navaron Section National Highway) under Phase-3

The Phase-3 will upgrade the Bhomra – Satkhira – Navaron section of the National Highway (62km) from a two-lane single carriageway to a climate-resilient four lane dual carriageway. It will include separate service lanes for slow moving vehicles and vulnerable users on both sides of the carriageway, installation of Optical Fiber Cable (OFC), and deployment of Intelligent Transport System (ITS). For this alignment, site and intervention specific ESIA will have to be undertaken and a detailed management plan will have to prepare by the E&S Consultant under task 4.

As the two-lane highway already exists, the alignment of the road is known. However, the technical feasibility study and design details of this stretch (Bhomra – Satkhira – Navaron) are yet to be initiated. As per plan the feasibility and design consultancy for this leg of the work would be commissioned in Phase I, so that the design and alignments are finalized and the project is ready for floating tenders for construction/ upgradation by Phase 3. The existing two-lane road is 5.5 meter wide, which needs to be planned by the design consultants as a six-lane highway, with an assumed width of 42.00 meters.

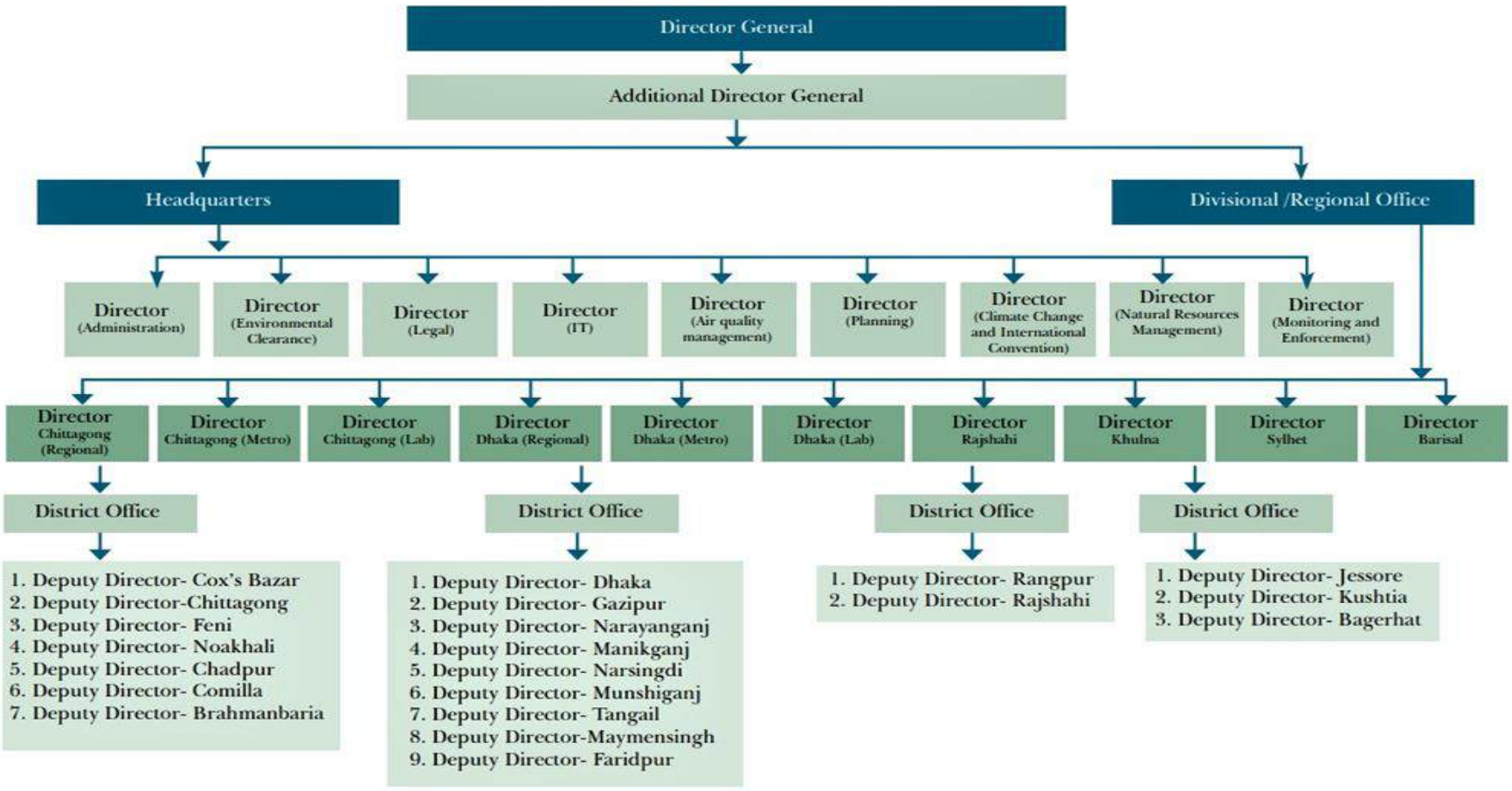
For preparation of the ESIA and ESMP for this road section, the E&S consultant will follow the detailed objectives and scope as mentioned under the Task 1 (please refer to the section 3.1). However, under this task, a new ESIA and ESMP will need to be prepared as there is no preliminary ESIA for this road section.

In addition, the consultant will need to work in close coordination with the technical feasibility, Design /DPR consultants during this period to understand the design features, the utilities planned, the road width etc to scope the scale and corridor of social and environmental impacts, and equally importantly, to ensure the integration of ESA findings in the engineering feasibility studies. The final E&S assessment and management plan will need to be based on the final design details developed and finalized by the technical consultant in consultation with the RHD and World Bank technical team.

ESIA Consultant will also work closely with the PIU at RHD to ensure that the DPR Consultant incorporates all relevant recommendations related to E&S mitigation measures in their designs, working drawings, estimates of quantity/quality and includes the quantity and management measures in the standard bid documents. It will also be the responsibility of the E&S Consultant to ensure that the ESIA is completely harmonized with and fully informed by the recommendations of the SESA. Since both these tasks are the responsibility of the same E&S Consultant, it will have to ensure that these tasks are properly (linearly) sequenced so that that there is adequate time for specialists tasked with ESIA preparation to analyses the SESA and make the E&S impact assessment in line with the SESA.

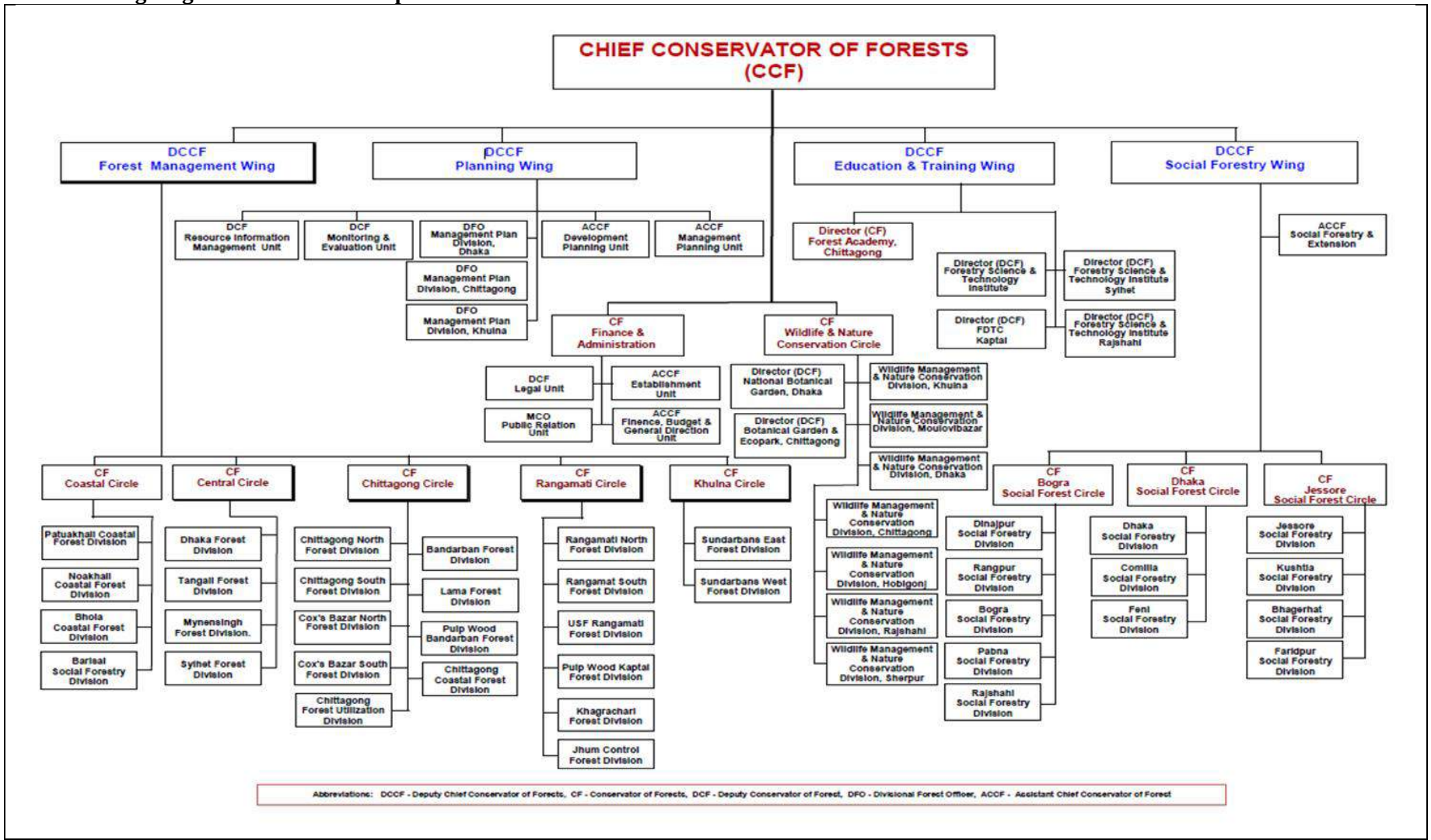
Moreover, since WeCARE program is under parallel financing arrangement with work on certain alignments being financed by World Bank and others by AIIB, the E&S Firm will have to closely

Annex 2.1 Organogram of the Department of Environment



Annex (Figure) 4-1: Organogram of Department 0f Environment

Annex 2.2 Organogram of the Forest Department



Annex (Figure) 4-2: Organogram of the Forest Department

Annex 2.3 WB's, AIIB ESS Policy and GOB rules and Regulations

WB's ESSs Requirements and Relevance to the Project Interventions				
WB's ESS Policy	**AIIB ESS Policy**	**GoB Laws/Regulation**	**Identified Gaps**	**Applicability**
ESS-1: Assessment and Management of Environmental and Social Risks and Impacts ► Identify, evaluate and manage the environment. ► Adopt a mitigation measure to reduce environmental and social risks and impacts of the project.	**ESS-1: Environmental and Social Risks Assessment and Management** ► To achieve the environmental and social soundness and sustainability of Projects ► To support the integration of environmental and social considerations into the Project decision-making process and implementation. ► It applies if the project have potential environmental risks and impacts or social risks and impacts.	ECA 1995 ECR 1997 EIA guidelines for Industries	► The screening and scoping do not cover all aspects of ESS in the EIA study. ► EIA study does not require to include the environment and social impacts at same scale, whereas ESF does. ► The stakeholder engagement is limited and not required to be disclosed. ► The existing national EIA system does not require analysis of alternatives.	► The ESS1 of the WB and AIIBs are applicable to the project interventions of WeCARE Program. ► An ESIA study following the guidelines of the multilateral agency are to be carried out considering the applicable national legal and administrative framework.
ESS-2: Labor and Working Conditions ► Workplace safety and health. ► Fair treatment to project workers, without prejudice, and with equal opportunity. ► Protect project workers, with a special focus on disadvantaged workers; Prevent forced labor and child labor from being used. ► Occupation health and safety	**ESS-1: Environmental and Social Risks Assessment and Management** ► Required a sound labour management relations system for Project workers as per International Labor Laws. ► Prohibits child labour and forced labour ► Occupational health and safety measures	Labor Law 2006 (Amendment 2013) Occupational Health and Safety Policy 2013 Public Procurement Rule 2008	► Before approval, the Labor Act does not expressly require that development be analyzed and reviewed in terms of labor and working conditions, including OHS regulations. ► The Labor Act does not require Labor Management Plans or Procedures and OHS Plans for development projects.	► All the work force of Contractors shall be considered contractual workers including labor of subcontractors, migrant labor from other districts. ► A labor management method will be developed. ► GRM, terms and conditions of employment, non-discrimination, and equal opportunity, ► GBV, workforce protection, the prohibition of child/forced labor, and the provision of OHS.
ESS-3: Resource Efficiency and Pollution Prevention and Management	**ESS-1:** Contains the following. For pollution prevention and control technologies and resource	ECA 1995 ECR 1997	► Existing rules, laws, and regulations governing energy	► ESIA process will identify feasible measures for efficient

WB's ESSs Requirements and Relevance to the Project Interventions				
WB's ESS Policy	**AIIB ESS Policy**	**GoB Laws/Regulation**	**Identified Gaps**	**Applicability**
► Sustainable use of resources, including energy, water, and raw materials. ► To avoid or minimize adverse impacts on human health and the environment project-related emissions, generating hazardous and non-hazardous waste, impacts associated with pesticide use.	efficiency, international good practice, as reflected in internationally recognized standards, such as the World Bank Group Environmental, Health and Safety Guidelines (EHSGs).		and water conservation do not mandate development projects to examine resource efficiency concerns and include resource efficiency strategies into their ES risk management plans.	(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 the use of local materials, recycled aggregates, and innovative technology to minimize project's environmental impact. ► GIIP of IFC shall be followed.
ESS-4: Community Health and Safety ► To avoid adverse impacts on the health and safety of project-affected communities; minimize community exposure to projects by taking adequate measures to address emergency events and ensure the safeguarding of personnel and property	**ESS 1:** requires that community health issues shall be discussed in the ESIA and ESMP of project.	► National Road Transport Act ► ECR 1997 ► BLA 2006 ► Public Procurement Rule,2008	► ESIA is applicable; however, the systems do not provide explicit requirements for the development project and implementation. ► MHFW is responsible for health problems but is not currently involved in project planning or monitoring.	► The gaps between GoB rules and ESS-4 will be filled by appropriate provisions in the ESMP and the contractor's duty as part of the Contractor's ESMP for CHS.
ESS-5: Land Acquisition Restrictions on Land Use and Involuntary Resettlement ► To avoid involuntary resettlement ► Prevent Forced eviction. ► Mitigate unavoidable adverse social and economic impacts.	► ESS 2: Land Acquisition and Involuntary Resettlement ► ► To avoid Involuntary Resettlement ► To minimize Involuntary Resettlement ► To enhance, or at least	► Acquisition and Requisition of Immovable Property Act, 2017	► ARIPA does not require the preparation of an RAP for non-titled entities. ► it does not provide compensation or assistance to those who do not have a formal legal claim to the land; it does not provide transitional	► Land will be required for corridor widening and upgrading in the widening and strengthening of National Highways. ► Significant gaps (between the ESS of funding agencies and GoB policy) exist in the

WB's ESSs Requirements and Relevance to the Project Interventions				
WB's ESS Policy	**AIIB ESS Policy**	**GoB Laws/Regulation**	**Identified Gaps**	**Applicability**
► To improve living conditions of poor or vulnerable persons who are physically displaced, ► To conceive and execute resettlement activities as sustainable development programs, ► To ensure appropriate disclosure of information, meaningful consultation, and the informed participation of those affected.	restore, the livelihoods of all displaced persons. ► to understand and address gender-based risks and differential impacts and to improve the socioeconomic status of the displaced poor and vulnerable ► To conceive and implement resettlement activities as sustainable development programs,		allowances for the restoration of livelihoods for informal settlers; ► it relies on cash compensation, no developmental objectives, and no provision to give special attention to vulnerable groups. ► The valuation of a lost asset does not follow the "replacement cost" criteria.	assessment of compensation, identification of non-titleholders, non-titleholder cut-off dates, and value of structures with depreciation. ► The RAP based on entitlement matrix will prepared to cover these gaps, as well as additional short- and long-term initiatives.
ESS-6: Biodiversity Conservation and Sustainable Management of Living Natural Resources ► Protection and conservation of Biodiversity. ► Encourage the long-term management of live natural resources.	ESS1: ► Discusses the protecting and conserving biodiversity, sustainably managing terrestrial and aquatic natural resources and maintaining core ecological functions and services are fundamental to sustainable development	ECR 1997 ECA 1995	► There are no analogous requirements for: (i) the implementation of a hierarchy of measures; (ii) the drafting of a Biodiversity Management Plan; (iii) differentiated measures on habitat types; or (iii) due diligence on primary suppliers.	► Site preparation for construction will require clearing and grabbing trees. Aside from clearing roadside vegetation, road building will necessitate the removal of trees. It is applicable and mitigation measures are to be adopted.
ESS-7: Indigenous Peoples/Sub Saharan African Historically Underserved Traditional Local Communities ► To avoid adverse impacts of projects on Indigenous Peoples etc. ► To promote sustainable development benefits and opportunities for Indigenous Peoples. ► Establishing and maintaining meaningful consultation with the	**ESS 3: Indigenous People** ► Where applicable, the issue pertaining to indigenous people to address this in the social section of the assessment report ► An Indigenous Peoples plan (IPP) or Indigenous Peoples planning framework (IPPF).	► Employ alternative terminology for groupings that match the Standard's requirements. National screening methods may be used if they match World Bank criteria and conditions. ► Forest dwellers, hunter gatherers, pastoralists, and other nomadic cultures are all represented. ► A grievance mechanism	► There are no analogous criteria for: ► ESIA coverage of IP effects; ► special treatment or differentiated approach to IPs and vulnerable groups; ► FPIC conduct. ► preparation of IP Plan.	► The ESS will identify strategies to reduce the disturbance to livelihoods caused by project development.

WB's ESSs Requirements and Relevance to the Project Interventions				
WB's ESS Policy	**AIIB ESS Policy**	**GoB Laws/Regulation**	**Identified Gaps**	**Applicability**
Indigenous Peoples for improving the project design and promote local support		and genuine engagement suited to impacted parties are required.		
ESS-8: Cultural Heritage ► To protect cultural heritage from the adverse impacts of project activities and these issues as an integral aspect of sustainable development. ► To promote the equitable sharing of benefits from the use of cultural heritage.	**ESS 1:** ► Conserve and avoid impacts on cultural resources under the Project. ► Review available documentation on these resources and conduct field-based surveys using suitably qualified and experienced experts for the assessment.	► National Culture Policies ► Antiques law 1968	► There are no equivalent criteria for: ► developing a Cultural Heritage Management Plan; ► developing and implementing project-specific Chance Find Procedures; ► engaging cultural heritage specialists.	► There are no protected ancient monuments or archaeological sites along the proposal road route. If one of these (antiques/cultural heritage) is discovered, it must be moved and arrange.
ESS-9: Financial Intermediaries ► To promote good environmental and social management practices in the subprojects the FI finances. ► To promote good environmental and sound human resources management within the FI.	There is no ESS, but ESF mentions that: ► FIs are important instrument for sustainable growth and promoting lasting improvement in people's living conditions, through Bank financing for economic activities in infrastructure and other productive sectors.	-	► The nation system is not applicable. Project supporters, regardless of funding source, are subject to the same country regulations.	Not applicable

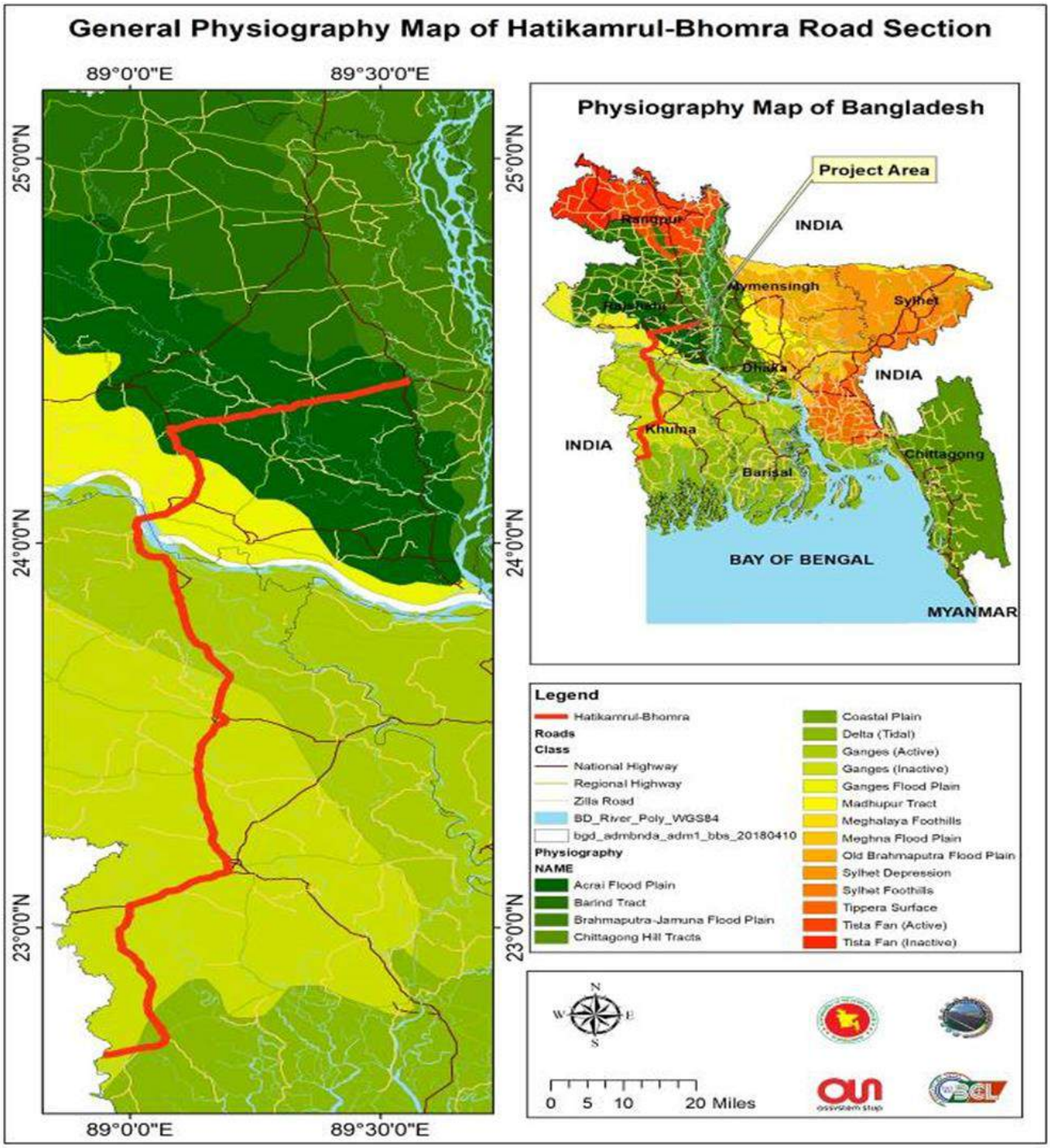
WB's ESSs Requirements and Relevance to the Project Interventions				
WB's ESS Policy	**AIIB ESS Policy**	**GoB Laws/Regulation**	**Identified Gaps**	**Applicability**
ESS-10: Stakeholder Engagement and Information Disclosure ► To establish a systematic approach to stakeholder Engagement ► To assess the level of stakeholder interest and support for the project ► to enable stakeholders' views to be considered in project design and environmental and social performance. ► To promote and provide means for effective and inclusive engagement with project-affected parties throughout the project life cycle ► To ensure that appropriate project information on environmental and social risks and impacts is disclosed to stakeholders in a timely, appropriate manner	**ESS1 discusses the requirement of consultation as below:** ► engaging with Project-affected people and other relevant stakeholders, through: (i) timely disclosure of the Project's environmental and social information; (ii) meaningful consultation; and (iii) Project-level grievance redress mechanisms (GRMs), which can be readily accessed by Project-affected people.	► No Specific Policy or Legislation identified	► Although the ECA/ECR does not directly mandate consultation, DOE and other agencies' ESIA guidelines promote public consultations throughout scoping and ESIA preparation. There is also no provision for engaging stakeholders throughout project execution.	► This is pertinent to the project, to have stakeholder interaction strategy. ► The project will guarantee that: (i) Stakeholders have been/will be consulted over the Stakeholders Engagement Plan. ► (ii) Revised SEP to be followed during project implementation. ► (iii) Ensure stakeholders are properly informed and have access to project material, which is intended to be publicly released as and when it becomes available, as well as in publicly accessible locations in local languages to the people.

