

# Environmental Assessment and Review Framework (updated)

---

Project No.: 44167-013  
May 2021

## Bangladesh: Flood and Riverbank Erosion Risk Management Investment Program

Prepared by the Bangladesh Water Development Board for the Asian Development Bank. This is an updated version of the draft originally posted in May 2014 available on <https://www.adb.org/projects/documents/flood-and-riverbank-erosion-risk-management-investment-program-4>.

This environmental assessment and review framework is a document of the borrower. The views expressed herein do not necessarily represent those of ADB's Board of Directors, Management, or staff, and may be preliminary in nature. Your attention is directed to the "terms of use" section on ADB's website.

In preparing any country program or strategy, financing any project, or by making any designation of or reference to a particular territory or geographic area in this document, the Asian Development Bank does not intend to make any judgments as to the legal or other status of any territory or area.



**Consultant's Report**

---

**Flood and Riverbank Erosion Risk Management Investment Program**

**Updated ENVIRONMENTAL ASSESSMENT AND REVIEW FRAMEWORK**

**May 2021**

---

**Prepared by**

**Institutional Strengthening and Project Management Consultant (ISPMC)**

Joint Venture of Northwest Hydraulic Consultants Ltd. and Euroconsult Mott MacDonald Ltd. in association with Deltares, Resource Planning and Management Consultants and CEGIS

**Flood and Riverbank Erosion Risk Management Investment Program (FRERMIP) - Project-2**

**Institutional Strengthening and Project Management Consultant (ISPMC)**

**Document Name: Updated Environmental Assessment and Review Framework**

**Document No: FRERMIP-T2-ES-F-EARF-01**

Issue and revision record

Revision	Date	Originator	Checker	Approver		Description
				Name	Signature	
A	26 Jan 2017	Wandert Benthem		Knut Oberhagemann		Updated Revised 1
B	16 Nov 2017	Wandert Benthem		Knut Oberhagemann		Updated Revised 2
C	13 Dec 2017	Wandert Benthem		Knut Oberhagemann		Updated Revised 3
D	22 Feb 2018	Wandert Benthem	Md Amir Faisal	Knut Oberhagemann		ADB comments of 8 and 13/2/2018 Incorporated and addressed
E	28 Apr 2020	Wim Giesen	Hiba Khan	Knut Oberhagemann		Updated and revised in accordance with latest design and project Tranches
F	26 May 2020	Wim Giesen	Hiba Khan	Knut Oberhagemann		Updated following comments from the ADB
G	19 May 2020	Wim Giesen	Hiba Khan	Knut Oberhagemann		Updated following comments from the ADB on 12 <sup>th</sup> May
H	4 June 2020	Hiba Khan	Wim Giesen	Knut Oberhagemann		Updated following comments from the ADB on 2 <sup>nd</sup> June
H	April/May 2021	Jesper Mathiesen	Wim Giesen	Knut Oberhagemann		Update to reflect reduction in scope of works and ADB's comments

<sup>1</sup> contributing Team Members comprise

Md. Amir Faisal  
 Dr Md. Shahjahan Howlader  
 Wandert Benthem  
 Wim Giesen

National Environmental Specialist  
 National Fisheries Specialist  
 International Environmental Specialist  
 (Replaces Wandert Benthem)

**DISCLAIMER**

This document issued for the party which commissioned it and for specific purpose connected with the above-captioned project only. It should not be relied upon by any party or used for any other purpose.

We accept no responsibility for the consequence of this document being relied upon by any other party, or being used for any other purpose, or containing any error or omission which is due to an error or omission in data supplied to us by other parties.

This document contains confidential information and proprietary intellectual property. It should not be shown to other parties without consent from us and from the party which commissioned it.