Annex 2.4 International Conventions, Treaties, and Protocols Signed by Bangladesh

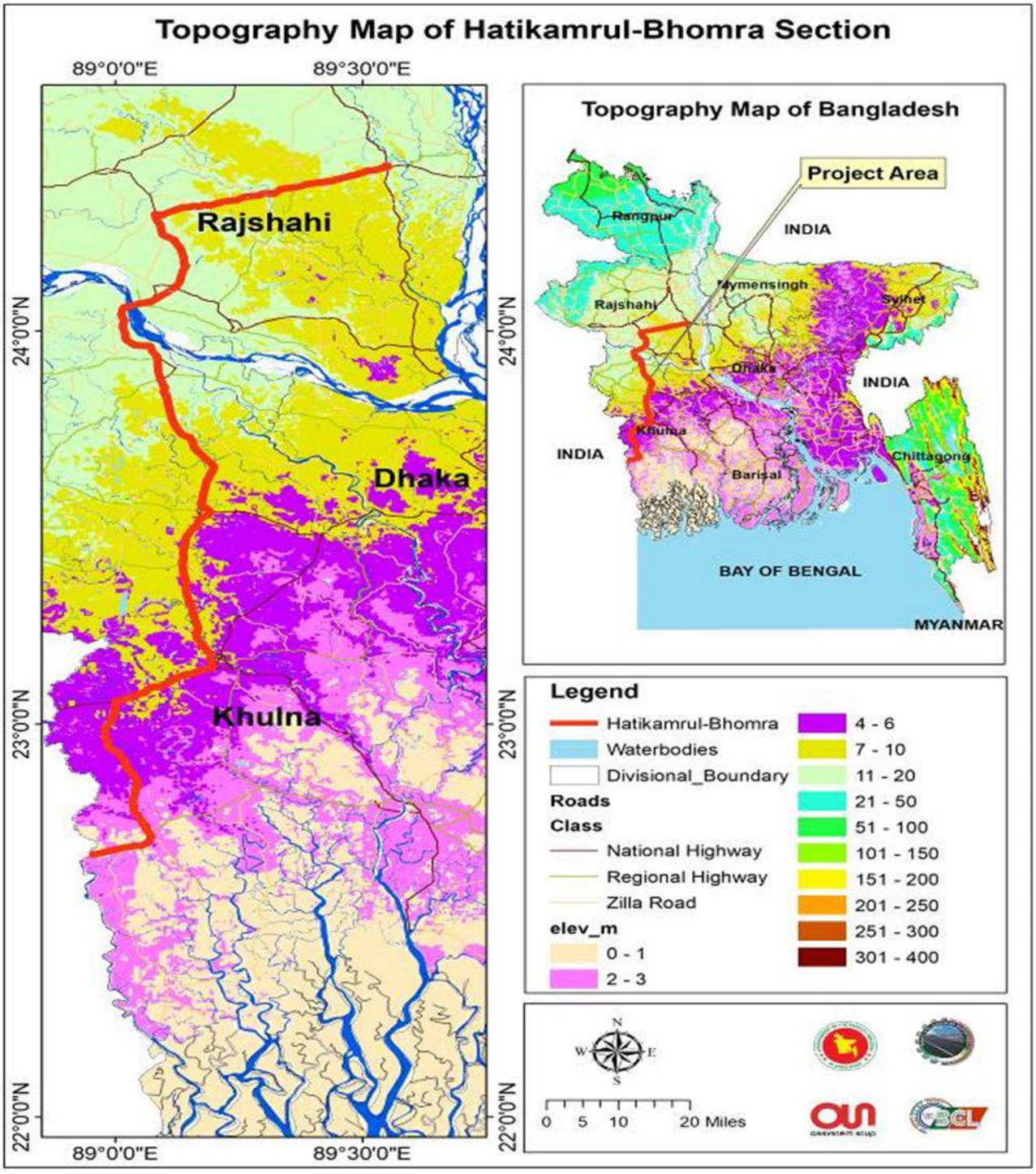
Conventions	Years	Ratified/Accessed (AC)/Accepted (AT)/ Adaptation (AD)	Relevance
International Plant Protection Convention (Rome,) & Plant Protection Agreement for SE Asia and Pacific (1999 Revision)	1951 1999	01.09.1978, 04.12.1974 (AC), (Entry into Force)	Ensuring that the Project work or construction materials do not introduce plant pests
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.
Convention on Persistent Organic Pollutants, Stockholm.	2001	In process	Restrict use of different chemicals containing POPs.
UN Framework Convention on Climate Change, (New York,)	1992	15.04.94	Reduction of emission of greenhouse gases.
Convention on Biological Diversity, (Rio De Janeiro, 1992.)	1992	03.05.94	Conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources.
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 on the Prevention of Marine Pollution by Dumping of Wastes and Other Matters (as amended), London-Mexico City- Washington	1972	Signed	Effective control and prevention of all sources of pollution of the sea by the dumping of waste and other matter that is liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea.
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 workplace due to air pollution, noise and vibration.
Convention on the Conservation of Migratory Species of Wild Animals, Bonn.	1979	Signed	Conservation and sustainable use of migratory animals and their habitats
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.

Conventions	Years	Ratified/Accessed (AC)/Accepted (AT)/ Adaptation (AD)	Relevance
Vienna Convention for the Protection of the Ozone Layer,	1985	02.08.90 (AC)	Preventing human activities that may have adverse effects on ozone layer.
Convention Concerning Occupational Health Services, Geneva.	1985		Convention Concerning Occupational Health Services, Geneva.
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 I 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)	To strengthen the control procedure and extend the coverage of Montreal Protocol to new substances.
United Nations Framework Convention on Climate Change, New York	09.06.92	15.04.94	Achieving stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.
Convention on Biological Diversity, Rio De Janeiro	05.06.92	03.05.94	Conservation of biological diversity and sustainable use of its components.
International Convention to Combat Desertification, Paris.	14.10.94	(Ratification)	Combating desertification and mitigating the effects of drought.
Agenda 21, UNCED, Rio de Janeiro	1992	Signed	Ensuring sustainable development.
Copenhagen Amendment to the Montreal protocol on Substances that Deplete the Ozone Layer, Copenhagen	1992	27.11.2000 (AT) 26.2.2001 (Entry into force)	Extending the coverage of Montreal Protocol to new substances
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.

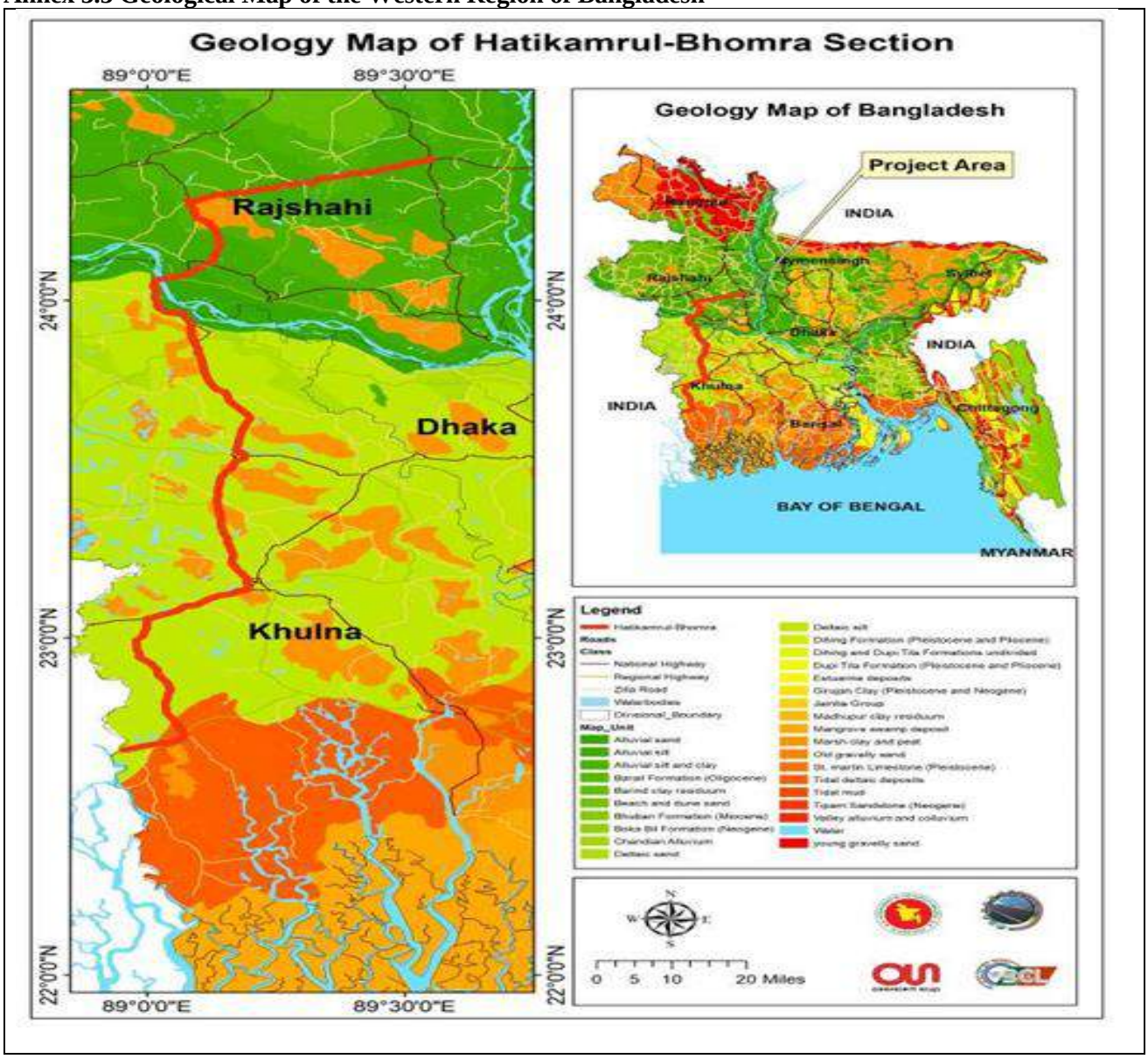
Baseline Environmental Conditions
Annex 3.1 Physiographic Map of the Western Region of Bangladesh



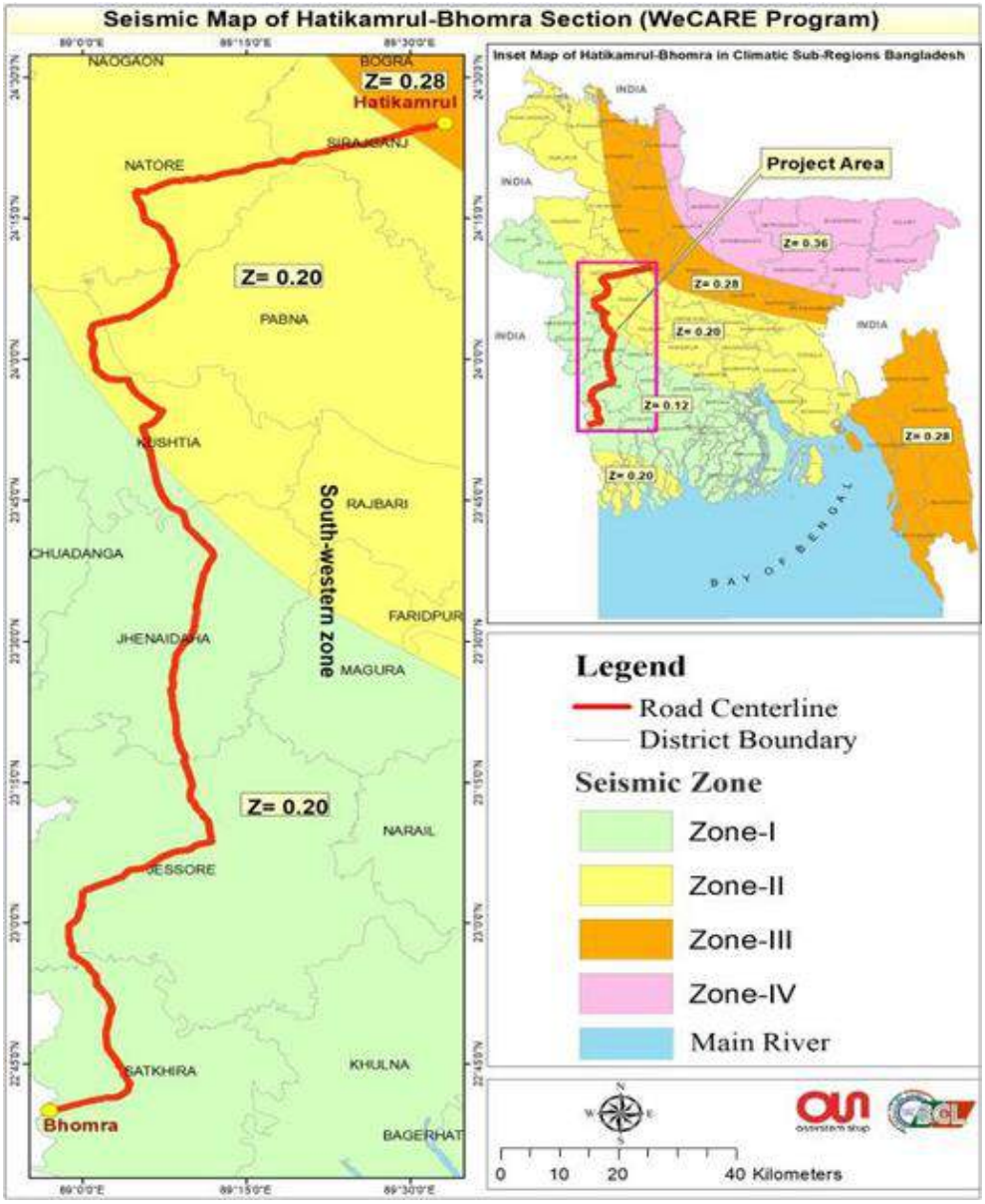
Annex3.2 Topographic Map of The Western Region of Bangladesh



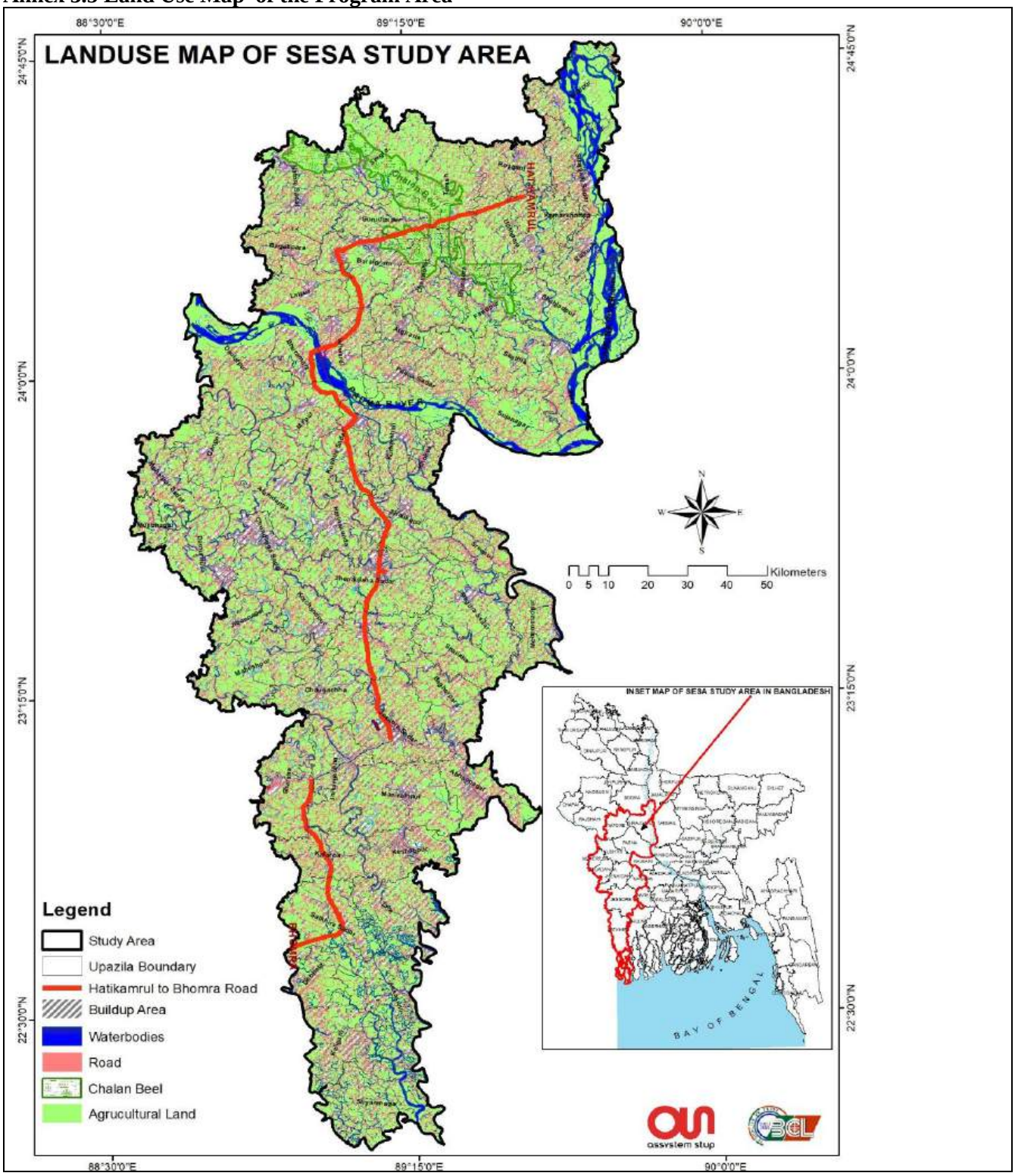
Annex 3.3 Geological Map of the Western Region of Bangladesh



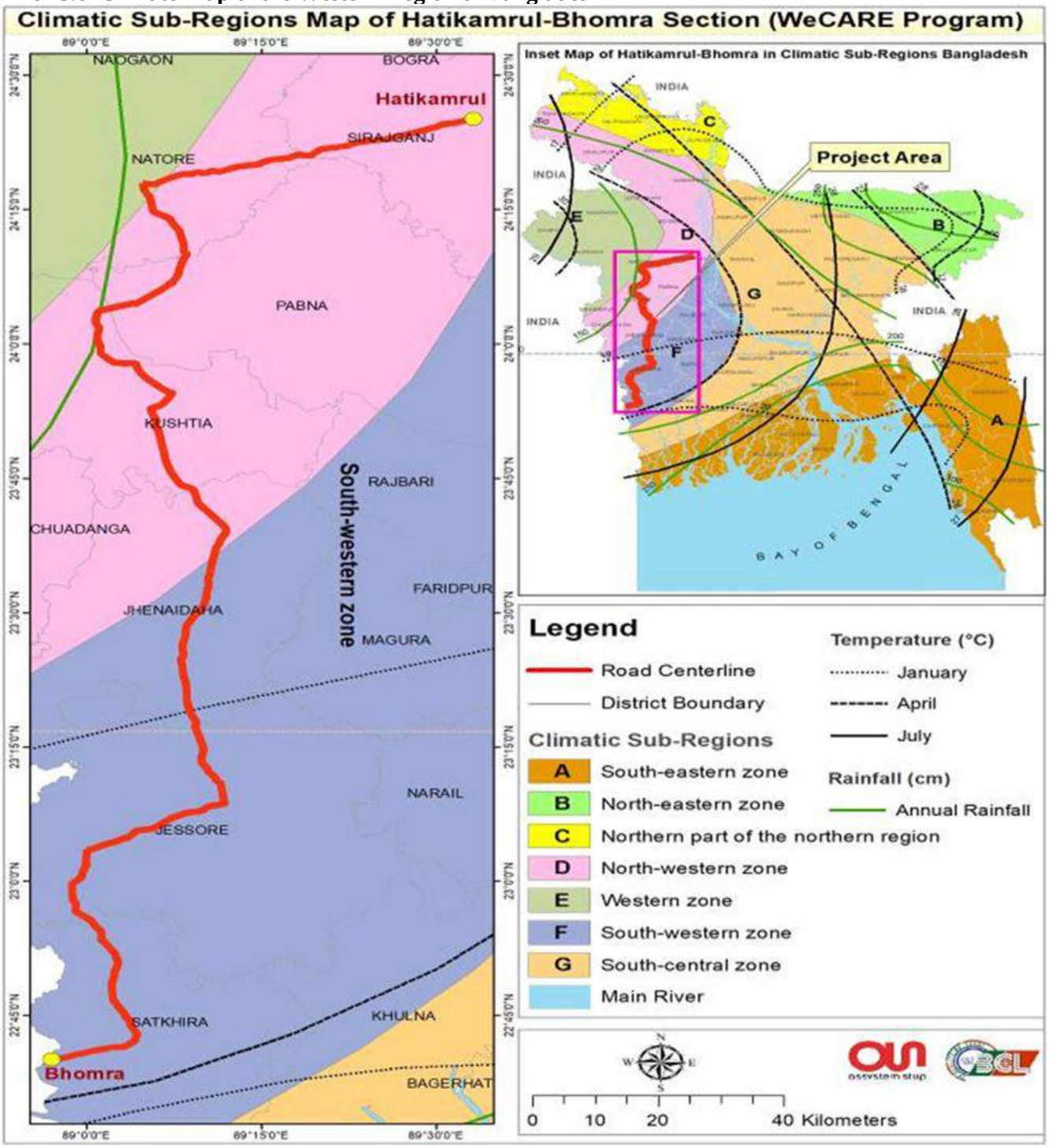
Annex 3.4 Seismic Map of the Western Region of Bangladesh



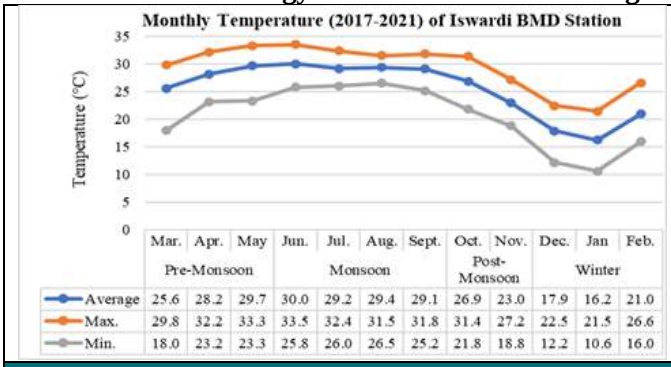
Annex 3.5 Land Use Map of the Program Area



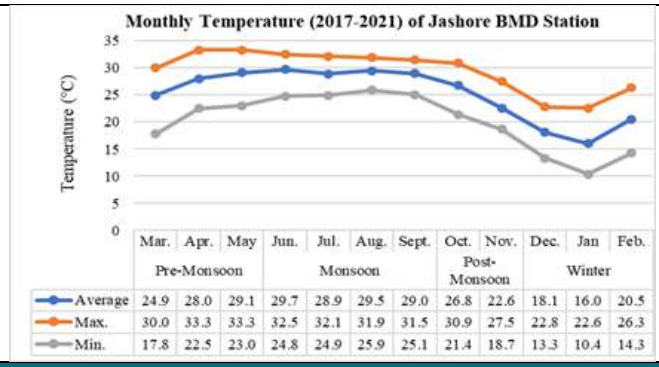
Annex 3.6 Climate Map of the Western Region of Bangladesh



Annex 3.7 : Meteorology Data and Wind rows diagram

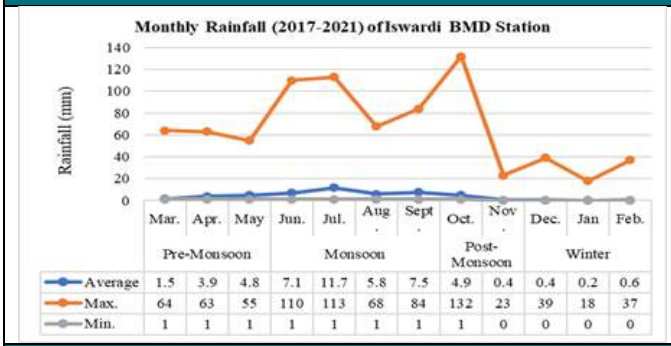


	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan	Feb.
	Pre-Monsoon			Monsoon				Post-Monsoon		Winter		
Average	25.6	28.2	29.7	30.0	29.2	29.4	29.1	26.9	23.0	17.9	16.2	21.0
Max.	29.8	32.2	33.3	33.5	32.4	31.5	31.8	31.4	27.2	22.5	21.5	26.6
Min.	18.0	23.2	23.3	25.8	26.0	26.5	25.2	21.8	18.8	12.2	10.6	16.0

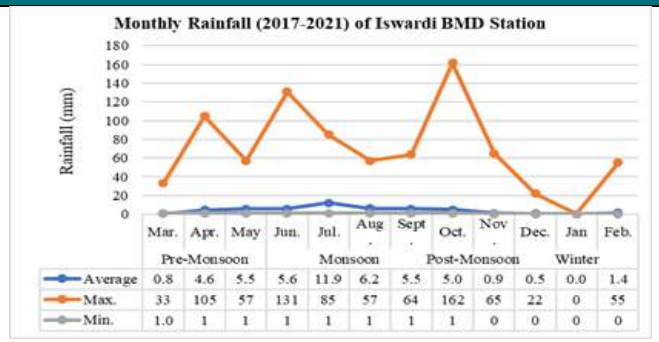


	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan	Feb.
	Pre-Monsoon			Monsoon				Post-Monsoon		Winter		
Average	24.9	28.0	29.1	29.7	28.9	29.5	29.0	26.8	22.6	18.1	16.0	20.5
Max.	30.0	33.3	33.3	32.5	32.1	31.9	31.5	30.9	27.5	22.8	22.6	26.3
Min.	17.8	22.5	23.0	24.8	24.9	25.9	25.1	21.4	18.7	13.3	10.4	14.3

Monthly Temperature Covering Western Bangladesh (Iswardi and Jashore Station) from 2017-2021

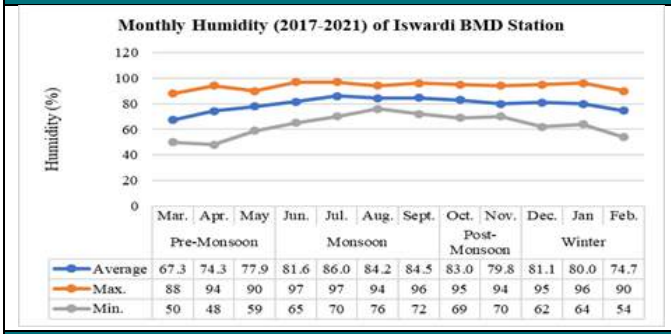


	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan	Feb.
	Pre-Monsoon			Monsoon				Post-Monsoon		Winter		
Average	1.5	3.9	4.8	7.1	11.7	5.8	7.5	4.9	0.4	0.4	0.2	0.6
Max.	64	63	55	110	113	68	84	132	23	39	18	37
Min.	1	1	1	1	1	1	1	1	0	0	0	0

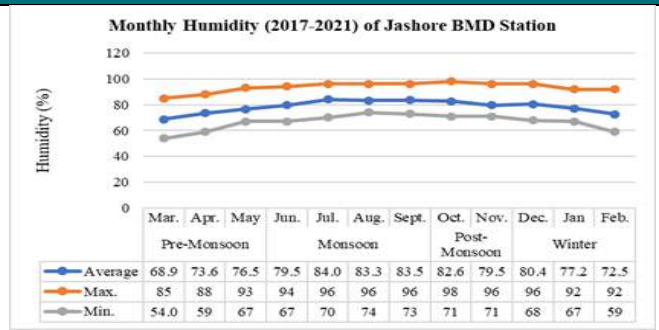


	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan	Feb.
	Pre-Monsoon			Monsoon				Post-Monsoon		Winter		
Average	0.8	4.6	5.5	5.6	11.9	6.2	5.5	5.0	0.9	0.5	0.0	1.4
Max.	33	105	57	131	85	57	64	162	65	22	0	55
Min.	1.0	1	1	1	1	1	1	1	0	0	0	0

Monthly Rainfall Covering Western Bangladesh (Iswardi and Jashore Station

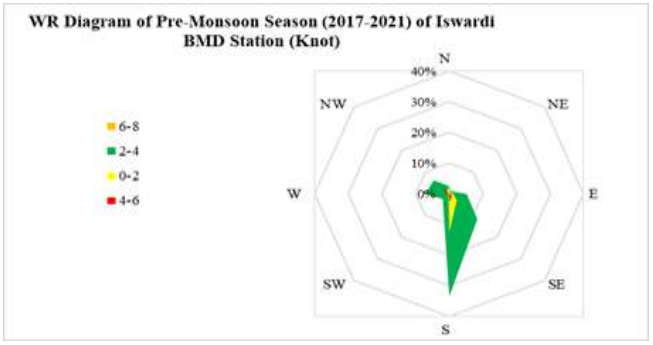


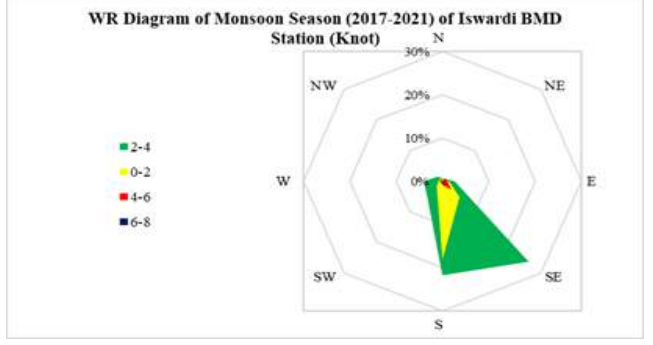
	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan	Feb.
	Pre-Monsoon			Monsoon				Post-Monsoon		Winter		
Average	67.3	74.3	77.9	81.6	86.0	84.2	84.5	83.0	79.8	81.1	80.0	74.7
Max.	88	94	90	97	97	94	96	95	94	95	96	90
Min.	50	48	59	65	70	76	72	69	70	62	64	54

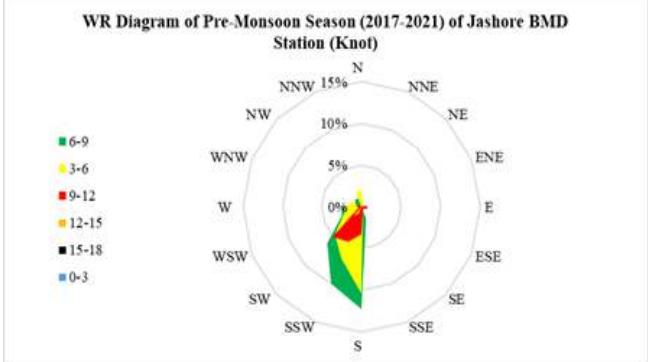


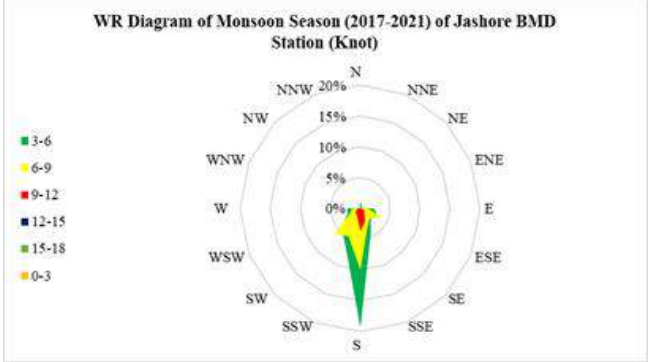
	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan	Feb.
	Pre-Monsoon			Monsoon				Post-Monsoon		Winter		
Average	68.9	73.6	76.5	79.5	84.0	83.3	83.5	82.6	79.5	80.4	77.2	72.5
Max.	85	88	93	94	96	96	96	98	96	96	92	92
Min.	54.0	59	67	67	70	74	73	71	71	68	67	59

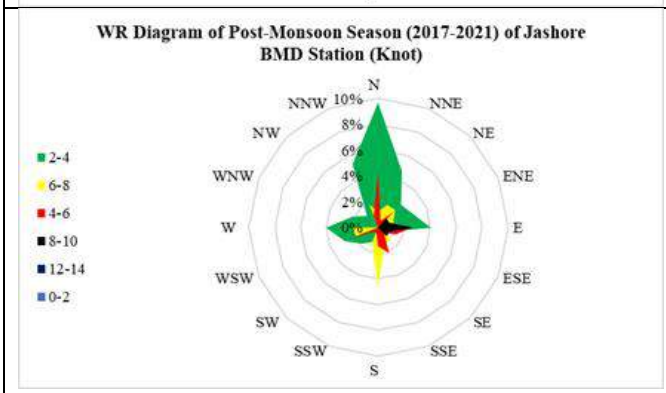
Monthly Humidity Covering Western Bangladesh (Iswardi and Jashore Station) from 2017-20

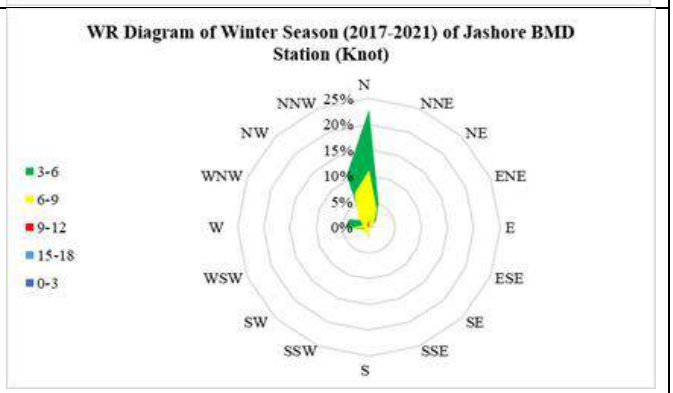








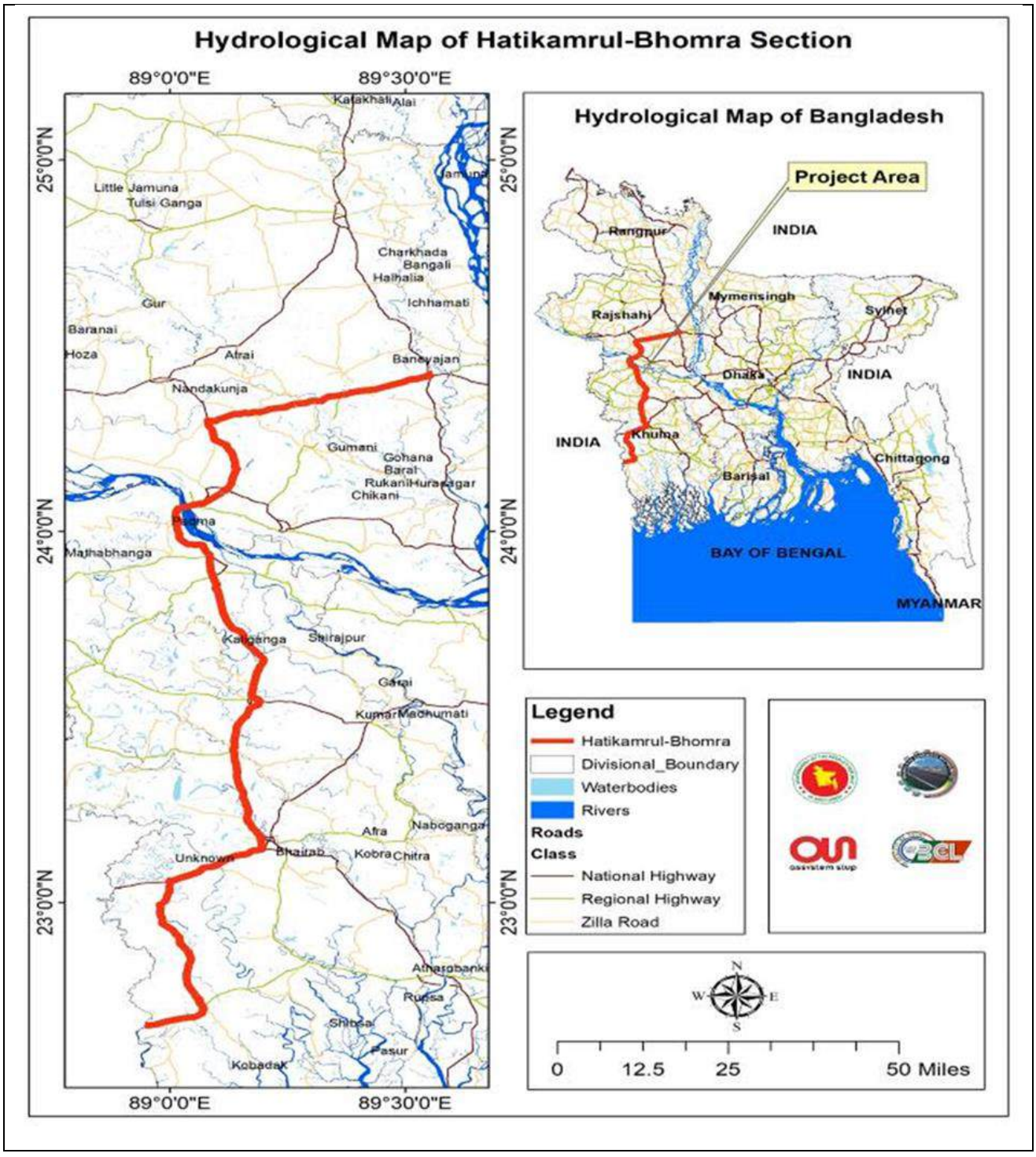




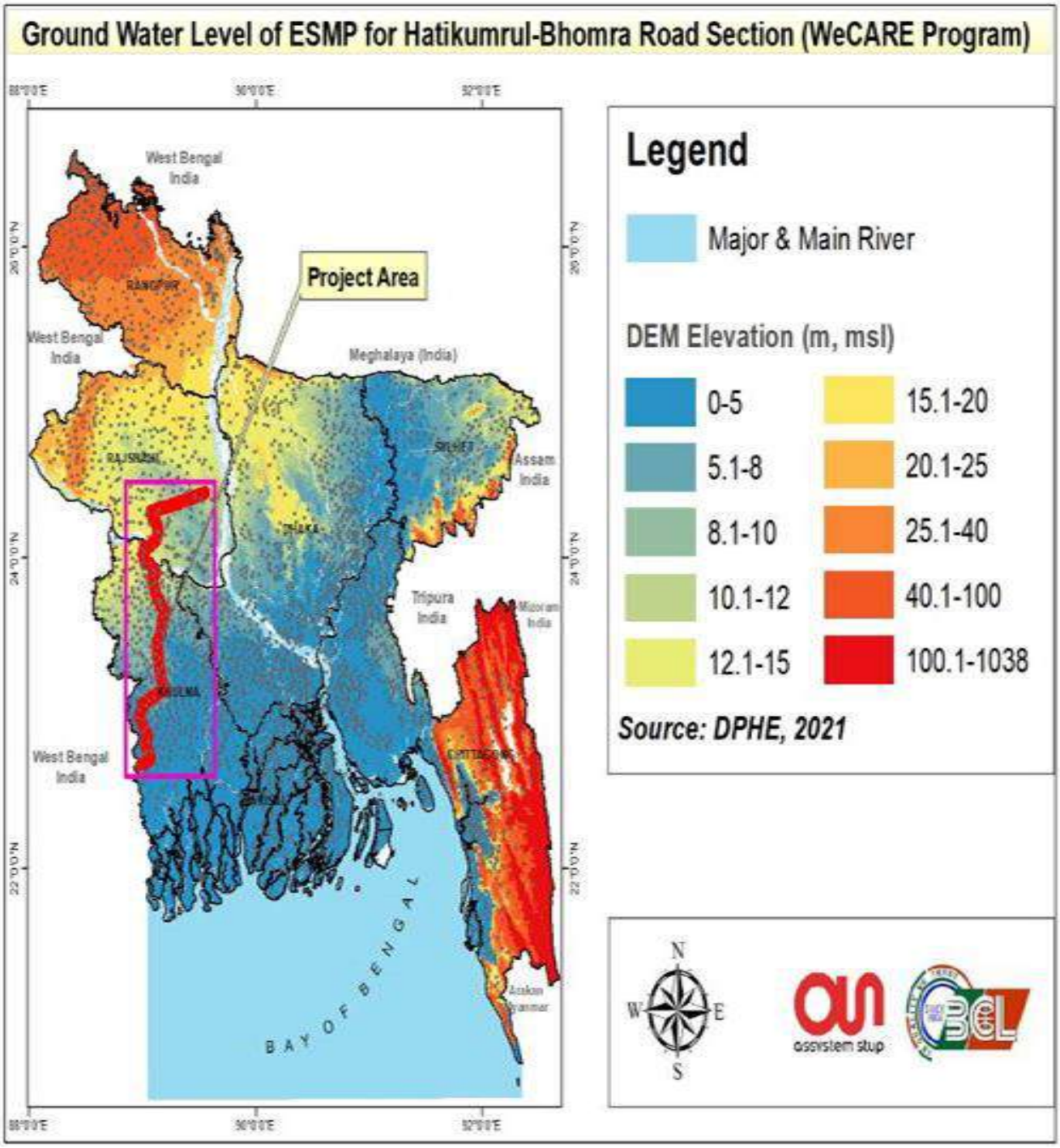
Wind Diagram Covering Western Bangladesh (Jashore Station) from 2017-2021

Source: Sources: Bangladesh Meteorological Department, Dhaka (2017-2021), Station: Iswardi and Jashore

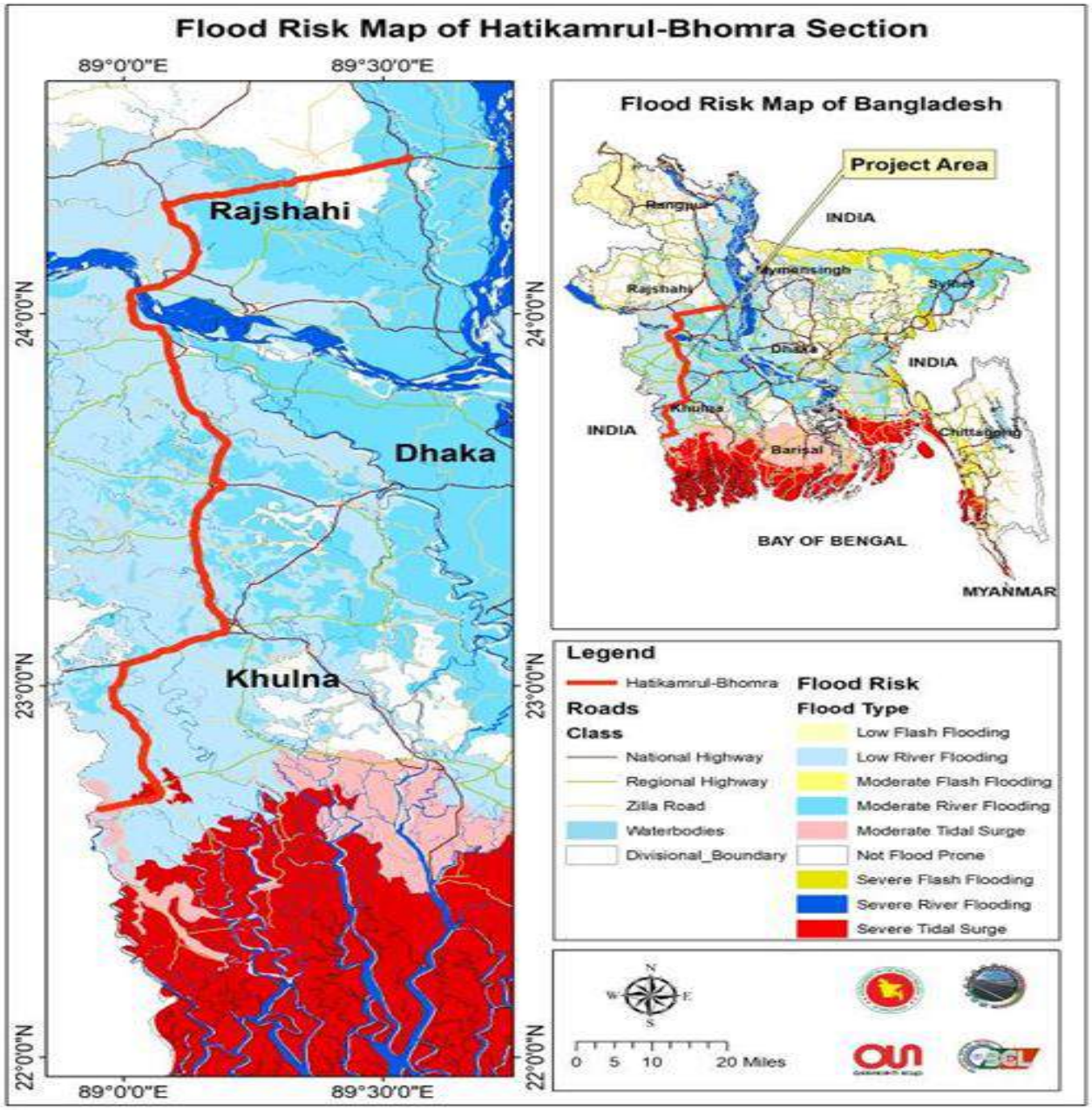
Annex 3.8 : RIVER NETWORK AND SURFACE WATER MAP OF THE WESTERN BANGLADESH



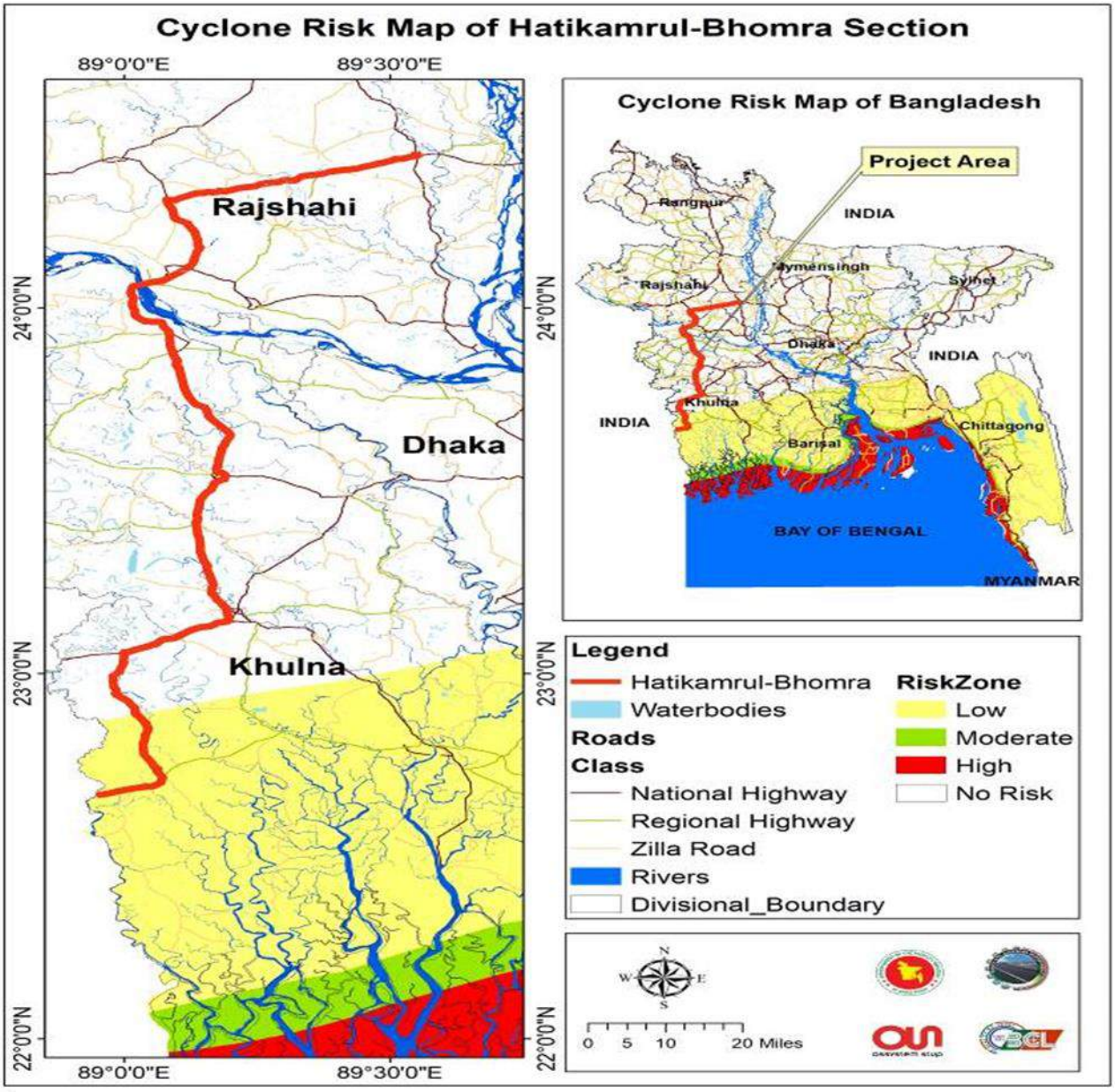
Annex 3.9 Groundwater Dem Elevation of the SESA Study Area



Annex 3.10 : Flood Risk Map of the Western Region of Bangladesh



Annex 3.11 : Cyclone Risk Map in the Western Region



Annex 3.12 Ecology and Biodiversity Details

Ecology

1. Ecologically, the western corridor is occupied by different parts of various ecosystems, including terrestrial, aquatic floodplains, and homesteads area. The long-designated western corridor region falls in a variety of bio-ecological zones as prescribed by IUCN. Starting from Sirajganj, the zones include **4a** (Teesta floodplain), **2** (Barind tract), **5b** (Chalan beel), **11** (Major rivers), **4b** (Ganges floodplain), **6** (Gopalganj/Khulna peat lands) and **10** (Saline tidal floodplain) up to Bhomra of Satkhira. Among these regions, just after the Hatikumrul Mor of Sirajganj, the Chalan Beel region has extensive low landform. This landform has even much depressions near the Atrai basin through which the highway criss-crosses the Atrai river. Besides, depressions are also present in some parts of the project belt near Jessore.