## Flood and Riverbank Erosion Risk Management Investment Program

Institutional Strengthening and Project Management Consultant (ISPMC)

ENVIRONMENTAL SAFEGUARDS AND CLIMATE CHANGE

Main Report

Key Data

<b>Name of Project:</b>	<b>Flood and Riverbank Erosion Risk Management Investment Program (FRERMIP) - Project-2</b>																																	
<b>Borrower, Executing Agency and Implementing Agency:</b>	Government of Bangladesh (GoB) Bangladesh Water Development Board (BWDB) Department of Disaster Management (DDM)																																	
<b>Financing:</b>	Asian Development Bank: US\$ 255 million for the MFF. ADB loan for Project 2: up to US\$ 160 million (concessional loan). Government of The Netherlands: grant up to a maximum of US\$ 18 million for Project 2. Government of Bangladesh: US\$ 40 million for Project 2																																	
<b>Consultant:</b>	Joint Venture of Northwest Hydraulic Consultants Ltd. (Canada) and Euroconsult Mott MacDonald Ltd. (UK) in association with Deltares (Netherlands), Resource Planning and Management Consultants (Bangladesh) and CEGIS (Bangladesh).																																	
<b>Contracting Authority:</b>	PD, FREMIP, BWDB, Dhaka																																	
<b>Start/ End Dates:</b>	ADB MFF: 27 June 2014 to 26 June 2024 <ul style="list-style-type: none"> <li>▪ Tranche 1 project (Project 1): August 2014 to 31 March 2021</li> <li>▪ Tranche 2 project (Project 2): July 2021 to 26 June 2024</li> </ul>																																	
<b>Beneficiaries:</b>	Local stakeholders directly and indirectly benefitting from river flood protection works and land reclamation and development																																	
<b>Subproject Sites/ Location/ Areas</b>	Works are along the Jamuna-Padma river corridor, from Bangabandhu (Jamuna) bridge to confluence with Meghna river at Chandpur. The Project 2 area comprises the three priority subprojects, JRB-1, JLB-2 and PLB-1 which extend over (part of) the following districts: Sirajganj, Tangail, Pabna and Manikganj.																																	
	<table border="1"> <thead> <tr> <th></th> <th>km<sup>2</sup></th> <th>ha</th> </tr> </thead> <tbody> <tr> <td>Total Area of all SPs</td> <td>9,292.3</td> <td>929,230</td> </tr> <tr> <td>Priority SPs (JRB1, JLB2, PLB1): Total Area</td> <td>2,473.9</td> <td>247,390</td> </tr> <tr> <td>SPs: Agricultural Benefit Area</td> <td>1,220.0</td> <td>122,000</td> </tr> <tr> <td>SPs: Population (priority SPs)</td> <td>10.6 million (2.9 million)</td> <td></td> </tr> <tr> <td>SPs: Population Density (priority SPs)</td> <td>1,137 km<sup>2</sup> (1160 km<sup>2</sup>)</td> <td></td> </tr> <tr> <td>SPs: No. of Households</td> <td></td> <td>2.03 million</td> </tr> <tr> <td>SPs: Average HH Size</td> <td></td> <td>5.2</td> </tr> <tr> <td>Master Plan Total Area</td> <td>15,950</td> <td>1,595,000</td> </tr> <tr> <td>Master Plan Agricultural Benefit Area (flood risk mitigated)</td> <td>5,000</td> <td>500,000</td> </tr> <tr> <td>Land Reclamation Area in River Corridor</td> <td>660</td> <td>66,000</td> </tr> </tbody> </table> <p>SP = Subproject. JRB = Jamuna Right Bank, JLB = Jamuna Left Bank, PLB = Padma Left Bank, HH = Households</p>		km <sup>2</sup>	ha	Total Area of all SPs	9,292.3	929,230	Priority SPs (JRB1, JLB2, PLB1): Total Area	2,473.9	247,390	SPs: Agricultural Benefit Area	1,220.0	122,000	SPs: Population (priority SPs)	10.6 million (2.9 million)		SPs: Population Density (priority SPs)	1,137 km <sup>2</sup> (1160 km <sup>2</sup> )		SPs: No. of Households		2.03 million	SPs: Average HH Size		5.2	Master Plan Total Area	15,950	1,595,000	Master Plan Agricultural Benefit Area (flood risk mitigated)	5,000	500,000	Land Reclamation Area in River Corridor	660	66,000
	km <sup>2</sup>	ha																																
Total Area of all SPs	9,292.3	929,230																																
Priority SPs (JRB1, JLB2, PLB1): Total Area	2,473.9	247,390																																
SPs: Agricultural Benefit Area	1,220.0	122,000																																
SPs: Population (priority SPs)	10.6 million (2.9 million)																																	
SPs: Population Density (priority SPs)	1,137 km <sup>2</sup> (1160 km <sup>2</sup> )																																	
SPs: No. of Households		2.03 million																																
SPs: Average HH Size		5.2																																
Master Plan Total Area	15,950	1,595,000																																
Master Plan Agricultural Benefit Area (flood risk mitigated)	5,000	500,000																																
Land Reclamation Area in River Corridor	660	66,000																																