Biodiversity

2. The region is home to both terrestrial and aquatic ecosystems. The terrestrial ecosystem included homesteads, roadsides, fallow land, and cultivated lands. Several beel, large and small ponds, rivers, channels, and seasonal waterbodies are included in the

aquatic ecosystem. Aquatic ecosystems, in particular, are more sensitive to disturbance than terrestrial ecosystems. Each ecosystem supports its own flora and fauna. All ecosystems are ornamented by a variety of life forms, including plant and animal diversity and different natural processes. Both sides of the corridor dominated by planted trees and naturally growing herbs, shrubs and climbers. The major trees plant by either Roads or Social Forestry Division or Zila parishad are *Switenia mahogany, Samania saman, Mangifear indica, Phoenix sylvestris, Borassus flabelifer, Bombax ceiba, Azadirachta indica, Melia sempervirense, Syzygium cummini, Terminalia arjuna, Leucaena leucocephala, Dalbergia sissoo, Lannea coromandelica, Litsea glutinosa , Acasia catechu, Anthocephalus cadamba, Albizia procera, Ficus benghalensis, Cordia dichotoma, Ficus racemose, Ficus religiosa, Salmalia malabarica, Delonix regia, Ficus hispida, Moringa olifera, Albizia rechardiana, etc.* Naturally growing shrub along with the roads are *Calotropis procera, Ricinus communis, Jatropha gossypifolia, Jatropa carca, Salix tetrasperma, Ficus heterophyllus, Glycomis pentaphylla, Phyllanthus reticulatus, Datura metel, Cassia alata, Abutilon indicum, Abroma augusta, Litsea glutinosa, Streblus asper* etc. A good number herbs and climber are growing along the road corridor. The common hers and climbers are *Clerodendron viscosum, Croton bonplandianum, Heliotropium indicum, Cassia tora, Cassia sophera, Cassia occidentalis, Sida acuta, Urena lobata, Triumfetra rhomboidei, Hyptis sauveolens, Eupaorium odoratum, Vernonia patula, Eclipta prostrata, Ageratum conyzoides, Blumea lacera, Colocasia esculenta, Alocasia indica, Xanthosoma violaceum, Mikania cordata, Cuscuta reflexa, Disocorea bulbifera,* etc. Very recently introduced invasive plants *Parthenium hirsutum* formed a wall like structure both sides of the western corridor road. A good number local LGED made roads are connected with Main corridor from Hatikamrum to Bhomra. Such roads may also be affected due corridor development. Timber, firewood, medicinal, fruits bearing trees etc. are also planted along with such roads. Some large and oldest trees including *Ficus benghalensis, Ficus religiosa, Tamarindus indica, Samania saman, Switenia mahagony, Mangifera indica* etc. also existed in the affected area. Common bamboo bushes are seen to grow randomly along the effected zone. The largest trees and bamboo bushes are used by a good number of birds and wildlife as resting, nesting, and feeding sites. There is no natural forest, national park, wildlife sanctuary or ecologically sensitive found along with the western corridor.

3.The homestead area of impact zone consisting of diversity of planted tree species of different purposes which is planted by homestead owners. The most common fruit bearing trees are *Mangifera indica, Artocarpus heterophyllus, Artocarpus Lakucha, Litchi chinensis, Syzygium cumini, Syzygium fruticosum, Psidium guajava, Ziziphus mauritiana, Annona reticulata, Annona squamosa, Pomoe granatum, Baccaurea ramiflora, Garcinia cowa, Flacourtia indica, Musa paradisiaca, Carica papaya,* etc. A good number of medicinal plants including *Azadirachta indica, Terminalia arjuna, Melia sempervirens, Terminalia chebula, Terminalia bellirica, Abroma augusta, Ocimum sanctum, Ocimum bassilicum, Centella asiatica, Andrographis paniculate, adhatoda zeylanica,* etc. are found in the homestead area. Many firewood and timber wood yielding trees are also planted in and around homestead area. The most common species are *Trewia polycarpa, Erythrina indica, Lannaea coromandelica, Samanea saman, Albizia procera, Albizia lebbeck, Barringtonia accutangula, Ficus hispida, Gmelina arborea, Eucalyptus camadulensis, Acacia auriculiformis, Dalbergia sissoo, Laucaena leucocephala, etc.*

4.Along with the western corridor some seasonal and few permanent wetlands are detected. The most common aquatics are *Nymphaea pubescens, Nymphaea rubra, Nyphaea nauchali, Nymphoides indicum, Nymphoides critatum, Trapa bispinosa, Ottelia alismoides, Hydrilla verticillate, Eichhornia crassipes, Pistia stratiotes, Lemna minor, Lemna purpusila, Monochoria hastata, Monochoria vaginalis, Sagittaria sagttifolia, Sagittaria guianensis, Potamogeton indicum, Apanogeton indicum, Necamandra gramenea, Myriophyllum indicum, Limnophila heterophylla, Leesira indica, Ipomoea aquatica, Schenoplectus articulates, Salvinia cuculata, Vallisnaria spiralis, Colonum crusgali, Spirodela polyrrhiza* etc. Permanent wetland is the dwelling places for a good number fish breeding site. Wetlands are usually considered sensitive area because all surface runoff accumulated here with all kinds of pollutants.

5.Terrestrial Birds: The whole region is dwelling place for a good number of birds. As many rivers are present and also the southern part is attached to the coastal Sundarbans, the region is abundant with birds round the year. Specially, during the winter seasons. Common birds of the area include *Upupa epops, Acridotheres tristis, Pycnonotus cafer, Dicrurus macrocercus, Acridotheres fuscus, Sturnus contra, Passer domesticus, Centropus sinensis, Spilopelia chinensis, Ardeola grayii, Aegithina tiphia, Micropternus brachyurus, Bubulcus ibis, Sturnus malabaricus, Lonchura striata, Milvus migrans, Ardea alba, Cyaneculas vecica, Athene brama, Anastomus oscitans, Dendrocopos macei, Parus major, Streptopelia tranquebarica, Megalaima asiatica, Pellorneum ruficeps, Otus lettia, Merops orientalis, Eudynamys scolopaceus, Clamator jacobinus, Picus guerini, Motacilla alba, Corvus levaillantii, Saxicola caprata, Jynx torquilla, Zosterops palpebrosus, Merops philippinus, Zoothera citrina.* Aquatic birds including *Halcyon smyrnensis, Ceryle rudis, Alcedo atthis* are some of the common kingfishers that are found in the area.

6.Terrestrial Wildlife: A good number of terrestrial wild species are observed in the project area. They include reptilians such as *Hemidactylus flaviviridis, Xenochrophis piscator, Calotes versicolor, Eutropis carinata, Amphiesma stolatum, Gekko gecko, Ahaetulla nasuta, Typhlops diardii, Hemidactylus brookii, Ptyas mucosa* and mammals such as *Bandicota indica, Funambulus pennantii, Bandicota bengalensis, Herpestes edwardsii, Suncus murinus, Rattus rattus, Mus musculus, Pipistrellus coromandra, Rattus norvegicus, Pteropus giganteus, Canis aureus.*

7.**Aquatic Wildlife**: Along the road transect, a few amphibians, namely Hoplobatrachus tigerinus, Euphlyctis cyanophlyctis, Duttaphrynus melanostictus, Polypedates leucomystax, and Polypdates maculatus, are found as aquatic species.

8.**Fish**: The most common fishes found in the northern section of the road transect before the Lalon Shah bridge include Gudusia chapra, Amblypharyngodon mola, Puntius sophore, Chanda nama (VU), Chanda ranga (VU), Mystus cavasius, Mystus seenghala (EN), Mystus tengara, Ompok bimaculatus, Wallago attu (EN). Besides, Amblypharyngodon morar, Puntius sophore, Glossogobius giuris are also available round the year in the region and mostly in the distributaries of the river Padma. Besides the whole transect from Hatikumrul, Sirajganj to Bhomra, Satkhira Labeo rohita, Cirrhinus cirrhosis, Puntius sophore, Channa punctatus, Mystus vittatus are very common. Mystus cavasius, Mastacembelus pancalus have also been recorded from the downstream of the Padma.

ANNEX 4 STAKEHOLDERS CONSULTATION DETAILS

Annex 4-1: Consultation Meeting

9. Stakeholder consultations were conducted from December 2022 to February 2023 in the SESA study area across 10 districts in the western part of Bangladesh under the WeCARE program. A total of thirteen (13) stakeholder consultation meetings were held along the project road for the SESA study, with 412 participants in attendance. Of these attendees, 317 were male and 95 were female. The lower participation of women in three meetings may be attributed to their daily household chores such as cooking, cleaning, and other responsibilities. Additionally, social and cultural taboos, as well as the meeting locations, could have contributed to absenteeism. Some female participants attended the meetings but had to leave early due to urgent commitments. Eight (8) annexes were prepared during the SESA study in WeCARE Phase-1, which were included in the previously submitted SESA report. However, these annexes were not attached to the SESA Final (Task 3) report. Only five annexes, based on consultation meetings held during the SESA study for WeCARE (Phase-3), are attached.

Annex (Table) 4-1:1st Stakeholder Consultation Meeting

Venue : Solonga Union Parishad, 8 no Ward Pabna
Date : 19 December 2022; **Time:** 12:30 -2.30pm
Total Participant : 111 Persons (Male 80 & Female 31)

Issues	Major Concern Raised by the Participant	Replies to the Concern
Environmental, social and other issues	The major concerns raised by the participants are: 1. Cutting trees falling within the ROW was discussed. Participants agreed these trees should be removed due to their age and potential risk during the monsoon season. They suggested planting new trees as replacements. Concerns were raised about environmental and social issues resulting from construction activities, including loss of livelihood, housing and the potential spread of various diseases. 2. Compensation for the removal of trees 3. Road safety issues due to widening the existing 2 lanes to 4 lanes were discussed. Participants proposed constructing POP and VOP for the safe movement of the community. 4. 5. Concerns were raised about various water-borne diseases, such as typhoid and hepatitis, as well as stagnant water becoming a breeding ground for mosquitoes. The safety of vulnerable Project-Affected Persons (PAPs), including female workers, was highlighted. Participants suggested new skill training programs for vulnerable groups. 5. Participant raised concerns about the environmental and social risks and impacts on the disadvantaged and marginalized vulnerable groups, as well as Labor Health and Safety (LHS) 6. The participants demanded a sufficient number of Overpass/Underpass to accommodate frequent movement.	According to the ESMP 1:3 ratios i.e., three (3) saplings will be planted for every tree cutting. Roadside drainage facilities will be provided where the road passes through markets and local markets (bazars). Skill Development Plan has been included in LRP. Special support for the disadvantaged/marginalized people has been included in the RAP. Provision for compensation for squatters and encroachers included in the RAP. The project and its management integrate the aforementioned mitigation measures into the project design and implementation as follows: Occupational Health and Safety Management Plan and Labour Management Plan has been prepared to address these issues. Detailed information is provided in the Section 8 and 9 of the ESIA Report.

Annex (Table) 4-1:1st Stakeholder Consultation Meeting		
Venue : Solonga Union Parishad, 8 no Ward Pabna **Date :** 19 December 2022; **Time:** 12:30 -2.30pm **Total Participant :** 111 Persons (Male 80 & Female 31)		
Issues	**Major Concern Raised by the Participant**	**Replies to the Concern**
	7. They inquired about the project impact on drainage and whether necessary measure are considered to avoid waterlogging issues. 8. Tin- made fences should be installed around the construction area 9. Regular water spraying on constructions roads to mitigate e dust pollution 10. Road cleaners should be appointed to clear the road including dead animals,) 11. The participants demanded economic assistance for the small traders	

Annex 4-2: Consultation Meeting

Annex 4-2: 2nd Stakeholder Consultation Meeting		
Venue : Ujangram Union Parisod Auditorium, Kustia **Date :** 21 December 2022, **Time:** 12.30am -2.30pm **Total Participant :** 89 Persons (Male 70 & Female 19)		
Issue	**Major Concern Raised by the Participant**	**Replies to the Concern**
Environmental and social and other issues	A large number of participants attended and expressed the follwing concerns : 1. Participants were concerned about the fumes emitted during tar making for roads which would pollute the areas. They suggested designating a construction yard to store construction materials. 2. Participants emphasized the need to ensure a safe environment due to an anticipated influx of workers from outside the community. It is crucial to safeguard both female workers and women in the community. 3. There is a need for over pass/underpass to avoid the congestion. They also suggested extending the divisional road and Lalon Oil pump road. 4. Participants recommended constructing designated yards to store construction materials and prevent clutter. 5. Female participants from vulnerable households expressed interest in job opportunities during the project implementation for both male and female members of their households. 6. A major issue raised was ensuring the health and safety of the community during the pre-construction and construction phases, including concerns about waterborne diseases like Hepatitis and Typhoid, as well as hearing and breathing problems due to increased noise and air pollution. 7. The potential loss of wildlife, aquatic diversity, and overall biodiversity, including the need for tree replantation, was another significant concern raised by the community. 8.	1. The project authority assured that comprehensive safety measures will be implemented to mitigate potential diseases (such as waterborne illnesses) and pollution (including air and noise pollution). Active female participants will be encouraged to engage in tree planting, tree care, turfing, and suitable construction work. This will address the safety concerns related to women. 2. The project will install noise barriers, such as trees, in necessary locations to protect the community from noise pollution. Additionally, a significant reduction in carbon emissions is anticipated as a result of the project. 3. A Grievance Redress Procedure has been established for this project, and a Gender-Based Violence (GBV) Action Plan has been prepared, as detailed in Section 7 of ESIA report. 4. Furthermore, an Occupational Health and Safety Management Plan and a Labour Management Plan have been developed to address these issues. Detailed information is provided in Sections 8 and 9 of the ESIA report. 5.

Annex 4-3: Consultation Meeting

Annex 4-3: 3rd Stakeholder Consultation Meeting for SESA		
Venue : Muladuli Union Parishad, Pabna **Date:** 21 December 2022, **Time:** 12:30 -2.30pm **Total Participant :** 124 Persons (Male 95 & Female 29)		
Issue	**Major Concern Raised by the Participant**	**Replies to the Concern**
Environmental and social and other issues	1. The Chairman of Muladuli Union expressed concerns about traffic congestion caused by train movements on the road, sometimes resulting in traffic jams up to two kilometers long. He noted that the government has begun constructing an overbridge in the area following earlier recommendations. 2. A participant requested a proper drainage system to manage water in the growth center market. 3. The people of the society are concerned about the possibility of destruction of wildlife and aquatic diversity and biodiversity along with tree replacement. 4. Other issues include- proper safety measures, noise control and waste and drainage management during construction period; proper evaluation of lands, local level involvement during the construction phase of the project- which are discussed in the RAP. 5. A proper drainage system should be in place to stop waterlogging, which will save crops and stop land sliding. 6. Ensuring that fertile topsoil is not used for road construction. 7. If trees are felled during construction, they should be replaced in available space. 8. Concerns about the health and well-being of the local population, which may be affected by noise and air pollution generated during construction.	1. The project authority has assured that comprehensive safety measures will be implemented to address potential health hazards, including waterborne diseases and pollution (air, noise, etc.). Additionally, active female participants will be encouraged to engage in activities such as tree planting, tree maintenance, and turfing, as well as suitable construction tasks. This approach ensures that the safety concerns of women are adequately addressed. 2. The project will provide noise barriers (trees) in the necessary locations which will protect the community from noise pollution. Furthermore, the project is expected to significantly reduce carbon emissions. 3. Appropriate numbers of Pedestrian Over Pass, Vehicle Overpass and Foot Overpass, adequate lighting systems, Drain and other facilities will be included in the project.

Annex 4 3: Table:4th Stakeholder Consultation Meeting for SESA		
Venue : Ghorshal Union Parishad, Conference room, Jhenaidah Sadar, Jhenaidah District **Date :** 31 January 2023, **Time:** 11.00am-1.00am **Total Participant :** 50 Persons (Male 48 & Female 2)		
Issues	**Major Concern Raised by the Participant**	**Replies to the concern**
Upazilla, Union, Village/Feeder roads related issues	1. The three roads from Kola to Narikelbaria, Kaliganj to Narikelbaria-(13 feet wide) and Jhenaidah to Narikelbaria are crucial but frequently congested. To widene the congested road whether land acquisition is required or not 1. Local people use these roads to transport their agricultural produce to GCM, but the roads are not wide enough, causing occasional difficulties. The roads need to be widened to facilitate easier movement. Proper road safety instruction signs are essential	1. There are enough Govt. lands available besides the roads so land acquisition will not be a problem 2. LGED already planning and designing the respective roads to be widened. 3. Road safety design issues are mainly concerned with road infrastructure features such as horizontal and vertical alignment of roads, cross sections of roads and bridges, lane configuration and provision for NMVs, crash barriers, pedestrian facilities and carriageways, intersections, footpaths, etc.

Annex 4 3: Table:4th Stakeholder Consultation Meeting for SESA

Venue : Ghorshal Union Parishad, Conference room, Jhenaidah Sadar, Jhenaidah District
Date : 31 January 2023, **Time:** 11.00am-1.00am
Total Participant : 50 Persons (Male 48 & Female 2)

Issues	Major Concern Raised by the Participant	Replies to the concern
	1. Women and students frequently use these roads for commuting to school and other purposes. Thus, it is important to have a proper lighting system, safety signs, and foot overbridges in front of schools and colleges, as well as along the roads.	Important elements of road safety in engineering design are considered as follows ► Road side safety barriers, ► Intersection, illustration and lighting, ► moderate obstruction, ► Pedestrian crossings and fences, ► Central hatching, paved shoulder, ► Structure Width, ► Median / Separator, ► Bridge and culvert approach cross-section, ► At grade rail crossings, ► Pavement width and surface, ► Ripe shoulder edge drops, ► Junctions, Pedestrian Underpasses / Overpasses, ► Footpath ► Traffic calming measures, ► Road signs, pavement markings etc. 4. Adequate number of lighting system, safety sign, foot over bridges will be in place according to design.
GCM related issues	1. The drainage systems at GCM's are in poor condition and need improvement. 2. Solid waste management system is inadequate, with no designated areas for dumping of solid waste. Burning of dry waste contributes to air pollution. In this regard, GCM people need a designated dumping zone for waste disposal. 3. Due to the lack of a slaughterhouse in the market, butchers are forced to slaughter animals near the drain to quickly dispose of the blood, then bring the slaughtered animals to their shops. This practice results in a bad odor emanating from the drain. 5. During the market construction, local business persons have requested temporary locations to continue their operations.	1. The local Chairman informed that LGED already have a plan to improve the Growth Center Market condition and he need their support in this issue. 2. Their concern will be conveyed to the respective departments.

Annex 4 3: Table:4th Stakeholder Consultation Meeting for SESA

Venue : Ghorshal Union Parishad, Conference room, Jhenaidah Sadar, Jhenaidah District
Date : 31 January 2023, **Time:** 11.00am-1.00am
Total Participant : 50 Persons (Male 48 & Female 2)

Issues	Major Concern Raised by the Participant	Replies to the concern
	6.	
Social and safeguard related issues	1. According to local residents, thefts were previously high but have now decreased. This includes a reduction in motorcycle and bicycle thefts, attributed to the recruitment of security guards for GCM. Additionally, the education rate for girls is higher than that for boys i.e., 80% female educational rate. 1. Divorce rates are higher among women whose husbands live abroad. Contributing factors include child marriage, extramarital affairs, wives not prioritizing their husband's opinions on family matters, and watching TV serials. The chairman is actively working to reduce the divorce rate through awareness campaigns. 1. Women in this region can spend their earnings as they wish, but they need their husband's permission. 2.	-The local Chairman informed that he is trying to build awareness regarding violence on women, education, child marriage, ethics, crating social bonding etc.
Health, Water-borne disease related issues	1. Local people, particularly children and elderly people, are especially susceptible to water-borne, respiratory and salinity-related skin diseases	1. There are public health centers and mother and child care clinics. They receivetreatment through clinics. They need to visit government/other hospitals in case of any emergency 2. Above all Occupational Health and Safety Management Plan and Labour Management Plan has been prepared for the mitigation of these issues. Details are included in section 8 and 9 of the ESIA report..
Health, sanitation facility related issues	1. Health care service providers are located in city/urban and peri-urban and rural areas. 2. However, the specialized hospitals are primarily situated and are difficult to access for those needing emergency treatment living in remote locations due to poor communication networks.	1. There are community clinics and some alternative medical treatment facilities in both urban and rural areas, i.e. homeopathic, unani-ayurvedic.
Outmigration	1. Outmigration of poor people is common in the SWR (South Western Region) particularly from coastal areas. 2. Most of these migrantsare victim of natural calamities, debt, land grabs and dispossession andlack of employment opportunities. 3. In addition to living in squalid urban slums, the poor face further disadvantages due to an unfair labor market.	