## CONTENTS

1. INTRODUCTION.....	9
2. ASSESSMENT OF LEGAL FRAMEWORK AND INSTITUTIONAL CAPACITY .....	11
3. ANTICIPATED ENVIRONMENTAL IMPACTS.....	14
4. ENVIRONMENTAL ASSESSMENT FOR SUBPROJECTS AND/OR COMPONENTS.....	17
5. CONSULTATION, INFORMATION DISCLOSURE, AND GRIEVANCE REDRESS MECHANISM.....	19
6. INSTITUTIONAL ARRANGEMENT AND RESPONSIBILITIES .....	20
7. MONITORING AND REPORTING.....	22

## APPENDICES

APPENDIX A: OUTLINE TERMS OF REFERENCE FOR ENVIRONMENTAL SPECIALISTS

APPENDIX B: EXAMPLE RAPID ENVIRONMENTAL ASSESSMENT (REA) CHECKLIST

APPENDIX C: ADB COMMENTS & ISPMC RESPONSE MATRICES

## LIST OF TABLES

Table 3-1. Probable impacts associated with the proposed interventions, and possible mitigation ...	16
Table 6-1 Staffing for PMO and SMOs.....	21

## LIST OF FIGURES

Figure 1-1 Location of Structural Measures under Tranche 1 project (Project 1) and Tranche 2 project (Project 2).....	x
Figure 5-1: Grievance Redress Mechanism.....	22
Figure 6-1 PMO/SMO responsibility framework for Project2 environmental management .....	23

**ABBREVIATIONS**

ADB	Asian Development Bank
BDT	Bangladesh Taka
BWDB	Bangladesh Water Development Board
CbFRM	Community-based Flood Risk Management
CEGIS	Center for Environmental and Geographic Information Services
DDM	Department of Disaster Management
DPP	Development Project Proforma
DoE	Department of Environment
EA	Environmental Assessment
EIA	Environmental Impact Assessment
EMP	Environmental Management/Monitoring Plan
FRERMIP	Flood and Riverbank Erosion Risk Management Investment Project (ADB)
GoB	Government of Bangladesh
IEE/EIA	Initial Environmental Examination / Environmental Impact Assessment
ISPMC	Institutional Strengthening and Project Management Consultant
JLB	Jamuna Left Bank
JRB	Jamuna Right Bank
JMREMP	Jamuna-Meghna River Erosion Mitigation Project, 2002 to 2011 (World Bank)
LGED	Local Government Engineering Department
MFF	Multi-tranche Financing Facility
MIS	Management Information System
NGO	Non-Governmental Organization
NHC	Northwest Hydraulic Consultants Ltd.
PMO	Project Management Organization (BWDB)
PMU	Project Management Unit (DDM)
PPTA	Program Preparatory Technical Assistance
RPMC	Resource Planning and Management Consultants (Pvt) Ltd.
ToR	Terms of Reference
USD	United States Dollar
WARPO	Water Resources Planning Organization

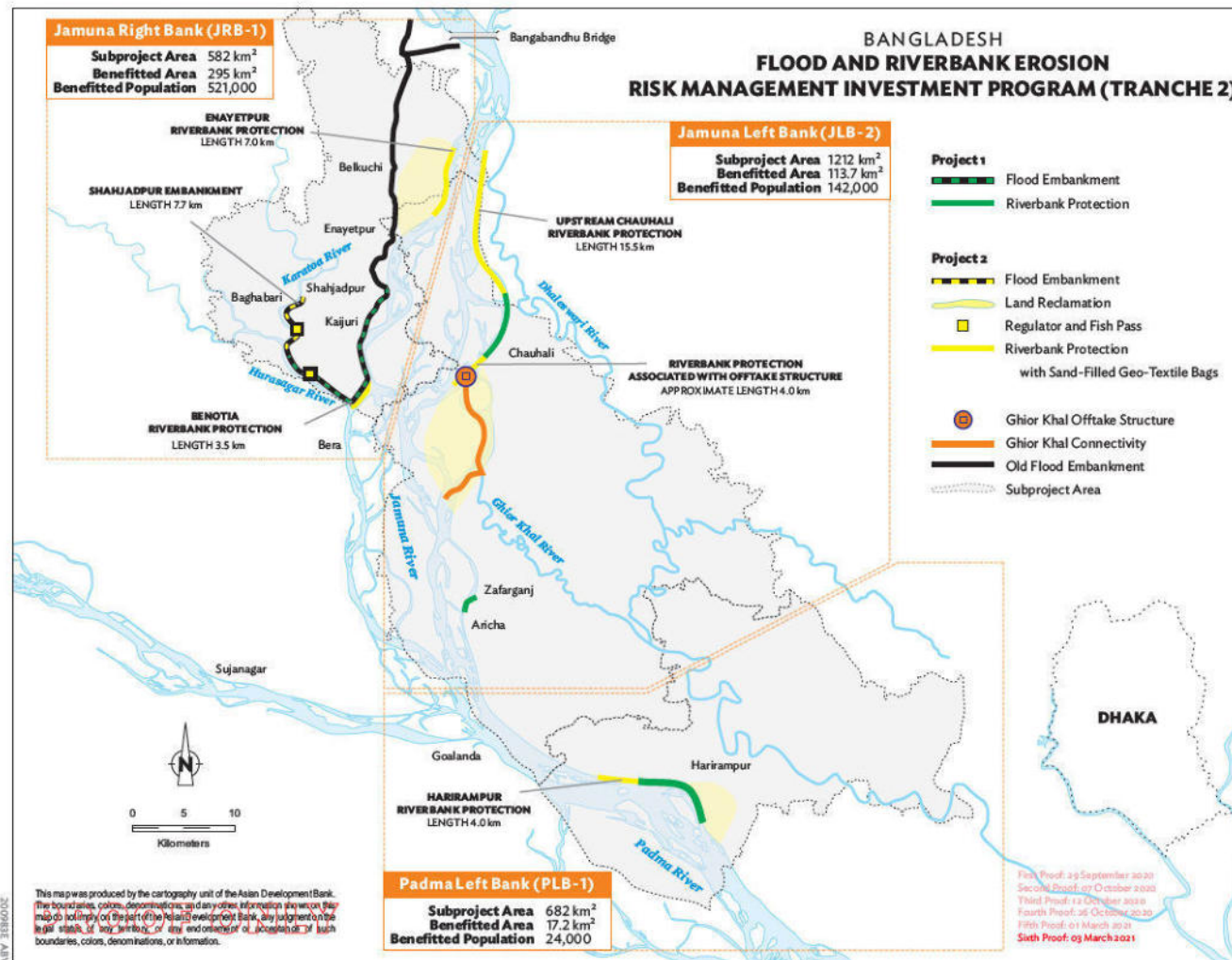


Figure 1-1 Location of Structural Measures under Tranche 1 project (Project 1) and Tranche 2 project (Project 2)