Annex 4 3: Table:4th Stakeholder Consultation Meeting for SESA		
Venue : Ghorshal Union Parishad, Conference room, Jhenaidah Sadar, Jhenaidah District **Date :** 31 January 2023, **Time:** 11.00am-1.00am **Total Participant :** 50 Persons (Male 48 & Female 2)		
Issues	**Major Concern Raised by the Participant**	**Replies to the concern**
	4. Some educated people migrate to urban areas/abroad for employment. Migrant remittances can supplement household incomes and contribute to the national economy.	
Irrigation and water supply related issues	1. Water supply and sanitation facilities in urban and semi urban areas (e.g. public toilets in public places and local markets) are either inadequate or in a poor condition. 2. Irrigation of rice with surface water in the SW region is a big issue because of salinity	
Gender-related issues	1. Women faces socio-political exclusion in decision-making processes-both in the home and society. 2. Women are often vulnerable while travelling alone to/from remote areas.	
Illegal activities: Illegal tree cutting, human trafficking	1. These issues are of major concern in the Sundarbans, causing loss of habitat and biodiversity (terrestrial & aquatic) & economic loss for communities	

Annex 4 3: Table:5th Stakeholder Consultation meeting for SESA		
Venue : Hazrapur Union Parishad, Chairman office, Magura Sadar, Magura District **Date :** 02 February 2023, **Time:** 2.00am-3.30pm **Total Participant :** 38 Persons (Male 24 & Female 14)		
Issues	**Major Concern Raised by the Participant**	**Replies to the concern**
Upazilla, Union, Village/ Feeder roads related issues	Is there any history or background related to these feeder roads?	An elderly local recounted that in the past, when roads were unpaved people endured significant hard ships. For example, his great-grandfather had to carry his pregnant daughter in a bamboo cage to Upazilla hospital because no bullock cart couldn't navigate the narrow unpaved road.. During British period roads were managed by district boards and began to improve. Initially, they were surfaced with soling carpet, then upgraded with brick herring-bon bonds. Eventually, when these roads were designated as LGED feeder roads, they became paved.
	Which roads are connected with this GCM?	Singra to Alomkhali via 37(Shaitrish), Singra road goes to Kaliganj through inside Jashore. Kaligonj road is in the western side of Singra, Alpara road is in the East side, Chaitro bari, Khajura road is in the South side of the singra road.
	Is there any other roads related to Alamkhali GCM and need improvement?	There is another road name Sreerampur road which need improvement.

Annex 4 3: Table:5th Stakeholder Consultation meeting for SESA		
Venue : Hazrapur Union Parishad, Chairman office, Magura Sadar, Magura District **Date :** 02 February 2023, **Time:** 2.00am-3.30pm **Total Participant :** 38 Persons (Male 24 & Female 14)		
Issues	**Major Concern Raised by the Participant**	**Replies to the concern**
	What kind of vehicles use this feeder roads?	All kind of vehicles use this feeder road ranging from 10 wheeler to two wheeler. This includes, big trucks, mini trucks, Nosimon, Korimon, e-bikes, vans, bullock carts, Rickshaws, Motorcycles
	What kind of products are transported through this feeder road to GCM?	Rice, Jute, husk, lentils, Leaves-vegetables, fruits, animals (cow, goat, chicken), dairy products, daily usable goods, Construction materials like brick, sand, cement, bamboo also are transported through this road.
	What kind of goods are bought and sold in this GCM and which day are market day?	Sunday and Wednesday are the market days. Sunday is primarily for the cattle market, while Wednesday and other days feature a variety of agro-based food products, along with fish, meat, poultry, daily essentials, sweets etc.
	Is this GCM is taken on lease basis? If so, how much money paid every year for lease purposes?	Union Secretary Mr. Debo Broto Kondo stated that 35 lakh taka, including VAT, is paid annually to the government for lease purposes.
	Can you compare the current road status with previous status? What kind of problems do you face in this GCM and need improvement?	Compare to the current road conditions, the previous road status was 80% missing The most pressing issue related to GCM is the absence of a proper drainage system and effective solid waste management. Additionally, the lighting system and public toilets are inadequate and need improvement. A slaughterhouse is also essential.
	How do Environmental and Agro-products conditions change over the period?	In the past, people could distinguish between six seasons, but now only three are discernible. These changes have resulted in inadequate rainfall during the rainy season, leading to crop damage. According to an elderly individual, there has been a noticeable change in the taste of food compared to earlier times; nothing seems as flavorful as before. Fish, fruits, and vegetables nowadays seem to lack the taste and purity they once had. However, despite these challenges, crop production has increased due to the use of advanced fertilizers, pesticides, and improved seeds. Nowadays, there is significant research on how to boost agricultural output. Unlike in the past when only one type of crop could be grown in a field, advancements in technology and machinery such as shallow tube wells and tractors allow people to cultivate different types of crops in a single field within one season.
	Compare to earlier what kind of birds and fishes can be found these days?	In the past, there was a rich abundance of fishes and birds in the area, but nowadays, sightings are limited. Previously, species such as hawks, falcons, black drongos, herons, owls, martins, seagulls, and others were commonly observed, whereas now, only crows, kingfishers, martins/shaliks, black

Annex 4 3: Table:5th Stakeholder Consultation meeting for SESA		
Venue : Hazrapur Union Parishad, Chairman office, Magura Sadar, Magura District **Date :** 02 February 2023, **Time:** 2.00am-3.30pm **Total Participant :** 38 Persons (Male 24 & Female 14)		
Issues	**Major Concern Raised by the Participant**	**Replies to the concern**
		drongos, owls, and herons are frequently seen. The proliferation of internet towers and the reduction of trees have had a negative impact on their breeding habitats. In the past, the ponds and rivers in these areas were teeming with various native fishes like koi, magur, pabda, sing, soil, khoilsha, ire, etc. However, nowadays, mostly cultivated fishes are found. Local residents attribute these changes to factors such as altered seasons, excessive pesticide use in agriculture, drought, reduced rainfall, and other environmental factors.
	About the health condition of this areas people, what's the rate of maternity death, child birth death? Is child marriage being happening in this area?	According to Mst. Jesma Khatun an Assistant Family Planning Officer at a Community Clinic in Magura, informed that the maternity rate is currently very low, with one or two child birth related deaths occurring in the past two years. Child marriage is not prevalent now a days, but other common health issues persist.
	What's the economic condition of this Area?	Compare to earlier times, present Socio-economic condition has significantly improved. Nowdays, people no longer face starvation because of the improved technology and research that has increased food production. The educational rate is also high due to enough school, collage availablility in every city, Zilla and Upazilla. Parents are aware of the importance of their children education and send them to schools. Furthermore, advancement in medicine and treatments, health system have led to decrease in maternal childbirth mortality rates. There are now various employment opportunities, resulting in fewer people being unemployed compared to before. Additionally, women are actively participating in the workforce nowadays.

Annex 4-4: Key Informant Interviews

A total of 47 Key Informant Interviews (KIIs) were conducted with the Project Displaced Persons (PDPs), Project Displaced Households (PDHs) and Project Displaced Common Property Resources (PDCPR) owners. The summary of the KIIs are given in Annex 4.4 .

Annex 4-4: Summary of Concerns Raised by the Key Stakeholders	
Stakeholder	**Comment/feedback/suggestions on key issues of the PAPs**
Proshanto Kumar Nandi, Secretary, 4 No. Bot Toil Union Parisad, Kustia Sadar, Kustia Mr. Sadikur Rahman, Member Mr. Abiduzzaman, Member Mr. Atiur Rahman, Member	The respondents highlighted the following concerns: The need for over passes/under passes at the entry points of the feeder roads, bazar area and around school, college and other religious institutions 2. Implementation of effective drainage systems in the landscape areas along the highway to facilitate rainwater drainage. 3. Regular watering of roads during the construction period to minimize dust. 4. Improved management of traffic systems.
Md. Shariful Islam, President, Motor Labour Union, Kaligonj	Respondent demanded alternative job for the affected workers. They also suggested some mitigation measures for safe movement such as, construction of foot-over-bridge at the important intersections of the area, Designation of separate lane for the slow-moving vehicles like Alom Sadu, Auto rickshaw etc. and Relocation of the local kitchen markets and shops in safe distance from the highway road to reduce the number of road accidents
Md. Kamruzzaman, Manager, Jagorony Foundation, Bhutiargati, Jhenaidah Ph: 01743035151	We want a pollution free road where hydraulic horn will not be allowed, Roadside plantation is imperative Traffic system should be sound and good, Skill drivers are required to operate vehicles safely.
Mr. Sanuar Hossain, Chairman, 10 No.Ujanigram Union Parisad, Kustia Sadar, Kustia	**Chairman said-** The development activities carried out by the LGED are not satisfactory and materials are not good. The LGED department lacks a proper dust management system which is distrupting daily life and environment. The following measures are urged 1. Establish a storage yard for construction materials. 2. Expand the access road entry point from the highway. 3. Monitor load vehicles to ensure they stay within weight limits. 4. Install traffic signals and signboards at the entry point of the feeder road. 5. Construct a diversion road before starting the main construction work. 6. Expand the road equally on both sides. 7. Provide timely compensation and clarify the compensation mechanism for land, trees, and structures. 8. Define the project policy if one-third of a structure is affected.
Ms. Shapna Khatun, Secretary, Muladully Union Parisad, Pabna sadar, Pabna	Special corner for the women in the passenger sheds Female HHs would have additional benefits

Annex 4-4: Summary of Concerns Raised by the Key Stakeholders	
Stakeholder	**Comment/feedback/suggestions on key issues of the PAPs**
Ph:: 01736407020	Ensure the opportunity of need base training for income generating activities. Ensure involvement of women PDP at GRC Employment opportunity for the local people in the project Equal wages for both male and female Regular sprinkling of water to control dust
Mr. Delowar Hossain, Monirujjaman, Social elite, Solonga, Pabna	Affected people will fromsuffer from non-cooperation by the DC office during compensation payments PAPs will be in trouble if they don't get compensation prior to their displacement. Road side tea stall businessman are vulnerable, they will be jobless after dismantling the shop, they need to compensate or provide alternative source of income
Mr. Prodip Kumar Das, Health & Safety officer, LGED, Magura	One HS officer from the LGED office informed WeCARE ESMP team about the district wise LCS (Labor Contracting Society) program run by LGED. This program exclusively hires destitute, widow, disabled, and helpless women from a lower class e.g. Dom, Scavengers, Sweeper etc. They are provided with PPE and receive their salaries on time. He also discussed on some positive and negative issues i.e.Cost of material, time and movement cost will be reduced Product/Seasonal crops transportation from village to GCM will be easy Students can commute to school/college more easily. Employment opportunities will be increased Labor shortage may occur due to migration to urban areas Vehicular movement could lead to higher incidence of road accident will be high due to vehicular movement Growth Centre and Market (GCM) can enhance employment opportunities for the youth, contributing to the country's main stream of economic development
Mr. Md. Rezaul Haque, Executive Engineer LGED, Magura	Mr. Rezaul Haque informed that the LCS program in the Magura districts has been very successful, created livelihood opportunities for the distressed women. -Developement efforts have facilitated the GCM's economic growth in this area. Essential improvements include: -Establishing a Proper slaughterhouse, creating separate sheds for fish, meat, vegetable. Implementing proper drainage systems, -Providing separate and adequate toilets for both male and females. Ensuring proper lighting and a clean drinking water system.. -Setting up a proper dumping zone for solid waste. Currently, Solid waste is dumped into hole near the GCM, which is later used as organic fertilizer, while dry waste is burned. They are waiting for tender date to proceed. The feeder roads are selected based on the income, local resources and public demand

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	The WeCARE team from consultant's end, a is already on-site, they are counselling businessman and local residents in the market place which will be affected. Material cost will be increased from the proposed budget if the tender activities are delayed. According to XEN, LGED of Magura district, they are waiting for tender and release of fund release.
Md. Monowar Uddin, Executive Engineer, LGED, Jhenaidah	Mr. Monowar expressed concern about the condition of feeder roads connecting GCMs with regional and village roads, which are crucial for fast-growing markets. He mentioned that the current roads are narrow and need widening, and a design plan has been finalized to minimize environmental impact and property damage. The impacts of road development include: Improvements in daily life and business oppurtunities Faster travel times for students to schools and colleges Savings in both cost and time A reduction in road accidents Prevention of damage to fish and vegetables during transport
Md. Parvez Masud Lilton, Chairman, Ghorshal Union Parishad, Jhenaidah	Mr. Chairman cooperating with the LGED officials for the development of GCM and feeder roads. He shows his concern for the local people's health issues and want to develop health clinic centers and adequate number of health workers.
Mr. Omitav Sana, Executive Engineer, LGED, Chuadanga	Mr. Omitav Sana gave a briefing regarding the current LGED operations. In particular, the feeder road development program, GCM, and LCS personnel program. Additionally, he stated that rather of relocating to the capital, they wish to implement young capacity building initiatives so that they may establish themselves financially and support the district's economic growth locally.
Md. Mominul Islam Momin, Chairman of Baradi Union Parishad office, Meherpur Sadar, Meherpur	The Chairman congratulated the We CARE program and and expressed his desire to see Baradi Hat become a well-planned and developed GCM. He mentioned that Baradi Hat is the largest market for black Bengal goats, attracting individuals from far distances daily to buy and sell goats, resulting in significant crowding.• The roads often experience traffic jams caused by trucks transporting animals. • People face challenges with marketing their goods.The Chairman stated that he is doing his utmost and hopes that government assistance will be forthcoming as a result of this program.
Md. Humayun Kabir, DC, Shatkhira & UNO, Kalaroa Office	Mobility is crucial for economic growth. The Padma Bridge, which connects the western region to the rest of the country, will enhance road connectivity for Bhomra, Mongla and Benapole land ports. Jhoudanga is for a significant paddy market along the Navaron-Bhomra road. While, GCMs are managed both private and public but mostly public. Proper and adequate cold storage to be established here for storage of agricultural produce. A bypass is proposed in the project to save Kalaroa and Jhoudanga markets. Construction of roads on existing roads requires extensive rehabilitation. 66 hectares of land is required for the construction of the bypass road, but the land is producing triple crops.

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	DC and UNO suggested to reconsider the decision to save the triple crops land in the areas. To avoid this situation RHD may decide to construct an overpass on the existing road.
Md. Kamruzzaman, Executive Engineer LGED, Satkhira	The WeCARE project in the Jashore and Satkhira districts will differ due to issues such as salinity, inadequate fish cultivation, and storage systems the area has numerous ponds for culturing fish like shrimps, prawns, and crabs, distributed in various districts and exporting abroad. However, government rules prohibit new ponds beside roads. Satkhira is known for mango production, but the system is inadequate, resulting in insufficient exports and income. Many mangoes are wasted due to improper storage, necessitating the need for a proper cold storage system to store surplus mangoes and other agro based products like shrimp, prawn etc. We can establish juice industry here so that they can also export Mango juice, besides raw Mangos. -The project aims to improve cyclone shelters and existing GCs in a flood-prone area. Improvements include segregating fish, meat, and vegetable sheds and proper drainage systems. Land acquisition may be required for the GCM, depending on the location. Road design prioritizes upazila, union village, and village roads, with upazila roads 12-24 meters, union roads being 10-24 meters, and village roads being 10 feet or 8 feet if lands are not available. - It depends on the location. If new GCM need to be built, then it might require land acquisition.
Md. Iftekhar Uddin Joyradar, Upazila Engineer, Kaliganj, Shatkhira	Salinity is a major issue in Kaliganj and Shyamnagar upazilas, causing contamination of ground water. Locals use rainwater for drinking, and LGED has implemented a rainwater harvesting program using ponds for purification. Additionally, companies provide pure water for local consumption. There are seven (7) temporary rainwater harvesting ponds in Kaliganj Upazila. Local LGED roads are damaged due to unplanned shrimp farming and flooding, affecting soil composition. To ensure sustainability, region-specific technologies must be introduced, coordinated with other government departments like BWDB, BADC, RHD etc, to builtroads and bridges..
Mizanur Rahman, Upazila Engineer; Sonjoy Mondol, Sub-Assistant Engineer (Estimator), Water Supply & Sanitation, Public Health Department, Satkhira	Salinity problem is higher in Assasuni, Kaligan.j, Shyamnagar upazila. The skims are taken as follows; -Rain water harvesting -Build tanks in various places for storing rain water from the ponds -Using Aro technology -Also use Pond Sand Filter technology -For high salinity problem 6th no. hand pump is also an effective technology - The water level is 1000 feet in Satkhira - Working in coordination with LGED - Built the primary school toilets with the coordination of LGED
Zakir Hossen, Sub-divisional Engineer, BWDB, Satkhira	The flood control, drainage, and protection department play a crucial role in preventing floods and ensuring the safety of roads and structures. They prioritized sustainable dams, monitoring water flow patterns, and working to prevent river erosion, relying on land acquisition for dam construction.

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	LGED and RHD are not coordinating the construction of dams with this department. LGED is constructing canal embankment using palaslighting technology, but this method is ineffective. Maintaining the slope is more effective. A BWDB project is underway in Gabura Union. Inter-ministerial meetings are needed for better coordination and decision implementation.
Protap Mondol, Computer Operator, BADC, Satkhira	In this region main crops and vegetables are Paddy, Wheat, Maize, Sugarcane, Mango, Panifal, Mustard, Sesame, Mugdal, etc. Total cultivated land is 39800 hectors. Total farmer family no. is 85489. among them Women farmers are also there. Nontitle farmer's family no. is 8370 Govt. Skim: -Govt. of Bangladesh provides 1500tk per farmer for fertilizer, seeds etc. Upazila base -There is a food warehouse where farmers sell their excess paddy's and other crops and Govt. buy from them at a higher price and store those crops for emergency situation. -Mangoes are exported from this district to other districts -There are no agricultural markets here - Satkhira has mainly 3 crop cultivations Satkhira cropping patterns: -Boro- fallen-fallen, -Boro-Aush-Aman paddy.Sesame-Boro-Jute/Aman paddy and season vegetables are grown. The problems shared are as follows: -the main problem is water logging and salinity He further suggested mitigation: -Drainage should be arranged under the road -longevity of the drainages need to be assured -Need more water harvesting ponds
Mr. Mohammad Mamun Kobir Torofder, APD (Traffic), Land Port Authority, Bhomra, Satkhira	The Additional Project Director, informed that Bangladesh has 23 land ports, of which only 13 are currently operational TheAPD mentioned that the short distance between Kolkata and Bhomra will reduce transportation cost for traders. Additionally, the distance between Satkhira and Dhaka via the Padma bridge will be reduced by approximately 100km -Currently, Bhomra land port offers limited services to importers. Although 56 products can imported through this port, only 30-35 product are being imported. -The road at the starting point of the port will be 8 lanes with designated two lanes for vehicle parking -A separate passenger lane will be developed -The culvert at the border periphery will be expanded to 10 lanes -Vehicle over 20-tons will not be allowed

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	-RHD site is having 60 ft. land and need to acquire an additional land for 90 ft - • The Border Guard camp located on the north side will need to be dismantled and relocated; the authorities have already planned this relocation with the Border Guard.. -APD assured full cooperation for the project implementation. -An Improper drainage system is major problem in the land port area. -Dust and noise are also significant problems due to heavy traffic in the port area. -Approximately 1000 vehicles pass through the port area. -Previously the rate of human trafficking rate was high but it has now nearly reached zero due to strict border guard security. - • Black market activities have also decreased for the same reason, although they still occur to a lesser extent. **Suggestions:** • Construct a proper drainage system, with the drainage outline leading into the Ichamati River near the port area. • Build a service road to facilitate easy movement for local people near the port area. • Establish a holiday market in the land port area to further reduce black market activities.-It will be benefited in two ways 1. Imported products will be available at comparatively lower prices, encouraging frequent purchases by local people.2. Local people will be less inclined to buy black market products, leading to an increase in legitimate product sales.
Mr. Abdul Kader, Deputy Director of Social Welfare Department, Kushtia	Activities of Social Welfare: -Old Age Allowance -Widow's Allowance -Micro Credit -Rural Social Service (both for men and Women) -RMC (only for women) -Sorkari Sishu Poribar (for 4.5 to 5 years old orphan child's only) provide food shelter and education -IP Allowance -Training for IP's -Provide scholarship for IP's children -Probationary proceedings: When child trafficking happened, we send those children to their country through our court. -Amar Bari Amar Sohor project controlled by BRDB - Juvenile Offender Correctional Center Problems: We have branches in Dhaka, Faridpur, Khulna,

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	-We have the permission of build our own buildings but couldn't find suitable lands
Md. Abdur Razzak, Executive Engineer, LGED, Kushtia	Need to implement road specific technology depends on traffic volume and categories on the road. Need to connect all villages through connecting road to city so that village people can get the fundamental needs. Road connectivity also should give priority in "Amar Gram Amar Shahar" project.
Md. Abdur Rahim, Upazilla Engineer, Kumarkhali Upazilla, Kushtia	There are several tourist spot and archeological site in Kumarkhali Upazila so gathering of tourist also high in this area. So, road widening is needed specially "Rabindra Kuthibari" connecting road.
Mr. Bikash Chndra District, Forest Officer (DFO) & RHD X-EN, Pabna	In 2003, the Forest Department signed an MOU with RHD for highway plantation. The Social Forestry Program was executed by various departments, including the Water Development Board, Roads and Highways Department, Zila Parishad, Island Forestation Program, and Railways Forestry Program. The Rail Authority agreed to plant Palmira Palm within the periphery rail line. Akashmoni, an exotic plant with equivalent timber quality to Teak, was planted on highway sides. The department decided not to plant exotic plants but mixed native plantations on different roadsides.
Ruppur Nuclear Power Plant, Admin Office, Pabna	The nuclear power plant requires no other structures within half a kilometer, but the national highway and railway are linked to the Lalon Shaha and Hardinge bridges. Due to economic involvement, these roads and bridges cannot be shifted. To ensure plant safety, a provision of barrier is demanded by the power plant authority.
Botany Quarantine Center Office, Local Officers, Bhomra, Satkhira	Since 2009, the Plant Quarantine Station at Sthalbandar, Bhomra, Satkhira has struggled with issues such as inadequate drainage, dust pollution, and odor pollution from decomposable or rejected products dumped on roadsides during import and export activities with India. While no definitive solution has been identified, the SESA program aims to address these problems.
Vice President Mr.Sheikh Ezaz Ahmed Swapon & Local Officers, Bhomra Custom Clearing & Forwarding Agents Association	The Vice Chairman informed that currently, the Bhomra-Satkhira-Khulna-Gopalganj-Bhanga route is used for transportation. Upgrading this road to six lanes will reduce the distance from Bhomra to Dhaka by 180 km and save at least one hour of travel time. Additionally, people from the northern regions of Bengal will benefit from improved facilities.
Sri Rup Majumder, Assistant Director, DOE, Jhenaidah	A No Objection Certificate (NOC) must be obtained from the relevant agencies for constructing the stockyard. Several issues need to be addressed during the construction period:• Ensuring the surrounding environment remains dust-free.keeping stone crashing yard sound free • Setting chimneys within a zigzag pattern and ensuring they are above 60 feet in height.• Maintaining environmental standards during the burning of bitumen.Obtaining NOC from the DC office to collect earth-filling materials. Ensuring surrounding institutions remain pollution-free Adhering to legal requirements before commence of work
Mr. Jafarullah, Forester, Magura Mr. Zakir Hossain, Forester, Jhenaidah	The Forest Act of 2011 must be adhered to for the cutting of roadside trees, followed by new plantation in accordance with forest guidelines. Government land should be identified for additional wood and tree plantation efforts. With the area currently covering 11-12%, the coverage is expected to decrease due to

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	the cutting of roadside trees. Concerned agencies should provide subsidies for nurturing trees along the roadside. More plantation efforts are necessary to maintain a pollution-free environment.
Mr.Shariful Islam, XEN, LGED, Jashore	The feeder roads and GCM have already been selected for development LCS workers are repairing the roads. Engineer and members of WeCARE team are engaging with GCM traders and conducting road surveys. Once funding is secured, the development of the road and Growth Centre will commence, as they have already been selected
Mr. Rubel Sheikh, Vanpooler, Ranigram, Solonga Union Parisad, Ullpara, Shirajgonj	They transport goods from Ranigram to Solonga Bazar, Nandogram to Syedpur Bazar, and other nearby areas. These goods include paddy, rice, and green vegetables such as potol, ginger, and potatoes. Their daily earnings range from 300 to 400 Taka. The road is in good condition and is paved, remaining unaffected by flooding during the rainy season. Further improvements to the road will contribute to the enhancement of socio-economic conditions.
Mr. Ataur Rahman, Businessman, Dashuria Point, Ishardi, Pabna	The road has already been developed Expanding it to six lanes would be beneficial, although it may impact our buildings and livelihoods. The majority of the population in this area is Muslim, comprising approximately 90%, with the Hindu community making up around 7-8%, and the remaining belonging to other communities. Paddy and crops are the primary businesses in this area, but many are discontinuing due to losses. The rate of traders has declined to 4-5%, and import businesses are struggling to cope. Consequently, people are resorting to importing rice from abroad through LC, with their business also involving buying and selling pulses. -Improving the roads will facilitate the transportation of agricultural produce to the city.
Mr. Fazlur Rahman, Businessman, Baliapara, Pabna	According to the opinions of the respondents- They know that the road will be developed into 6 lanes, but it will effect their business, shops, and housing structures Though it has positive and negative impacts. Positive impacts are: Road accidents, Transportation costs will be reduced. Time will be saved (1 hour-2 hour) National income will be increased. The negative aspects briefed are as follows: People will suffer for a long time. Roadside people will lose roadside shops, agricultural land, ponds, fish hatcheries, gardens, and their livelihoods -6 lane road will play an important role to the growth of the national economy
Mr. Kanor Das, Chairman, Sri Sri Kali Mondir, Hamdah, Kalitola, Jhenaidah	Established in 1933, this temple holds significant historical importance and is revered by the Hindu Community for worship. Adjacent to the temple, the feeder road requires development. This road witnesses heavy traffic, with daily commutes of students to school being hindered by its poor condition.