## 1. INTRODUCTION

1. The Flood and Riverbank Erosion Risk Management Investment Program (FRERMIP) is financed by the Asian Development Bank (ADB), Government of The Netherlands (GoN), and Government of Bangladesh (GoB). The Bangladesh Water Development Board (BWDB) is the executing agency. The investment program is to be financed through a multi-tranche financing facility (MFF). The MFF provides loans amount of a maximum of \$255 million; further financing is provided by the GoB and GoN. The investment program total cost is approximately \$ 480 million.
2. The investment program has the following individual tranche outputs contributing to the facility's outputs: (i) flood and riverbank erosion risk mitigation functioning at priority river reaches, (ii) a strengthened institutional system for FRERM, and (iii) an operational program management system. The investment program's executing agency is the Bangladesh Water Development Board (BWDB) under the Ministry of Water Resources. The Department of Disaster Management (DDM) under the Ministry of Disaster Management and Relief is the implementing agency for community-based flood risk management activities.
3. The investment program was designed to be implemented over 9 years and financed in three tranches. Project 1 was approved for a loan of \$65.0 million and a grant of \$15.3 million from the Government of the Netherlands on 3 July 2014, signed on 14 August 2014, and became effective on 17 September 2014. Due to implementation delays experienced under Project 1 and preparation of the subsequent tranches, which have been exacerbated by COVID-19 induced lockdowns, the government proposed to (i) combine the remaining tranches into a single and final tranche, and (ii) to extend the MFF availability period until 26 June 2024. Project 2 will apply the same technologies and methodologies as developed during Project 1, except for minor improvements that consider the actual site conditions, such as latest erosion and river morphology, and lessons learned from Project 1.
4. This Environmental Assessment and Review Framework (EARF) is an update of the facility EARF and has been prepared to guide, screen, categorize, prepare environmental assessments including environmental management plans, and implement safeguard plans in accordance with the laws of GoB, and ADB's Safeguard Policy Statement (2009).
5. **Project Description.** The works under Project 2 are a continuation of those under Project 1. Also, Project 2 will continue the actions of the road map of the Framework Financing Agreement (FFA) of the MFF by integrating the long-term stabilization approach beyond emergency response to critical erosion and introducing suitable measures for more systematic river stabilization to result in a more stable river corridor. This includes broadening the knowledge base, enlarging the suite of river training technologies with nature-based solutions, and integrating river stabilization with floodplain management.
6. Specifically, Project 2 consists of: (i) 30 km of riverbank protection with innovative technologies, combined with nature-based solutions for channel closure; (ii) 7.9 km of climate-resilient flood embankment; (iii) a river channel closure and a distributary offtake; and (iv) 2 regulators with fish pass to improve drainage. Other activities include community-based flood risk management and livelihood supporting training, institutional strengthening, and knowledge development.
7. Table 1 outlines the civil works proposed under Project 2 and salient features at each subproject area, while Figure 1-1 depict the location of the subprojects and sites.

**Table 1: Scope of Works of Project 2**

Subproject/Work Item	Scope of Work	Remarks
<b>JRB-1 - subproject</b>		
Shahjadpur flood embankment	7.9 km realignment along the Hurasagar and Korotoya Rivers	This is an extension of the flood embankment at Kajuri built under Project 1 and will close the remaining reach to achieve full benefits of this subproject.  LGED may build a road on the top of the embankment and held informal meetings



		with the BWDB field office on this.
Regulator with fish passes	2 nos. to the Hurashagar River.	Additional to the DMF of the MFF.
Riverbank protection	3.5 km new works at Benotia in extension of the Kojjuri revetment. 7 km new works at Enayetpur	1 km of Project 1 work was deferred to Project 2 due to char formation in this area. However, the bankline channel has returned and BWDB provided emergency protection that now needs to be upgraded to 3.5 km of full protection.  Out of the 11 km initially planned for Project 2, only 7 km will be required to stabilize the river upstream of Enayetpur.
<b>JLB-2 - subproject</b>		
River training	15.5 km bifurcation stabilization upstream of Chauhali	This work is an extension to the 7 km Chauhali revetment built under Project 1. The works will stabilize the approach channel to the bifurcation and prevent severe bank erosion and merger of Jamuna and Dhaleswari rivers. This is an extension of the 5 km initially planned in the FAM and was adjusted due to unfavorable morphological development.
Land recovery	Updating model study for Solimabad channel closure with recent morphology  Intelligent dredging of the Jamuna to overload the Solimabad channel with sediment and reclaim the Solimabad char	Works downstream of Chauhali as originally planned to recover lost floodplain from the river. This work is part of the river stabilization plan.  Approximately 6,000 ha of lost floodplain to be recovered. Works will free about 15 km of bankline along the left bank channels from riverbank erosion.  The approach planned in the FAM had to be adjusted to account for changed river situation and incorporate "building with nature" approach.
Offtake	Offtake stabilization for the Ghior Khal	Stabilizing of the offtake by providing underwater protection to shape the offtake in a hydraulically favorable way. The offtake is expected to be provided with a flood management structure (flood barrier) during the construction of a flood embankment.
<b>PLB-1 - subproject</b>		
Riverbank protection	4 km upstream extension work	Per original FAM approach, 4 km extension upstream.
<b>Adaptation and emergency works</b>		
Adaptation	40 km	Extended from the original approach of the FAM to incorporate previously built sites, as well as expected works at Projects 1 and 2 sites.
Emergency	6 km	To cover for unforeseen developments.