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Stakeholder	**Comment/feedback/suggestions on key issues of the PAPs**
	Additionally, farmers utilize this road to transport arums lobe (Kochu Lati) for exportation. The Mondir authorities have requested that the boundary of the temple premises remains untouched during any road development.
Hazarilal Biswas, Headmaster, Bamrail Palli Mongal Shandhani School, Jhenaidah	People in the area, including teachers & students, use this road every day. Development of this road will assist them to change their life. Only the road passing through this village which need to be repaired
Karimuddin, Van pooler, Jhenaidah	Using this road 8-10 times daily Earn 600-700 taka/day Road development will help for movement the people to their required place safely. Products will not be damaged Fare Cost will be minimized Road development will change the socio-economic condition of the local people
Mr. Alibordi Biswas, Head Master, Moslem Uddin High School, Baliadunga, Jhenaidah	The number of students is decreasing gradually due to the poor condition of the road. However, an improvement in road conditions could potentially increase student enrollment. There is a need for a passenger shed, zebra crossing, and divider in front of the school to enhance safety. Additionally, signs and caution marks should be placed at road corners, and speed breakers should be maintainedLocal laborers face challenges due to the narrow road when traveling to Jhenaidah Sadar for work The potential impact on the graveyard due to road widening is a sensitive issue. The area is well-known for its vegetable production, with locals selling their produce in the market daily. Safety measures such as passenger sheds, caution marks, and zebra crossings are essential.
Ashraful Islam, Farmer, Donan Joipur, Jashore	The Farmer informed that road development will help them to carry their agricultural products to the market They currently bring grass for livestock from long distance and travel to other villages to sell their labor. On market days, farmers rely on the road to conduct their business. Improving the road will significantly enhance the socio-economic conditions in the area.
Growth Centre, (GCM) linked with Narkel Baria, Hat Gopalpur, Sadar, Jhenaidah Mr. Shakib, Businessman, Jhenaidah	This market serves a 10 km radius and is only market in the area. Developing the link road will reduce transportation cost and save time. The growth center is very close to the Naboganga river, which locals use to transport their produce from distant areas during the monsoon season. Obtaining a No Objection Certificate (NOC) from the concerned agency is required for the construction of the stockyard. As a significant growth center connected by rivers and village roads, farmers bring their produce to this market daily. Market development will boost economic growth and ensure farmers receive fair value for their products.
Mr. Monirujjaman Firoj, Vegetables Traders, Rohita Bazar, Monirumpur, Jashore	People bring vegetables from distant areas But due to the poor road conditions , transportation costs are high. The has led to a decrease in income levels, once averaged Rs 1500-2000 per day, but have now

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	fallen below Rs 1000. Developing the roads development will increase the income level and provide farmers with the opportunity to transport their agricultural inputs to the market at lower cost A cold storage facility is needed for storing vegetables and fruits and a go-down is necessary for safe storage of jute and other materials. Godkhali in Manirampur is famous for flower cultivation and business. It is an important market allows local people to sell their agricultural products, and many also send goods to Dhaka including significant portion of flowers.
Ms. Joly Khatun, Supervisor, LCS, CW 03, Jashore	They are recruited under LGED scheme for LCS program to maintain cleanliness in the growth center market This market faces significant drainage problems, with waterlogging being a major issue during monsoons. A proper drainage system is required Waste management is a major concern, as there is no designated dumping zone. Consequently garbage is often dumped in nearby pits or by the riverside, which sometimes causes unpleasant odors..
Dr. Nazrul Islam, Pharmacy business, Rohita Bazar, Monirumpur, Jashore	It is not a pucca market, butLGED is plans to improve the market which will facilitate faster growth. Road development is also crucial The market needs a dust bin Women requires toilets and shelters People usually travel 4 km and 7 km Jhikargacha and Manirampur, from here, for medical treatment. Pregnant women are particularly at risk during their delivery. A health centre is needed here. Markets require separate toilets for men and women
Mr. Tarikul Mollah, Vanpooler, Khamar Para, Near to 18 Khada, Alipur, Magura	He travels 3-4 times daily with passengers and materials and earns Rs 400-500 each day to supports his family (Member 5). If the road is developed, their income will increase Given the road's length and the lack of settlements along it, adequate passenger sheds are needed.To maintain the road's condition, 10-wheeler vehicles should be banned. This area, known as 18 Khada, is a large bill area.The road connects two unions to a vital growth center, allowing farmers to transport agricultural products from long distances to their homes.
Mr. Sharif Hossain (District Coordinator, BDC, NGO, Pabna Sadar, Pabna, beside Pabna bypass road, Brac Learning Center Sadekur Rahman (Regional Manager, Brac Sajibur Rahman, Jr. Executive Jewel Rana, Jr. Researcher	After briefing about the WeCARE Program and SESA study purpose the Key employers of the BRAC NGO shared their valuable thoughts and information's with the team members. **Discussion-** **Mr. Sajibur Rahman-** The development of the Padma Bridge has significantly boosted the region's economic and social growth. Similarly, constructing new roads is expected to have a positive impact For instance, it currently takes almost six hours to go from Pabna to Dhaka, and poor road conditions frequently result in traffic accidents. Upgrading the roads from two lanes to four lanes will improve this situation.In addition, Pabna district is well-known for its production, including the Paksey Paper Mill, Pabna Sugar Mill, and Iswardi EPZ. It is also well-known for producing milk and a variety of fruits, including lychee, papaya, guava, boripey, and mango. Furthermore, Pabna district is bordered to the north by Natore and Sirajgonj districts,

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	to the south by Rajbari and Kushtia districts, and to the east by Manikgonj and Sirajgonj districts. As a result, a variety of goods are transported throughout the nation from this district, necessitating the development of roads in a timely manner. **Mr. Jewel Rana-** He is concerned about how the road development would affect the locals. According to him, the marginalized population will gain from the road construction rather than suffer negative effects. However, there will be a few drawbacks. For example, local drivers in Nosimon, Korimon who use this road will have to band to drive to the main roads because their vehicles are not meant to travel on highways. However, they can learn how to operate a truck, bus, etc The sustainable management of this area's development is another point. Prioritization should be established before any roads are developed, ensuring that the development is efficient rather than haphazard. For instance, the development of these rural, impoverished communities is the goal of our NGO. First, we give priority to the families that most need assistance and the locations where people are most vulnerable. Then, using this list as a guide, we lend them money to start small businesses, raise goats and cattle so they can sell milk and support themselves, construct hygienic latrines for their health and safety, and keep an eye out for other families who might require similar support. I like to focus on two other issues which is Govt. need to focus on the development of the local infrastructure which is related to the agro based product like GCM etc. And also local agro product export system need to be improved so that without any middleman farmers can sell their products and get benefited.
Mr. Babu Ram, Beside the Road local handicraft businessman, Chatmohor, Rail Bazar Area, Pabna	**Discussion-** They have been in the handicraft business for generations, starting from their father and grandfather. This is their sole occupation, producing and selling daily -use items such as chairs, mats, swings, baskets, chicken coops, fishing cages, clay tubs, large wicker baskets, kula etc. from cane, bamboo and clay. This shop on their own land. They purchase raw materials like bamboo from the local village market spending 500 tk each time..About 50 families are involved in this business. While there average monthly income covers daily expenses, it leaves little room for savings. He has completed his post-graduation and his children are also studying. They prioritize education for their betterment. The business owner, despite having good social status, struggles with lack of capital and profit. They also face obstacles like plastic-based products, which are popular due to their affordability and environmental impact. To revive their business, they need to raise awareness and promote sustainable practices. The speaker believes that developing roads will facilitate easy transportation of their product and attract customers, but is concerned about potential labor influx and potential threats to their children and daughters. To address this, they suggest increasing employment and awareness in the region. Till now no human trafficking is occurred as far he knows.

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Mst. Afroza Parvin, LGED Upazila Sub-Engineer, Bhangura, Pabna	**Discussion-** LGED department prioritizes road development, bridges, and ghats, including Char Bhangura Kheya Ghat in Chalan beel area. They plan to build a bridge and employ female workers without financial support, as part of the LCS program. Local upazila is informed about the program. LGED is prioritizing the development of connecting roads in the Chalan beel area, including Dilpasha, Bhangura, and Asta Monisha GCMs, as these roads are crucial for daily usable products, agro products, patients, and businessmen in the region. Recently they are not running any canal excavation program. Zila, Upazila roads are maintained by both RHD, LGED and RDMS. LGED is prioritizing for the development of the connecting roads because daily usable products, agro products, patients, businessmen all are use this road for transportation so road development is most important for this region. Main crops produced in this are Rabi crops, Paddy, Mustard etc.
Dr. Md. Rashedul Haque Chairman of Civil Eng. Department of Pabna University of Science and Technology, Pabna Sadar, Pabna	**Discussion-** He proposes to develop the Benapole-Bhatiapara road for development According to the Chairman of theCivil Engineering Department of Pabna University of Science and Technology, the feeder roads currently experiences low traffic. However, but when the road is improved, the transition and traffic congestion will increase and diversions will also be created Presently, port roads in Pabna have no traffic jams, but future development may lead to more congestion. Unauthorized vehicles are responsible for 30-40% of road accidents. To mitigate this, proper road planning and design are essential. To mitigate this, proper road planning and design, such as SMVT, proper lighting, and steering systems, and licensing for unauthorized vehicles, are required. Road plans should be projected for at least 15 years. To boost the economic condition of remote areas, more GCMs can be developed, and connecting roads need improvement. If the number of GCMs cannot be increased, existing ones can be converted into two-story buildings with proper modifications.For the development of landless people's livelihoods, proper training can be provided. For the development of landless people's livelihoods, proper training can be provided. In this district, the number of Indigenous Peoples (IPs) is low, but more IPs live in Natore, Rajshahi, and the northern part of the region. For their livelihood development, they can be involved in road construction work. In the Santal community, both men and women work for the family, primarily engaging in labor and agricultural work, often at low rates.Transport sector needs to introduce safer and more appropriate vehicles especially 40 seaters.

Annex: 4.4: Key informant Interview with Utility Service	
Mizanur Rahman Upazila Engineer, Sonjoy Mondol Sub-Assistant Engineer, Water Supply & Sanitation, Public Health Department, Satkhira District	He informed that Salinity problem is higher in Assasuni, Kaliganj, Shyamnagar upazila. The skims are taken as follows; -Rain water harvesting -Build tanks in various places for storing rain water from the ponds -Using Aro technology -Also use Pond Sand Filter technology -For high salinity problem 6th no. hand pump is also an effective technology - The water level is 1000 feet in Satkhira - Working in coordination with LGED -Built the primary school toilets with the coordination of LGED
Zakir Hossen, Sub-divisional Engineer, BWDB, Satkhira	- The flood control, drainage, and protection department plays a crucial role in preventing floods and ensuring the safety of roads and structures. - This department construct dams and prioritize on sustainable dams, monitor water flow patterns, and work to prevent river erosion, land acquisition needed for dam construction. - There is lack of coordination between LGED and RHD department for the construction of dams. - LGED is constructing canal embankments by using palaslighting technology - but this method is less effective than slope. - He also informed that a BWDB project is underway in Gabura Union. **Suggestion** - He suggested that Inter-ministerial meetings are needed for better coordination and decision implementation. - Sufficient number of inlet outlet is needed for water flow.
Mr. Mohammad Mamun Kobir Torofder, APD (Traffic), Land Port Authority, Bhomra, Satkhira	Additional Project Director, informed that, 23 land ports are in Bangladesh, among them only 13 are currently in operation -APD said the short distance between Kolkata and Bhomra will reduce transportation cost for traders. The distance between Satkhira and Dhaka via the Padma bridge will also be reduced by about 100km -At Present, Bhomra land port does not offer much to importers. Although there is scope to import 56 products through this port, only 30-35 product are imported. -The road will be 8 lanes at the starting point of the port (two lanes for vehicle parking) -Separate passenger lane will be developed -The culvert at the periphery of the border will be 10 lanes -Vehicle will not be allowed over 20-ton load

	-RHD site having 60 ft. land and need to be acquired 90 ft additional land. -APD informed that the Camp of the Border Guard is situated on the North side which will be required to dismantle; the authority sat with them and made a plan to shift the camp in another place. -APD ensured all sorts of cooperation from his side for the implementation of the project. -Improper drainage system is the main problem at the land port area's road. -Dust and noise also a problem due to heavy traffic on port area. -Approximately 1000 vehicles move through the port area. -Previously there were some record of human trafficking but now the rate is in nearly zero level because of the strict boarder guard security. -Black marketing is also reduced because of the same reason but still going on but in less amount. **Suggestions:** -Need to construct proper drainage system. Drainage outline may fall into the Ichamati river near the port area. -Service road should construct for local people's easy movement near the port area. -Black marketing can be reduced in full pleasure if we can establish a holiday market in the land port area. -It will be benefited in two ways 1. When imported products will be available in here with comparatively cheap rate local people will buy them frequently and 2. Will not be interested to buy black market products and products selling will be also increase
Md Ekramul Kabir, Sub-Assitent Engineer Public Health and Engineering Department, Jashore	The Directorate of Public Health Engineering (DPHE) was established in 1936 to improve public health through safe drinking water and sanitation services. Post-Bangladesh independence, the government prioritised the restoration of the damaged sanitation and water supply systems before beginning construction on new infrastructure under DPHE. The Directorate of Public Health Engineering is responsible for constructing and managing safe water supply and sanitation systems across the country, except for WASA areas, to protect public health. Activities: Directorate of Public Health Engineering's Role • Maintains safe water sources and sanitary latrines in rural areas. • Provides technical assistance to Union Parishad for rural water supply and sanitation infrastructure maintenance. • Strengthens healthcare and supports environmental development. • Assists municipalities in planning and institutional development, including construction of water supply and sanitation infrastructure. • Implements necessary activities in emergency situations like floods, cyclones, and epidemics to maintain safe water supply and sanitation systems. • Provide tube well (100 tube well allocated by the Government 50 for Chairman and 50 for Local MP) •Municipalities are receiving pipeline facilities; union-level operations have not yet begun. **-What is the procedure if the pipeline needs to be removed for emergency construction work?** •Notice from the RHD department • Union office will distribute a notice regarding Road construction to the concern area. (Micking, notice in the union notice board are other strategy to inform the people).

	• The RHD will provide road design with right of way • Survey the ROW • Draft drawings for design and cost estimates. • Send the design along with the estimated cost to the concerned department. • After approval, they will go to work. RAO office has a dedicated account for money deposits, and after receiving a copy of the money deposit, they use manual or e-GP to call tenders. • It takes 15 to 20 days to construct one kilometer of pipeline • Selection of contractors based on quality This department is building sanitary toilets at the bus stand, community area, and union marketplace. People in the concerned area are monitoring the construction. Widening the road will bring both social and economic development to this region.
G M Mahmud Prodhan Executive Engineer, WZPDCL Cell and Distribution, Unit -2, Jashore	According to him the procedure to maintaining the work is WZPDCL Project Management • • No Objection Certificate • Receives RHD instructions. • The RHD will provide road design with right of way Conducts survey and estimates total cost. Submits cost estimate to RHD. Approves work after department approval. Uses the Regional Accounting Office (RAO)office's dedicated money deposit account. Call tenders using manual or e-GP. • •Depending on the amount and type of work, the time frame is defined. • Mr. Pradhan said that RHD had not recognized ditches and potholes on the road and that his office had not received the Road Alignment (ROW) plan from Palbari More to Arabpur. After determining the alignment of the road with its existing location and state, they will survey the road. After finishing the road survey, they will compute the cost and submit it to the relevant department. Their department will create a section-by-section route plan to finish the work to prevent any disruptions in the provision of electricity and to enable re-establishment. • The Union office will distribute a notice regarding Road construction to the concerned area. (Public announcement over the loud speaker, and notice in the union notice board are another strategy to inform the people). They store the pole in the pole yard. They work in 21 districts and very few unions. Their coverage is 100%.
Md. Sarowar Jahan Sujon.	Mr. Sarowar Jahan informed us that the road alignment, comprising the design from RHD and the NOC from BWDB, is necessary if any structures need to be removed from the way so that the natural flow of water is not disrupted. BWDB can provide conditional NOC if necessary

Executive Engineer Bangladesh Water Development Board Magura	The activities of BWDB are • Preventing river erosion, building dams, raising the dam, dredging silts/sediments in rivers/canals, etc. • Forestry on both sides of the embankment • Informing the public before starting work • If there are bridges and sluice gates, they work in coordination with RHD and LGED in the case of canal fish farming. • The Noboganga river Sluice gate is very important to control the flow of the river (The working procedure regarding RHD road construction is same as above as these are Government offices).
Shree Deb Kumer Malo General Manager Magura Palli Biddut Samiti, Magura	According to Dev Kumar, development should be planned for the long run. Because of the small area of our country, short-term planning is not beneficial here. You currently have a ten-year plan to enlarge the road; beyond that time, will there still be land available for doing so? where the amount of arable land is decreasing. The electric pole is a stable system, interrupt the system is not a wise decision It is difficult to remove the large electric pole is risky in the big project It is very difficult to set up poles at root level, no one is ready to sacrifice their land and potholes in the road are another problem. In that case, the local people created obstacles and required logistical support and police assistance for the installation. Activities: • Rural Bidet Supply • Electricity is supplied to residences, hospitals, clinics, shops in industrial areas as per government laws • About 90% coverage • Online service is provided for electrical connection and bill payment. • One pole is free for residential connection • The price of the pole is from 30000-50000 depends on the size • In case of industry Rs 2 crore will be borne by the government and the remaining amount will be borne by the consumer • There is a restriction in irrigation. Only transformer will provide by them rest amount will borne by the consumer. (The procedure of starting work is the same as mentioned above)
Mr. Salahuddin Molla Sub Inspector Tularampur highway thana, Noraile	Mr. Salauddin Molla inform us about their activities in the highway. Activities: • traffic control • Legal action in accident cases • Initially fire service and local police station provide their services • As the area of the highway is wide, it is not possible to reach the accident area in a short time, so they took measures according to the situation. • Appeoximate area coverage is jashore to Kalna bridge -46 km **Suggestion** • Heavy racker /crane is needed for in accident case • CC Camera will be bringing good result in highway control • Sufficient number of ambulance and patrol car is needed

	• Individual unit is needed in the hospital for accident cases • Development of road is needed for easy movement which will reduce accident in the curve. • Florescent paint marking is also needed for better visual purpose
Md. Kaysar Iqbal Additional Deputy Director Department of Agriculture Extension Chuadanga	Activities: • Incentive to the farmers (Free supply of fertilizer and seeds) • Provide training Field inspection • Field Day (to disseminate the technical side) • Supply channel Monitoring , Personal connection with the Farmer (yard meeting) • There are Three seson here, KHrif 1 & 2 –producing paddy bhutta (corn) in Rabi season. He informed that Development of road will bring a good result in communication The small business men are cell their product through middlemen while the big businessmen are cell their product directly.
Protap Mondol Computer Operator, BADC Satkhira	Mr. Protap Mondol inform that, in this region main crops and vegetables are • Paddy, Wheat, Maize, Sugarcane, Mango, Panifal, Mustard, Sesame, Mugdal, etc. • Total cultivated land is 39800 hectares. • Total farmer family no. is 85489. Among them, Women farmers are also there. Nontitle farmer's family no. is 8370 **Govt. Skim:** • The government of Bangladesh provides 1500tk per farmer for fertilizer, seeds, etc. Upazila base • There is a food warehouse where farmers sell their excess paddy and other crops and Govt. buy from them at a higher price and store those crops for emergencies • Mangoes are exported from this district to other districts • There is no agricultural market here • Satkhira has mainly three crop cultivation land • Satkhira cropping patterns: • Boro- fallen-fallen, Boro-Aush-Aman paddy, Sesame-boro-Jute/Aman paddy • Vegetables are produced as season based **Problems:** • the main problem is waterlogging Salinity and Suggested mitigation: • Drainage should be arranged under the road • longevity of the drainages need to be assure • Need more water harvesting ponds **Suggestion** To be develop the connecting road of GCM for better communication and transportation of agricultural goods .

Annex 4-5Focus Group Discussion (FGD)

Focus Group Discussion (FGD) aims to generate information from various types of stakeholders, including PAPs, project-affected women, students, and traders. Market community, vendors, community leaders, UP members, market users, LCS, Growth Center Community, Land Owners, and vulnerable persons for their feedback, recommendations, and suggestions. The main concerns raised by the public are summarized as follows:.