BWDB = Bangladesh Water Development Board, DMF = design and monitoring framework, FAM = facility administration manual, JLB = Jamuna Left Bank, JRB = Jamuna Right Bank, km = kilometer, MFF = multitranchise financing facility, PLB = Padma Left Bank.

## 2. ASSESSMENT OF LEGAL FRAMEWORK AND INSTITUTIONAL CAPACITY

8. Assessment of Legal Framework and Institutional Capacity: The Bangladesh National Environmental Policy of 1992 sets out the basic framework for environmental action, together with a set of broad sectoral action guidelines. The Environment Policy provides the broader framework of sustainable development in the country. It also states that all major undertakings, which will have a bearing on the environment, (including setting up of an industrial establishment) must undertake an Initial Environmental Examination (IEE) or Environmental Impact Assessment (EIA) before they initiate the project. The Environment Policy delineates the Department of Environment (DOE) as the approving agency for all such IEEs and EIAs to be undertaken.
9. Building on the National Environmental Policy (1992), a number of acts, rules, and plans expands on and provides a basic framework for environmental action and the set of broad sectoral action guidelines for sustainable development:
  - I) The National Environmental Management Plan (NEMAP, 1995) addresses issues and management requirements for the period 1995 to 2005 and set out the framework within which the recommendations of the National Conservation Strategy, 1992 are to be implemented.
  - II) The Bangladesh Climate Change Strategy and Action Plan (BCCSAP, 2009) is built on six pillars of which five are relevant: (a) food security, (b) comprehensive disaster management, (c) sustainable infrastructure, (d) research and knowledge management, especially with respect to climate changes, (e) capacity building of government ministries and agencies.
  - III) The Environmental Conservation Act (1995) and Amendments with its 2000 and 2002 amendments is currently the main legislation for environment protection in Bangladesh. The Act addresses environment conservation, environmental standards development and environment pollution control and abatement, and requires project proponents to obtain Environmental Clearance from the Director General, DOE prior to construction.
  - IV) The Environmental Court Act (2010) provides for the establishment of an environment courts and amends the prevailing act to accelerate punishment of environment-related crime.
  - V) The Environmental Conservation Rules defined categories of industries and projects and the types of environmental assessments each requires.
10. The Environmental Clearance Procedure for Red Category Projects shows the application procedure for obtaining site / environmental clearance. To obtain an environmental clearance certificate for category Red projects (the category of the types of projects to be supported under the investment program), the following documents and materials must be submitted with the application to DOE: Project feasibility report, where applicable, Environmental impact assessment report, Environmental management plan, No Objection Certificate from relevant local authority (where applicable), other necessary information, where applicable.
11. As a consequence of the Flood Action Plan, which occurred in response to the extreme 1987 and 1988 floods, the water sector orientation shifted to participatory water management, specifically focusing on the large number of flood control, drainage, and irrigation (FCDI) schemes. The key documents are:
  - I) The National Water Policy of 1999 marks a fundamental shift from the technical/ hydrological approach to water management of the 1980s and early 1990s towards integrating socio-economic factors and environmental aspects of water management. It was passed to ensure efficient and equitable management of water resources, proper harnessing and development of surface and ground water, availability of water to all concerned and institutional capacity building for water resource management. It has also addressed issues like river basin management, water rights and allocation, public and

private investment, water supply and sanitation, and water needs for agriculture, industry, fisheries, wildlife, navigation, recreation, environment, preservation of wetlands, etc. The Policy states the need to counter land loss through erosion: "Undertake survey and investigation of the problem of riverbank erosion and develop and implement master plans for river training and erosion control works for preservation of scarce land and prevention of landlessness and pauperization. Plan and implement schemes for reclamation of land from the sea and rivers."

- II) The National Water Management Plan (NWMP, 2001) defines the Main Rivers as separate planning entity and allocates nearly 25% of the overall funds to the main rivers. The NWMP is strongly focused on implementation and provides a number of detailed investment programs. With respect to river training and "flood control", substantial new developments have taken place since preparation of the plan some 15 years ago.
  - III) The Water Resources Planning Organization (WARPO) Guidelines for Environmental Assessment of Water Management Projects, 2003 covers the environmental assessment of water resources projects commonly covering one full hydrological cycle.
  - IV) The National Policy for Arsenic Mitigation (2004) provides a guideline for mitigating the effect of arsenic on people and environment in a realistic and sustainable way. It supplements the National Water Policy (1998) and the National Policy for Safe Water Supply and Sanitation (1998) in fulfilling national goals related to poverty alleviation, public health, and food security.
  - V) The Bangladesh Water Act, 2013 vests the ownership of water resources in the Government of Bangladesh and gives effect to the National Water Policy (NWP) for integrated management, development, utilization, and protection of water resources.
12. Five key policies, plans, and acts cover a broad range of issues related to wildlife, fisheries, forestry and biodiversity:
- I) The Bangladesh Wildlife Preservation (Amendment) Act 1974 provides for power of government to declare areas for preservation and defines the different types of areas and the degree of protection.
  - II) The Protection and Conservation of Fish Act (1950) provides protection measures to fish through a number of prohibits and restrictions.
  - III) The East-Bengal Protection and Fish Conservation Act (1950), as amended by the Protection and Conservation of Fish (Amendment) Ordinance (1982) and the Protection and Conservation of Fish (Amendment) Act (1995), provides for the protection and conservation of fish in inland waters of Bangladesh.
  - IV) The National Forestry Policy (1994) is a revision of the National Forest Policy (1977) in light of the National Forestry Master Plan. The major targets of the Policy are to conserve existing forest areas; bring approximately 20 per cent of the country's land area under the afforestation program; and increase reserve forest land by 10 per cent by the year 2015, through coordinated efforts of Government and non-governmental agencies, and active participation of the people.
  - V) The Biodiversity Conservation Strategy and Action Plan 2004 (BCSAP) is a wide ranging and multi-faceted plan, which is also closely related to the statements set out in the National Environment Policy.
13. The goal of the National Agriculture Policy (1999) and the New Agricultural Extension Policy 1996 is to facilitate and accelerate technological transformation with a view to achieving self-sufficiency in food production and improving the nutritional status of the population. The Land-Use Policy (2001) aims to ensure land use in harmony with the natural environment.
14. Of the international environmental agreements to which Bangladesh is a party, those potentially relevant to the Project are:
- I) Convention on Wetlands of International Importance (also known as the Ramsar Convention, 1971; Bangladesh 1992) - promotes conservation and wise use of all wetlands.

- II) Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES Convention, 1975, Bangladesh 1981) aims to ensure that international trade in specimens of wild animals and plants does not threaten their survival,
- III) Convention on Biological Diversity (1993, Bangladesh 1994) - addresses three objectives (a) sustainable use of biological diversity components, (b) fair and equitable sharing of genetic resources utilization benefits.
- IV) Convention on the Conservation of Migratory Species of Wild Animals (also known as CMS or Bonn Convention) (1983; Bangladesh 2005) - addresses conservation of terrestrial, marine, and avian migratory species throughout their ranges, including conservation of migratory species habitats.
- V) Convention on the Conservation of Migratory Species of Wild Animals (also known as CMS or Bonn Convention) (1983; Bangladesh 2005) - addresses conservation of terrestrial, marine, and avian migratory species throughout their ranges.