Annex 4-5: Summary of FGDs

Focus Group	Major Issues	Demand and expectations	Action to be taken
Affected land and Businessman Group at Battoi Bazar, Soilokupa	➢ Need khal excavation for passing rain water ➢ Dislocation of business ➢ Compensation ➢ Loss of livelihood ➢ Restoration of income ➢ Employment opportunity ➢ Allow to take away belongings	1. Will be ensuring adequate compensation for the affected businessman and loss of business 2. Will be ensuring compensation before displacement 3. Will ensure livelihood and restoration plan 4. Should allow to take salvageable materials	➢ Compensation will be paid for business loss and prepare a RP and RPF to ensure compensation
Affected vulnerable group	➢ Employment opportunity in the project ➢ Equal wage for male and female ➢ Additional benefits for VPDP	1. Will ensure the employment opportunities for the eligible women during implementation of the project 2. Will ensure equal wage for women during construction work 3. Vulnerable HHs would have additional benefits	➢ A project implementation team will be formed to ensure smooth implementation of the RP Project will establish a GRM as well
Affected Transport worker group (Rickshaw & Van puller)	➢ Road safety ➢ Employment opportunity in the project ➢ Benefits for loss of income ➢ Payment before displacement ➢ Lane divider for slow moving vehicles ➢ Training for the drivers	1. Ensure reduction of road accident 2. Ensure divider and bays for bus crossing, 3. Ensure to stop the slow-moving vehicle in the high way like Alom Sadu and 3 wheelers 4. Ensure training to the driver 5. Ensure a labor welfare fund to assist the injured driver and their family.	1. Project will be 4 lanes 2. All types of safety measures will be taken

Annex 4-5: Summary of FGDs			
Focus Group	**Major Issues**	**Demand and expectations**	**Action to be taken**
		6. Prohibit to establish road side hotel, shop, market and other institutions 7. Ensure stop policing harassment. 8. Ensure employment opportunities during implementation of the project 9. Ensure payment for loss of employment 10. Ensure compensation before starting construction work	
Affected Female group	➢ Compensation and prior notice before displacement ➢ Employment opportunity of the local people in the project ➢ Equal wage for male and female ➢ Additional benefits for FHH ➢ Income generating activity ➢ Involve committee Adequate /sufficient Lighting system; ➢ Passenger shelter should be provided; ➢ Separate Toilets for men and women.	➢ Ensure notice for at least 3 months ahead of displacement ➢ Ensure compensation before displacement ➢ Employment opportunities for the eligible women during implementation of the project ➢ Ensure equal wage for women during construction work ➢ Female HHs would have additional benefits ➢ Ensure the opportunity through need base training for income generating activities.	1. All the affected HHs will be given minimum 3 months after the full compensation is paid. 2. All skilled and unskilled labors will be hired locally.
Businessmen, Teacher, Shop owners, UP Members, LCS group, Students, Jobholder, Member of market committee at Bagia Alokdia GCM, Magura District,	**Issues and Information's related to GCM**: ➢ Solid wastes are dumped in the field adjacent to the GCM, where dry wastes and polythene are burned. ➢ The drainage system in this GCM is inadequate. There are two low-lying roads within the GCM that need to be elevated to match the level of the connecting feeder road. During the rainy season, these areas become flooded, preventing GCM users from sitting and selling their products **Social and Family related Issues:** ➢ Cases of high divorce (59%) rate is largely due to lack mutual understanding between husband and wife. Many women file for divorce citing reasons such as abasement, unethical relationship, drugs, etc. There are also instances of male abuse ➢ Women's are employed, but in some cases, husbands restrict their wivesfrom spending money on their parents' families ➢ The Female education rate is 80% which higher than male rate. However, many girls drop out of school due to child or early marriages.	➢ Need proper designated area and system for dumping solid wastes ➢ Need proper dry waste disposal system ➢ connecting feeder roads need to be raise at least 2 feet or according to the level of connecting feeder road ➢ Some people said social media, Indian TV shows, etc. are reasons for divorce ➢ Extra marital affairs caused for mobile phone, Facebook, etc. ➢ Women demanded share from their parent and husbands' property ➢ Early marriage needs to be discouraged ➢ These feeder roads need to be widened	

Annex 4-5: Summary of FGDs			
Focus Group	**Major Issues**	**Demand and expectations**	**Action to be taken**
	Issues and Information related to Feeder road: ➢ Beltola-Bazar road, Post Office-Sheikhpara Khanpara is a katcha and unpaved feeder road		
UP Chairman, Secretary, Member of bazar committee, LCS Supervisor & LCS Cleaner Group, Businessmen, Day Labor at Alomkhali, Hazrapur Union Magura District	**Issues and Information's related to GCM:** ➢ Nearly 400-500 shop owners conduct business in this GCM ➢ The lighting system inside the GCM is inadequate. There is no slaughter house,s but there iscold storage facility. The Public toilet system is poor ➢ No separate toilet for men and women and their condition is poor. ➢ No designated dumping zone. So waste is thrown in to the riverside polluting the river water ➢ Drainage system is good in this GCM **Issues and Information related to Feeder Road:** ➢ People of these area know about the WeCARE project ➢ Earlier there was one single unpaved road. ➢ Singra to Alomkhali road goes through Kaliganj to Jashore main road ➢ This Feeder road is use for transporting all types of goods in this GCM ➢ Rice, Jute, Leave-vegetables, animals (cow, goat), daily usable goods, construction materials like sand, road, cement, bamboo also are transport through this road. There is no water logging history in this road and no potholes on the road. The width of this road is not enough ➢ There are Govt. lands available beside the existing road that can be used for road widening purpose. Less electric poles near this road. 5 solar post are there but not working properly ➢ Women's also use this road to come GCM **Social and Family related Issues:** If there any social problem arises, the Union Parishad Ezlash or office try to solve the problem Type of cases or social problems come to this Ezlash- ➢ Divorce cases ➢ Disputes between husband and wife based on dowry, husbands drug addictions etc. ➢ People said girls' self-reliance is not a reason of divorce but low education or poor education is the cause of divorce	➢ Need proper lighting system ➢ Slaughter house is also required ➢ Cold storage is also required ➢ Need adequate toilet in the opposite direction for both male and female ➢ Proper solid waste management system is needed ➢ Roads need to be more widen as per local users ➢ Proper solar post needed in this area ➢ Children's education rate need to be increased ➢ Social awareness and education need to be improved for reducing divorce rate	
LCS group of GCM & Road & Supervisor at Baliadanga, Jhenaidah District	**Issues and information related to LCS workers:** ➢ LCS workers get their logistic equipment 1 time in every year ➢ They also get PPE, medicines, umbrellas etc. ➢ Friday is their holiday, ➢ They get 20 minutes break after 1 or 2 hours ➢ 15 to 16 brooms are given in each group ➢ They are getting 300 taka per day.	➢ LCS workers said they need helmets, gumboots, hand gloves also more brooms and big size trolleys	➢ Consultant team suggest them to give requisition of this things to their supervisor

Annex 4-5: Summary of FGDs			
Focus Group	**Major Issues**	**Demand and expectations**	**Action to be taken**
	Social & Environmental Issues in this area: ➢ There is a Family Welfare Assistant (FWA) who visit every day in each houses of this area except Friday ➢ Govt. of Bangladesh provides 26 type of medicines and tablets in the clinics of this area, for the women and children ➢ They check the pregnant ladies weight, pressure etc. and provide Iron and vitamin tablets if needed and also consult about their health issues. ➢ They also provide health services to teenage girls, counseling them about their feminine problems and provide iron, vitamin tablets ➢ They provide services to 0-5 years old children ➢ They provide vaccines for the children ➢ They informed that child marriage rate is zero in this area ➢ Maternal mortality rate is very low ➢ Infant mortality rate is also very low		then she will arrange those things for them
Rice mill owner, Mechanic, Tea stall owner, Shop owner, School peon, Farmer, Businessman, Housewife at Bittipara, Ujangram Union, Kushtia District	**Issues and Information related to feeder road, social & environmental:** A resident mentioned that the current government has initiated numerous development projects that are significantly benefiting the national economy He noted that the present condition of the road is very narrow, making it impossible for two vehicles to move parallelly, which frequently leads to accidents. ➢ Export and import activities are increasing day by day, ➢ Traffic loads on the road have increased The Padma Bridge has accelerated economic activities in the southern region, particularly in Jashore, Jhenaidah, Satkhira, Khulna, Magura, and Narail. This allows people to send their materials to Dhaka more quickly and at a lower cost. ➢ Communication with Bangladesh and India became easy and comfortable ➢ Prepare the next younger generation smart and digital ➢ Introduce us with new technologies ➢ Prepare our next generation for future ➢ Uplift our unprivileged area ➢ Increasing un- lawful activities ➢ Smuggling and human trafficking ➢ Terrorism based on border	➢ Therefore, road infrastructure need to be developed based on the traffic load. ➢ Law enforcing agencies need to be more cautious and careful ➢ Increasing the security ➢ Fencing all the border area	
Union Chairman, Secretary, Accountant,	**GCM and Feeder Road related issues:** ➢ Hatgopalpur GCM established in the Govt. khas land, probably over 3.5 acre areas ➢ Beside the regional Highway a paved road goes to the GCM	➢ Slaughter house is needed ➢ Separate female toilet is needed in the opposite direction of male toilet	

Annex 4-5: Summary of FGDs			
Focus Group	**Major Issues**	**Demand and expectations**	**Action to be taken**
Farmer, Guard, Mason, Housewife, Local people at Hatgopalpur Padmakar	➢ This is a big GCM and roads inside this GCM are paved ➢ Drainage system is not adequate and cause water logging problem ➢ There are separate sheds available ➢ Most of the shops are paved shop and separate sheds are available ➢ Besides fruit, vegetable, meat, fish, poultry firms, all kind of daily usable products are available in this GCM ➢ GCM wastes are gather into specific places and later dumped into other places (in a pit or river side, no prescribed dumping area) ➢ Some rice mills are there in front of the GCM ➢ No slaughter house is available in this GCM ➢ Toilets are there but male female toilets are not separated ➢ Lighting system is good	➢ Plan wise separate sheds are needed ➢ High and covered drain is required in emergency biases	
UP Chairman, Sociologist, LGED Engineer, Supervisor and LCS worker group at Kutubpur Union Parishad Office, Chuadanga District	**Issues related to LCS worker:** ➢ They said sometimes typical people in the society belittle them for working as a LCS worker ➢ Rest of the LCS worker said they need to work because they want to be financially independent. ➢ GCM workers said that they have to spend Rs. 20 per day for transportation **Issues and information discussed about the GCM:** ➢ Friday & Monday is the market day in Sarojgonj GCM ➢ In these days' waste produces in large amount nearly 50 trolley or 15 to 20 Mann ➢ Other days waste produces in less amount **Issues and information discussed about the Feeder road:** ➢ There is a small culvert bridge above the Nobogonga canal in this 6 km feeder road ➢ There are two Feeder roads connecting to this GCM ➢ One is Sarojgonj to Alomdanga which we have visited ➢ Another one is Sarojgonj to Gholdari ➢ There are several villages beside this 6 Km feeder road ➢ Gholdari road is 7.1 Km long and 3.7 Feet wide. **Social and Security related issues and information:** ➢ Family violence is less. ➢ Education level is average. ➢ Problems like eve teasing, child marriage, dowry, and unequal property distribution exist.	➢ GCM workers said it will be very helpful for them if they get the conveyance bill	➢ Consultant team explain them everybody need to work for their own benefit and financial stability
Union Secretary, Journalist,	**Issues and information discussed about the GCM:** ➢ Saturday and Tuesday is the market day in Andulbaria GCM	➢ GCM workers said they need cover van for waste dump ➢ Lighting system is there but need to improve	

Annex 4-5: Summary of FGDs

Focus Group	Major Issues	Demand and expectations	Action to be taken
Sociologist, Local people at Andulbaria Union Office Chuadanga	➢Cleaners collect the waste and dump them after the market days ➢In the market days' waste produces nearly 15 to 16 sack or 10 to 12 mann ➢In Andulbaria GCM cleaners are all male because cleaning work is difficult in this GCM as there is no place available for dumping waste in or near this GCM ➢Cleaners need to put those wastes by hiring a van by their own money for dump those waste, 1 or 2.5 km away from the GCM. ➢Every week they hire a van for 400 Tk. by their own money for dumping those waste ➢For this reasons women are not interested to work in Andulbaria GCM, ➢They work as a LCS road cleaner ➢Trolley size is also small **Issues and information discussed about the Feeder roads:** ➢They get their salary on time but don't get festival bonuses ➢In each package a house is rented for the LCS GCM & Road Cleaners resting and equipment store purposes ➢An elder lady among LCS road cleaning team look after other workers infant or young children during working time in that house ➢There is no drainage system besides the feeder roads	➢They need big size trolley ➢They also insisted for more spade, shovel for removing the drain cover and clean the waste ➢Both LCS GCM & Road Cleaners said they need gum boots, hand gloves ➢They asked for festival bonus ➢Proper drainage system needed beside the feeder roads	
Panel member, Sociologist, OHS Officer, LCS group, Shop owners, Blacksmith, Local people at Katakhali, Moghi Union, Magura District	**Issues and information related to GCM:** ➢Wednesday is the biggest Cattle market day ➢Saturday is comparatively busy for raw vegetables, daily useable products etc. ➢Mostly this market gets busy in the afternoon time ➢In the market day, 30 to 40 trolleys or nearly 50 to 60 mann waste are produced ➢Solid wastes are dumped into a specific hole and covered by soil so that no odor can occur ➢GCM workers burned the dry wastes in different place ➢Village women collect the cow dung by themselves or by their children after-market day for cooking fuel purposes ➢Sometimes businessman sell their products about 300 m. away from the GCM for better pricing ➢Other products like fish, meat, vegetables are sell from this GCM ➢There are separate shades available in this GCM **Issues and information related to Feeder roads:** ➢Katakhali to Gonagati road was the first paved road among other feeder roads of this area **Feeder roads & related structures, trees, ponds from Katakhali to Alamkhali:** ➢Ichakhada bazar to Hazipor total 4.20 km long, this road is connected to Alamkhali Feeder road	➢Need separate toilet for women in opposite site ➢Tube well in front of the Toilet is not working ➢Drainage system need to be improve ➢Bazar committee panel expect that when the roads will get wide people will definitely sit in the GCM and sell their products from there	

Annex 4-5: Summary of FGDs			
Focus Group	**Major Issues**	**Demand and expectations**	**Action to be taken**
	➢ Alamkhali, saitrish to Alaipor, Laotara via khamarpara 6.84 km long ➢ There are Mirzapor Primary School Mirzapor Aralia Community clinic Mehogany tree orchard ➢ Sreemontopor Ridoypor Govt. Primary School, Hazipor Sommiloni Degree Collage, Hazipor cemetery and Hazipor Police Fari or Station in Magura ➢ Dr. Lutfor Rahman sahittik Toron ➢ Lokkhi kol Moddhopara Jame Mosjid Alaipor Feeder road ➢ Fulbari Haji Motiar Rahman Secondary School beside Saitrish (37) road ➢ Mahogany forest or trees are in large amount beside 37 to Alaipor road **Social & Environmental Issues in this area:** ➢ There is Community Clinic in Mirzapor name Aralia Community Clinic, this clinic provides all kinds of health services for women and children and they provide services to all classes and races of women ➢ Doctors sat in this clinic weekly 2 days ➢ They check the pregnant ladies weight, pressure etc. and provide Iron and vitamin tablets if needed and also suggest them what they do in this condition ➢ They also provide health services to teenage girls, counseling them about their periods related problems and provide iron, vitamin tablets ➢ They provide services to 0-5 years old children and provide vaccines for the children ➢ They informed that in this areas child marriage rate is zero ➢ Maternal mortality and Infant mortality rate is very low ➢ Pure drinking water can found under 180 feet from the ground level ➢ The level of arsenic in the water is tolerable ➢ Farmers use shallow tube well, tractors for cultivation		
Elishpur Union local businessman of Kelar Kata at Elishpur Union, Navaron Upazilla Jashore	One of the local business man said he is operating his brick field business since last 12 years ➢ He has government approval and maintain all environmental parameters as per ECR 1997 and Act 1995 of DOE, ➢ Watering every day to keep the area dust free, bring earth from his own places, riverside and purchase lands. Selling brick to different stakeholders like government agencies, roads, people resident, markets and other city areas. He shared the following issues: ➢ 6 lanes road will connect us with different big cities ➢ Marketing system will be updated and people will get fair price of their products ➢ Export/import business will be increased as it is a border area, we are depending on the goods of India like Onion, Potatoes and other agro products which will be easy to import and reduce the damages	➢ Road widening and better communication is very much needed for the business purpose ➢ Government can set up here an economic zone and financing the educated young generation to be an entrepreneur	

Annex 4-5: Summary of FGDs			
Focus Group	**Major Issues**	**Demand and expectations**	**Action to be taken**
	➢ Here are two land ports, people move to India for treatment, business purposes and to the relatives of the Hindu community, 6 lanes road will make all the things easy and jam free ➢ Besides these, the Benapole and Bhomra Land port is the busiest path among all other land ports, all types of material imported by this port, stone is the major construction materials which needs wide road and big transport, 6 lanes road may increase the business opportunity and the local youth may get employment opportunity ➢ Now a day the human trafficking activity drastically cut due to tight security of the border guards, it may come into lower level if the law and order agencies become more sincere ➢ Many unemployment youths are not getting jobs after complete their higher study		
Vegetable traders and other local people of Alompur Baliapara Bazar at Kanchanpur, Kustia Sadar, Kustia	**Discussed issues** ➢ Selling green vegetables, it brings from village area which is far away from shop, the condition of the road is not good, ➢ Accidents occurred frequently due to unauthorized vehicles ➢ 6 Lanes Road will help to profit our business, time and cost will be saved	➢ Roads need to be widened ➢ Need to stop local transport like Alom sadhu on the 6-lane road to reduce the accident ➢ Demanding an improve road which is required	
Local Students of Makunda High School, Jashore	➢ One of the student's father is a businessman, she said, her father using this road every day to go at the business centre ➢ They come to the school every day through this road and facing problem due to bad condition of the road, they often become late to reach at the school ➢ Student and their guardians cross the road every day to bring their children in the school and vehicles are moving through this road at a high speed so it's risky to cross the road	➢ Improvement of the road is required ➢ They are demanding a foot over bridge in front of the high school	
Up Member, Local people at Bangdah GC, Satkhira Sadar, Satkhira District	**Various issues and facts related to the growth centers which need to be noticed and take proper action:** ➢ There is no storage house or ware house available in the GCM ➢ Shades are not in the planned way ➢ Solid waste management is the biggest problem ➢ Wastes are dumping here and there which pollutes the atmosphere ➢ Businessmen's faces odor problems because of that reason ➢ Lack or pure drinking water system. In few growth centers tub wells are available but not properly working ➢ Access road of the GCM's is in very poor shape. In the monsoon season water logging happed frequently ➢ Most of the GCM's are below to the access road which need to be in the same level	➢ Most of the roof of the shades are broken and need replacement ➢ Storage house needed ➢ Sheds need to be in the proper way ➢ Pure drinking water need to be available ➢ Proper access road with drainage system needed ➢ Need to be informed to the local people and passersby through signboards and advertisement etc. about the GCM ➢ Foster collaboration between rural and urban stakeholders to ensure inclusive growth and shared benefits.	➢ Encourage the establishment of growth centers in strategically chosen locations to promote balanced regional development. ➢ Implement policies that

Annex 4-5: Summary of FGDs			
Focus Group	**Major Issues**	**Demand and expectations**	**Action to be taken**
	➢ In some places GCM's are available which is not required and people are not known so before establish a GCM, proper location selection is very important ➢ Also traffic jam is a common problem in the access road of this GCM ➢ Potholes, water logging is there which creates problem for the businessmen's ➢ Local peoples don't like women to come in the GCM for business or marketing purpose		support sustainable practices in growth center development.
Local businessmen of Subarnabad hat GC in Debhata Upazila, Satkhira District	**Issues discussed:** ➢ This market is covered with 10km radius area. ➢ There is no other market in this area, connecting road development will reduce our transport cost and save time ➢ The growth centre is very close to the river of Navogonga, during rainy season the local people using this river to transport their goods from long distance **Environment related issues:** ➢ Some issues need to be considered during construction period- ➢ keeping the surrounding environment dust free ➢ keeping stone crashing yard sound free ➢ keeping Chimney height above 60feet and setting within zigzag ➢ maintaining environment during burning of bitumen ➢ obtain NOC from DC office to collect earth filling materials ➢ keeping surrounding institutions pollution free		
Chairman, Upazilla LGED Eng, Up Members, Local Businessmen at Gazir Hat GC, Debhata Upazila, Satkhira District Union	**Issues discussed:** ➢ In some places GCM space are not adequate as a result, local vendors sat beside the road and do their business which creates traffic jam ➢ Road condition is not so good so that transportation cost higher. ➢ Labor shortage due to migration to urban areas ➢ Road accident will be high due to unauthorized vehicular movement	➢ Before construction or shifting the GCM, alternative location need to be select carefully and move the GCM at that place so that local peoples livelihood doesn't disturbed	
Local People of Amjhupi GC, Meherpur sadar Upazila, Meherpur District	**Issues discussed:** ➢ One local people who has a business in this GCM said, road development will contribute to the economic growth of the country, besides these, government can take some steps like – ➢ Train up the unemployment youth by assessing their needs and educational qualification ➢ optimum use of the local resources through processing local resources		

Annex 4-5: Summary of FGDs			
Focus Group	**Major Issues**	**Demand and expectations**	**Action to be taken**
	➢ Include the technical curriculum in the academic course so that a student can do something after complete his academic carrier ➢ Connecting all growth centers to the remote areas through constructions/development of unpaved roads ➢ develop the drainage system to pass water naturally, sometimes problem arise that water stagnant impact on the farmer's field to cultivate their land three times, costing increase due to water stagnant ➢ All the plan should be practical, long term and sustainable ➢ Having positive impact due to development of Padma Bridge, express way, Mongla Port, Ruppur Nuclear Power Plant etc. to rapid growth of our economy, people can sale their product to Dhaka and other cities without any damages, increase employment opportunity to the local youth		
Local People of Pirojpur GC, Meherpur sadar, Meherpur District	**Issues and information discussed:** ➢ According to the chairman, this Pirojpur baradi hat was established during the Pakistan period. ➢ It is located on Govt. land and the total land area is 7 acres but the bazaar area is only 2 acres. ➢ Mr. Chairman said he wants this Baradi Hat into a properly planned and develop GCM ➢ He informed us that this is a very important hat ➢ This is the biggest Black Bengal Goat hat in Bangladesh ➢ Every market day people from far away come to this hat for purchasing and selling goats. ➢ Wednesday and Saturday are hat days. ➢ At that time this place become too crowdie ➢ The trucks that carry the animals are jamming roads. ➢ Government earns 50 lakhs taka from this hat by leasing it ➢ According to Union Porishad Officials, Government will earn 2 crores if this GCM get proper development ➢ People face problems for marketing ➢ Chairman said he is doing what he can but need Govt. help ➢ Proper lighting and drainage system is needed ➢ Slaughterhouse is needed ➢ There is only one public toilet available in this GCM ➢ Separate female toilet and adequate number of toilets needed ➢ If the bazar is developed, people from Gangni, Dhankhola, Baradi, Rajnagar will be benefitted and more products will be imported and exported and the area will be developed.	➢ Entry and exit point should be separated.	
Local Van puller at Ulashi bazar,	**Issues discussed:** These people involve with the van pulling, carrying human, agro products, goods of the residence, transferring material from one place to another. During discussion they pointed out that-	➢ Concern authority can assist them through financial help during the construction period for their survival ➢ Therefore, they are demanding paved road.	

Annex 4-5: Summary of FGDs			
Focus Group	**Major Issues**	**Demand and expectations**	**Action to be taken**
Sharsa upazila, Jashore	➢ Many people are leading their life by this profession, during construction period they will face problem in the road, as a result, it will effect on their family maintenance cost ➢ They are facing problem when they carrying goods to the remote place where the road is unpaved, during rainy season it become muddy, vehicle wheel goes under mud, spare parts of the vehicles are damaged, material fall into muddy ➢ If the road connects with the remote and far locality it will help to carry the materials easily, farmers will get fair price and cost will be reduced.	➢Demanding wide space every entry point of the feeder road ➢Demanding service road to move the local transport	
Local People at Khajura village, Ulashi, Sharsa, Jashore	**Issues Discussed:** All the people are happy and appreciated to know that the road will be enhanced, people will get work opportunity and carrying goods to local market would be easy. They said: ➢Time will be saved to reach at Dhaka and other cities like Khulna, Jashore ➢Business party will come to our area for purchasing agricultural products ➢We could be able to send our agro -product to Dhaka and other areas by cheap cost ➢Employment opportunity will be increased ➢They also mentioned Some negative impact ➢Dust will be generated ➢Roadside people losing their natural life ➢Road crossing would be a great problem if foot over bridge not set up to the proper areas ➢People will lose their business place, homestead, orchards, ponds and fish farming area ➢Water logging may cause if proper drainage system, culvert, pool and bridge not develop in the land scape of the road ➢Human trafficking may increase ➢Smuggling may increase	➢Checking force need to be increase to cut the smuggling and human trafficking ➢Proper valuation of the resources that would be affected like land, structures, crops, trees, fisheries etc. ➢It would be required to cut more trees, can plantation more in other places ➢Can increase training programme based on the needs of the affected people so that Project Affected People (PAPs) could get means of alternative earnings to mitigate their losses.	
Local businessmen and transporters (van driver, tea staller etc.) at Hatikumrul, Sirajganj,	**Issues Discussed:** At first the team brief describes local people about the WeCARE porgram and the purpose of the SESA study. Then ask them about their opinions, expectations, problems and probable solutions. ➢A local people said their livelihood is totally depending on this road. ➢He is a van driver and has his own battery driven van and his wife running their tea shop which is beside this road. ➢His daily earning is in between 500 to 600 taka through driving and his wife earn 300 to 400 taka running the shop so this is the main source of their daily livelihood. Beside this they have no land for cultivation but they have their house in own land. ➢His son is studying in a college. As per his opinion if the roads get developed then more vehicles will go through this road and more selling will be generated in their shop but that time he can't drive van in the main roads he can drive only in the union or village roads, so it may be negative impact in his income.		

Annex 4-5: Summary of FGDs			
Focus Group	**Major Issues**	**Demand and expectations**	**Action to be taken**
	➢ On the other hand, if the village roads are also improved then more people will use vans for transportation and in this way his income may be continue. ➢ Moreover, if the roads get improved then the whole impact will be positive. Beside this if govt. gives permission and license to drive in the main road then there will be no problem. ➢ Another local van driver also agreed with him and also enlighten us with his views ➢ He said if the roads get improved that time we can drive easily and accident rate will also decrease now based on the road condition driving is difficult through this road.		
Local People at Bhangura Kheya Ghat, Pabna	**Issues Discussed:** What will be the positive and negative impact due to bridge construction as per the opinion of the **Positive Impacts:** ➢ Connect two distant points in a straight line ➢ Cost effective ➢ Surrounding natural ecosystems will be disturbance free ➢ Could be able to cross the livestock without any risk ➢ Connection to upazila sadar would be easy ➢ Enhance the livestock rearing opportunity ➢ Movement of student and female would be easy ➢ Remote area to be well connected to upazila sadar and GCM ➢ Easy transportation of agricultural products ➢ Economic growth will be increased ➢ Resolve the river crossing problem ➢ Farmer get fair price of their agricultural products ➢ Business will be increased ➢ As a milk production area, cost of livestock rearing will be reduced Remote area to be well connected to upazila sadar and GCM ➢ Get fair price of agricultural products ➢ Easy river crossing of the livestock without any risk **They also discussed some negative Impacts** ➢ Increase Traffic movement ➢ Sound of vehicle disturb the nearest receptor/villagers ➢ Labour influx during construction impact on daily life ➢ Dust problem ➢ Trees would have to be cut down both side of the river ➢ River side erosion will be strong during monsoon if the length of bridge keeps narrow		

Annex 4-5: Summary of FGDs			
Focus Group	**Major Issues**	**Demand and expectations**	**Action to be taken**
	➢ Loss of biodiversity habitat ➢ River water will be polluted through discharging polythene by the tourists ➢ Surrounding natural ecosystems will be disturbed free		
Local Businessmen & Users of Bhangura GCM at Bhangura, Pabna,	**Issues Discussed:** ➢ As per local businessmen who are doing business in this GCM, Bhangura GCM is one of the biggest GCM in this upazila, not only agro products rather than all kinds of daily usable products are selling in this GCM. ➢ Total length of the bazar area is 200 meters. ➢ There are 1200 permanent shop and 800 temporary shop in this GCM. ➢ Though govt. didn't take any initiative to develop this GCM. ➢ Sheds and stands are not adequate; some roofs also need repair. ➢ In the monsoon businessmen do their business in the rain which is a huge problem, at that time they use plastic sheets but this is not a permanent solution. ➢ Another issue is there is no toilet available in this GCM people use the nearest mosques toilet as a result businessmen and local people faces a great difficulty. ➢ Also, there is no proper management of solid waste. Drainage system is also poor and, in some places, drain get blocked and create odor problems. ➢ There is a tub well so drinking water is available but lighting system is poor and also no slaughter house is there. ➢ For further economic development of this area GCM's condition need to be improve. ➢ The village roads which connect this GCM with other roads and villages is also need to be widen and paved so that trucks and van can move easily. ➢ There is no case of extortion happen till now. ➢ For solid waste management bazar committee can hire few persons and can train them how to manage the waste so that it will solve the waste problem also create more employment.		
Local Tea Staller & Farmer at Dharamgacha, Handial road, Chatmohor, Pabna,	**Issues Discussed:** ➢ In earlier days Chalan beel was always filled with water and it was difficult for us to cross the beel. ➢ They used boat for movement. Now a days RHD and LGED built small bridges near the beel area which makes movement easy for them. ➢ But water can't pass through the area as a result one side of the beel get dry and other side remain full. ➢ This thing is happened to the bridge near to this road and that time local people made a movement and do excavation for drain under the bridge so that water can pass through properly. ➢ Proper drainage system is needed to drain out the water.		

Annex 4-5: Summary of FGDs			
Focus Group	**Major Issues**	**Demand and expectations**	**Action to be taken**
	➢ The water level is low compare to previous time in the whole beel area as a result, fish breeding is less. But they can cultivate when the beel get dry. ➢ Mostly they are cultivating Paddy, Mustard etc. sometime vegetable ➢ In the mustard field bee farming is also going on. ➢ Water can pass through properly because without water fishing and farming will be hamper.		
Mr. Bibhuti Mahato of Ethnic Minority Community and the Activist of Indigenous Rights at Bagholbarimor, Chatmohor, Pabna	**Issues Discussed:** ➢ In this area mostly Mahato tribal people are living ➢ Around 200 families ➢ Their main occupation is laboring and farming. ➢ Sometime they go for fishing in the monsoon season but it's optional because on these day's water level remains low in the Chalan beel area. ➢ As a result, fish breeding is also less compared to previous time. ➢ They try to do cultivation and sell the crops in the nearest GCM but still the profit is less compared to investment. ➢ Every year they have receive an amount of money from the Govt. through TNO office for the betterment of there society which is not adequate. ➢ Beside this they don't get any other facilities from the Govt. ➢ they don't have any other business or occupation for their livelihood. ➢ They are belonging to Hindu community but they consider as a low caste. ➢ In order to develop their social and economic status in the society they are prioritizing to educate their children, but due to their poor condition they can't provide their children advance level education or admitted them into the university. ➢ Doing laboring they can earn daily 300 to 400 taka not more than that which is not enough for living so providing further education for there children is difficult ➢ Their marriage goes on their own tribe not with the out siders. ➢ If the roads are getting developed, then communication will also be improved which will be beneficial for the Chalan beel areas people.	➢ We want our recognition as a tribal people of Bangladesh with all our civic rights ➢ We want the construction camp/facilities should be at least 1000m away from our living premises ➢ We hope that more Health complex, school, college and other business institute will be flourished in this area after the road condition get improved and which will increase the economic situation of Chalan beel areas people.	

ANNEX 4.6 MEETING WITH ETHNIC PEOPLE

Introduction:

E&S consultant team visited SESA study area from 06/12/2024 to 04/01/2024 for WeCARE programme. The main purpose of this visit was to identify the ethnic groups of the western region. During the SESA study the E&S team found some ethnic groups in the western region. Bagholbari More, Chatmohar, Pabna and Rajbari More, Bangajal, Natore Sadar, Natore. Pabna is inhabited by the Mahato ethnic group and Natore by the Oraon ethnic group. The following table shows the meeting place and date.

The meetings are conducted as follows:

SL#	Date	Place	Team
1	07/12/2023	Chatmohar, Bagholbarimore, Pabna	E&S Team
2	07/12/2023	Rajbarimore, Bangojal, Natore Sadar, Natore.	E&S Team
3	06/12/2024	Rail Bazar Area, Chatmohor, Pabna	E&S Team & PIU team
4	04/01/2024	BRAC Office	E&S Team, PIU team. team.

Details description of the meeting are as bellow

Annex:4.6: Key Informant Interview with Small Ethnic Minority Community

KIIs conducted with IPs and NGOs who worked for SEMC are presented here

Stakeholder	Comment suggestions by the concerns
Mr. Naresh Chandra Oraon Executive Director, Ethnic Minorities Asus, Rajbarimore, Bangojal, Natore Sadar, Natore.	Naresh Chandra Oraon's inform that the tribal community has its own culture and language, i.e., the culture and language of the Oraons are different from those of the Santals; they live in Singra Upazila of Natore District. Santals mainly live in the Birampur area of Dinajpur. The government calls them Bano Jati, Jan Jati, and Minority. But they are trying to get recognition as Indigenous Peoples (IP). Earlier, they had huge land in this area, but it is decreasing day by day. Some people have encroached on their land by making fake papers

	Socioeconomic Status and Education and other information as follows; • Majority work in agriculture and everyday labor, residing in urban areas. • Prioritize education to improve socioeconomic status. • Financial assistance from NGOs like Oxfam. • The Prime Minister's Office has started a financial assistance program since 1998 through the TNO Office to develop their children's educational programs. • Goal: Increase education level from 9 to 15%. Cooperative Society Benefits and Challenges • In their cooperative society, people are free to save, invest, and spend money as they see fit. • They are purchasing rabi crops from three to four different people and selling them straight to consumers, doing away with the need for a middleman to take a cut. • Real estate purchases and sales are permitted. WeCARE project • Road construction enhances subsistence and communication • Allows driving and small business operations. • Concerns about potential adverse effects of road construction. • If the roads are built and paved, then so will their sources of subsistence and communication. • They will be allowed to drive on these roads and run small enterprises next to the road. They think that building new roads will have some negative repercussions. As construction was completed, • Noise pollution can be the cause of other disturbances. • To avoid this kind of problem, a construction camp could be established far away from their community. • They seek government assistance to preserve their rights and own culture and train their vulnerable people in income-generating activities.
Mr. Babu Ram Das Handicraft Businessman	Mr. Babu Ram Das provided the following information.

Rail Bazar Area, Chatmohor, Pabna, Roadside	**Tribal Handicraft Business Overview** • Mr. Babu Ram Das, a tribal member, has been in the handicraft business since his forefathers' time. • He has a postgraduate degree and uses cane, bamboo, and clay to create various products. • His shop is located on his own land, and he purchases raw materials from the village market. • His company engages in commerce with fifty households, with a monthly average of revenue and expenses. Business Support and Education Prioritization • Business income supports family but could not save money • Prioritizes education for future generations. **Business Challenges and Solutions** • Business struggles due to lack of capital and profit. • Plastic products, despite being cheap and durable, pose environmental risks. • Awareness campaigns against plastic to promote natural products. • Development of roads for easy product transportation and market access. **Concerns Over Construction Disruption** • Increased labor flow due to road construction could pose societal threats. • Potential for societal harm to children due to outsiders. • Potential for trafficking or other threats. • Solutions include increased employment and awareness. • No reports of smuggling have been received so far. **Suggestion;** • Provide Proper training they preferred (as per educational qualification) • Facilitate important fundamental rights like housing and health facilities, job opportunities, sanitation facilities, education, etc. • Upgrading of socio-economic condition, skill development, and safe and secure healthy environment. • For the cluster relocation of affected group there should be a budget for setting up common facilities like; i. Tube well ii. Drainage system iii. Connecting roads in this site and RHD will implement through INGO.

Mr. Abu Hanif, Senior Program Manager-Monitoring & Evaluation, Integrated Development Program, **BRAC** **Ms. Alpona Joyontee Kujur** (Deputy Manager, Capacity building and Community empowerment**, BRAC** (Integrated Development Program)	**BRAC's Tribal Assistance in Bangladesh** • Founded in 2013, BRAC provides assistance to tribal people in Bangladesh. • Prioritizes the "Integrated Development Program for Indigenous Peoples of Plain lands in Bangladesh." • Focuses on the northern plains people, the most vulnerable to Indigenous Peoples (IPs). • The SESA study focuses on IPs in Bangladesh's western region, but their circumstances are similar. • Aims to improve tribal communities' livelihood and socio-economic conditions. • Aligns with UN Sustainable Development Goals, including ending poverty, gender equality, clean water, sanitation, and inequality. ESMP Team Briefs BRAC Individuals on WECARE Project and SESA Study • The project aims to support IPs through smooth communication, development of new growth centers, and increased work opportunities. • It also aims to increase livelihoods and reduce human trafficking cases. Ms. Alpona raised concerns about sexual harassment in construction work, inadequate compensation, and wage discrimination. • Women often face wage discrimination, with men receiving 600 taka per day, while women receive 300-400 taka. BRAC's Focus on IPs in Northern Bangladesh • BRAC focuses on IPs in Naogaon, Dinajpur, Chapainawabganj, and Jaypurhat districts. • Research indicates IPs in this region are more vulnerable than in western Bangladesh. • Majority of IPs are landless and poor. • BRAC aims to improve health, sanitation, livelihood opportunities, and socio-economic status for tribals. **Project BRAC Support for IP's** • Increase livelihood through skill-based training program "Brac Star Model" for both genders. • Ensure access to primary education and promote higher and vocational education through career counselling seminars. • Mobilize community by raising awareness, improving socio-economic conditions, and strengthening women's decision-making power. • Link IP's access to services through local, public, and non-government service providers. • Mobilize resources for economic recovery of people affected by natural disasters. Ms. Alpana's Cultural Overview of IP • Encourages tribal living and recognition. • Avoids tribal identification. • Marries within their community.

	• Mainly follows Hinduism, but has converted to Christianity. • Has unique religious festivals like Karam Puja. • Uses Roman and Bengali script for written and spoken language. **Suggestion;** • Provide preferred training based on educational qualifications. • Facilitate fundamental rights like housing, health, job opportunities, sanitation, education. • Upgrade socio-economic condition, skill development, and secure environment. • Obtain loan facilities from local NGOs for income-generating activities. • Budget for cluster relocation, including tube well, drainage system, and connecting roads. Implement RHD through INGO

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Annex:4.6:Table:3

Community: Ethnic Minority

Groups name/description: Mahato, Munda, Lohar, Bagdi

District : Pabna (Bagholbarimore, Charmatha, Chatmohor, Pabna)

Date:07/12/2023

Total Participants:11**, Male:**11**, Female:**00

Introduction

The E&S team collected information's from BBS about these ethnic minority community in the program area while conducting the SESA study. Rajbari More, Bangajal, Natore Sadar upazila, Natore, and Bagholbari More, Chatmohar upazila, Pabna. The Mahato ethnic group lives in Pabna, whereas the Oraon ethnic group resides in Natore. On July 12, 2023, in Chatmohar, Bagholbarimore, the Mahato ethnic group of the Pabna West region participated in a focus group discussion led by the E&S Consulting Team. Mahatos have been resided in the western part of Pabna since the time of their ancestors.

The information they have given as follows;

- Earlier they had a lot of land which has been decreasing currently.
- About two hundred families are living here.
- They usually speak in Bangla and don't have any other language

- Their main occupation is labor and agriculture with some fishing during the monsoon season.
- During the monsoons, many working individuals leave the area to find employment, while the disabled and elderly remain idle
- They mentioned that some of their land was previously taken by local people, but they have since regained some of it for cultivation.
- They produce crops and sell them to nearby GCMs, but the profits are low compared to the investment.
- Due to poor road condition they are facing lots of problem like; bring their product to GCM, Students cannot reach school and college on time, ambulance cannot reach due to broken and narrow road.
- They reported that the Bangladesh government has a program to support them by providing some cash each year through TNO offices.
- Apart from this, they receive no other assistance or facilities. They no longer have any other livelihood options.
- They identify as Hindus, but the broader Hindu community considers them to be of low caste.
- They celebrate Durga Puja along with their own Karam Utsav during which they worship a tree as their deity and seek its blessings for good health.
- The main religious festival of the Mahato ethnic group Sharai festival was celebrated in the ethnic villages. This festival was held in the new moon of Kartik Bangla month.
- The community hopes to be accepted into the mainstream tribal community but is not yet recognized as a tribal community or tribe by the government
- To improve their socio-economic status, they prioritize education and send their children to schools and colleges.
- However, due to their poor financial condition, they cannot afford higher education or university enrollment for their children.
- They earn 500–600 taka per day, which is insufficient to support their families, making it impossible to fund further education.
- Their marriage ceremonies are conducted within the community and not with outsiders.

Suggestion

- Connecting road needed to bring the product to GCM.
- Road development will help school and collage going students and parents.
- Foot over bridge is needed in front of the educational institute for safe movement
- Also development of road will help to bring the patient to nearby hospital/clinic quickly.
- Adequate number of health clinic is needed to support them for better health.
- They believe that as roads are constructed and communication improves, the development of the Chalan Beel districts will follow.
- Grants from the government for pursuing higher education for their children
- To be accepted into the mainstream of the tribal community by the government
- Proper training for livelihood to mainstream them in other area of business.
- Sufficient facilities from Government

Table:4

Community: Ethnic Minority Communiity

Groups name/description: Sordar, Kol, Ray, Mondol

District : Kushtia (Sordarpara,Mirpur,Kushtia)

Date:21/08/2024

Total Participants:22**, Male:**09**, Female:**13

Introduction

To gather information regarding the lives of ethnic groups of Kushtia, the Sordar and Kol groups of Sordarpara, Mirpur, were the subjects of this focus group discussions. ALO NGO help the E & S team in this purpose. This NGO is continuously working for the development of this Ethnic Minority group. They assert that their ancestors moved from Odisha to Kushtia during the Nile Rebellion, which took place before India was divided, and that Kushtia was a portion of the Nadiya region at the time. The Kushtia district was founded in 1984 by the six police stations that make up the Kushtia subdivision. Since the British era, they have lived here with their family.

There are a thousand people residing here in about 350 different households. They are living there by taking over the rail department's land approximately 1 to 2 acres). Some live on land they own, while others are on the Govt. Khas land (approximately 1 to 1.5 acres). They practise Hinduism (scheduled caste), and their main celebrations are Durga and Monosha puja.

The information given by them were as follows;

- The ethnic group have their own language but there is no alphabet book
- They are mainly involved in agricultural works and also manufactures and sells bamboo products. Some time they catch snakes, birds and animals for their livelihood. Present-day occupation is the collecting and selling fuel of wood and leaves from forest and wage labor, catching fish and other labor works.
- They are getting 400 Taka as daily labor for agricultural work. Most of the female person are worked in the Agricultural field.
- The majority of them are well-known for creating bamboo items like kulas and baskets, but they claim that the profit margin is quite limited for the high price of bamboo.
- They received no benefits from the Pourosova, not even widow's or elderly's allowance.
- As they are from scheduled castes, people detest having food from them.
- They are trying to create awareness among people to reduce social inequality through cultural plays and demonstrations.
- They need sufficient number of Tube-well as there are lacking of pure drinking water.
- They usually suffer from water borne diseases, fever and paralysis due to malnutrition
- There earning peak period is March, August, September and also the monsoon period. The rest of the time they spend very hard. They want job resources.
- There percentage of education is approximately –primary level -40%, SSC-7-8%, HSC- 3%, Higher education –Nill,
- They are interested in Yatra Pala folk culture but socially it is not so encouraging
- Earlier there was a social norm of marrying in their caste, but now it has been changed.
- They do not have arable land for crops or fish farming
- They have access to loan. They took loan from different NGOs like Grameen Bank, BRAC etc.
- Maximum loan amount taken by the individual is 1 lakh Taka and minimum 20000 Taka.
- Recently Kushtia DC Office distributed 40 goats to 20 poor families.

Suggestions

- Local people has to be engaged in the work of road construction
- Adequate compensation must be ensured
- Most of the time IPs do not get adequate compensation
- Work opportunities and decent wages should be ensured
- The construction camp should be away from locality.
- During construction work, sexual harassment of women may occur
- There must be justice for any injustice
- They need a trained teacher to teach their children at primary level.
- Livelihood training with remuneration (They have to run for daily livelihood so it is very hard to them to receive training without remuneration)
- Animal husbandry training
- Bamboo and Rattan Industry Training need for the kol group
- To provide sufficient financial facilities by the Govt.
- Opportunities in the field of arts and sports as there are talented artist and player.
- Adjacent GCMs need to be improved for the better economic condition of this area

ATTENDANCE LIST OF KII FOR UTILITY

Strategic Environmental and Social Assessment (SESA) for Western Economic Corridor and Regional Enhancement (WeCARE) Program

List of Participants

Location: Sardarpara, Mirpur, Kushtia

Date: 21.08.2024 Time: 4.00 pm

Sl.No.	Name	Occupation	Phone No.	Signature
1.			01767 DC4760	
2.			01936-979426	
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Strategic Environmental and Social Assessment (SESA) for Western Economic Corridor and Regional Enhancement (WeCARE) Program

List of Participants

Location: Baghdhanimon, Charmatha, Chatmohor, Pabna

Date: 07.12.2023 Time: 12:30

Name	Occupation	Mobile No.	Signature
Anando Lohar	Farmer	01731994178	
Apurba kumar singha	Student	01521-305921	
Ashik Kumar Mahato	Student	01615656253	
Mithu Murmu	Day Labor	01744640977	
Palash Kammakar	Burbur	01737160710	
Gabindu kammakar	Blacksmith	01746718692	
Mithu Murmu	Student	01776546487	Mithu
Binoti Bhusan mahato	Student	01733953647	
Prokash Kammakar	Burbur	01782932811	
Sujon Kammakar	Burbur	01798420380	
Shamol Kammakar	Burbur	01767057834	

Strategic Environmental and Social Assessment (SESA) for Western Economic Corridor and Regional Enhancement (WeCARE) Program

List of Participants

Location: Jashore, Public Health Department

Date: 22.08.2024 Time:

Name	Occupation	Ph. No.	Signature
MD Kamrul Kabir	Sub-Assis Town Engg.	01814-448352	
WZPDCL	—	—	—
G M Mahmud Prabhu	Xen	01711-298374	
Water Development Board - Magura			
Md. Sarwar Jahan Sujon	Xen	01819-846109	
			22.08.24
		01715-233378	

FGD PICTURES OF SMEC			
			
Place: Bagholbarimore, Charmatha, Chatmohor, Pabna		**Place: Sordarpara, Mirpur, Kushtia**	
KII WITH GOVERNMENT OFFICIALS			
			
Place: Satkhira, Bangladesh Agricultural Development Corporation with Mr. Protap Mondol, Computer Operator		**Place: Satkhira, Mr. Mohammad Mamun Kobir Torofder, APD (Traffic), Land Port Authority, Bhomra, Satkhira**	

KII PICTURES OF SMALL ETHNIC MINORITY COMMUNITY

Place: Rajbarimore, Bangojal, Natore Sadar, Natore with Mr. Naresh Chandra Oraon, Executive Director of ASUS (Ethnic Minorities).

Place: Rail Bazar Area, Chatmohor, Pabna, with Mr. Babu Ram Das, , Roadside Handicraft Businessman

Place: BRAC office with Mr. Abu Hanif, Sr. Program Manager-Monitoring & Evaluation & Ms. Alpona Joyontee Kujur (Deputy Manager, Capacity Building and Community Empowerment, BRAC (Integrated Development Program)

KII PICTURES OF UTILITY DEPARTMENT:


Place: Jashore, Public Health Department Engineering Office with Mr. Md. Ekramul Kobir, Sub-Assistant Eng.


Place: Jashore, Power Development Board (WZPDCL), with Mr. G M Mahmood Prodhan, Executive Engineer


Place: Magura, Water Development Board with Mr. Sarowar Jahan Sujon, Executive Engineer


Place: Magura, Palli Bidyut Samity (Magura Rural Electrification Board) with Mr. Dev Kumar Malo, Sr. General Manager

KII PICTURES OF UTILITY DEPARTMENT:


PLACE: CHUADANGA, DEPARTMENT OF AGRICULTURAL EXTENSION WITH MR. MD. KAYSAR IKBAL, ADDITIONAL DEPUTY DIRECTOR (PLANT PROTECTION)


PLACE: NORAIL, HIGHWAY POLICE STATION WITH MR. SALAUDDIN MOLLAH, SR. INSPECTOR


PLACE: SATKHIRA, PUBLIC HEALTH DEPARTMENT WITH MR. SONJOY MONDOL, SUB-ASSISTANT


PLACE: SATKHIRA,WATER DEVELOPMENT BOARD WITH MR. ZAKIR HOSSEN, SUB-DIVISIONAL ENG.

Annex 6.1 Typical Noise levels from the Construction Equipment

Equipment	Typical Noise Level (dBA) 50 ft from Source	Equipment	Typical Noise Level (dBA) 50 ft from Source
Air Compressor	81	Pile-driver (Impact)	101
Backhoe	80	Pile-driver (Sonic)	96
Ballast Equalizer	82	Pneumatic Tool	85
Ballast Tamper	83	Pump	76
Compactor	82	Rail Saw	90
Concrete Mixer	85	Rock Drill	98
Concrete Pump	82	Roller	74
Concrete Vibrator	76	Saw	76
Crane, Derrick	88	Scarifier	83
Crane, Mobile	83	Scraper	89
Dozer	85	Shovel	82
Generator	81	Spike Driver	77
Grader	85	Tie Cutter	84
Impact Wrench	85	Tie Handler	80
Jack Hammer	88	Tie Inserter	85
Loader	85	Truck	88
Paver	89	Source: FTA	