### ADB's Environmental Safeguard Requirements:

15. ADB has classified projects under four categories depending on the most environmentally sensitive component, including direct, indirect, cumulative and induced impacts in the project's area of influence. The categories are:
- i. Category A - where projects are likely to have significant adverse environmental impacts that are irreversible, diverse, or unprecedented. The impacts may affect an area larger than the sites or facilities subject to physical works. Such projects require an EIA;
  - ii. Category B - where potential adverse impacts are less than those of Category A. Impacts are generally site specific, few if any are irreversible, and in most cases mitigation measures can be designed more readily than for Category A projects. Such projects require an IEE;
  - iii. Category C - incurs minimal or no adverse environmental impact and thus does not require environmental assessment, although environmental implications need to be reviewed. Environmental Due Diligence will be adequate for such projects and;
  - iv. Category FI - refers to projects that involve investment of ADB funds through a financial intermediary and is not applicable to the present Project.
16. ADB's policy on Environment Safeguards (2012)<sup>1</sup> states that "A project's category is determined by the category of its most environmentally sensitive component, including direct, indirect, cumulative, and induced impacts in the project's area of influence" and the policy requires that "environmental impact assessments evaluate transboundary and cumulative impacts of ADB projects or programs".
17. **Institutional Capacity:** The BWDB is an organization with a dominant technical focus. Non-engineering work including environmental management, has received less priority. However, through its engagement in several externally funded projects, the BWDB has demonstrated the will and ability to comply with requirements related to implementation of environmental assessments and management plans. While the BWDB employs some environmental staff in the planning wing, it does not have a dedicated environmental monitoring cell. Environmental management of projects has been monitored through consultants and staff dedicated to project implementation.
18. Due to limited in-house capacity the nominated environmental compliance officer in the Project Management Office (PMO) will be supported by international and national environmental management specialists from the institutional strengthening and project management consultants (ISPMC) team to monitor overall compliance with the environmental management plan (EMP). Outline terms of reference of the environmental specialists are in Appendix A. The specialists in the consulting team have also prepared the strategic environmental assessment during the first tranche/ project, and environmental assessments

---

<sup>1</sup> ADB (2012) Environment safeguards. A good practice sourcebook, draft working document December 2012.

including environmental management plans for the subsequent projects. Project staff, as well as contractors will be trained on implementation of the EMP. Compliance with the EMP will be part of the work contracts as separate bill in the bill of quantities following the ADB funded predecessor project, Jamuna- Meghna River Erosion Mitigation Project (JMREMP) practice. A follow up study conducted in 2011 concluded that the protected banks supported more fish species than unprotected banks, and overall the use of geotextile bags had a positive impact on water resources, fisheries, algae community and the socio-economy. Environmental monitoring and compliance with the EMP will be regularly reported as part of the quarterly reporting. The environmental compliance officer and the specialist consultant will maintain liaison with the DOE and the Department of Fisheries (DOF) and other relevant offices.

### 3. ANTICIPATED ENVIRONMENTAL IMPACTS

19. Project Activities – FRERMIP will expand the riverbank protection methods developed in the earlier JMREMP to other river reaches. Under FRERMIP, siting of riverbank protection works is based on strategic planning, guided by predictions of long-term morphological trends. This is an improvement on the *ad hoc* and piecemeal protection of erosion-damaged sites that is currently practiced. In addition, FRERMIP will construct or rehabilitate flood embankments and associated gated structures, leaving major tributaries and distributaries open, to mitigate impacts during greater flood events while still allowing lower levels of beneficial flooding to occur.
20. The program area encompasses the Jamuna River reach starting below the Jamuna Bridge and the proposed Ganges Barrage site, down to Chandpur on the Lower Meghna (the confluence of the Padma and Upper Meghna rivers). Downstream of the Jamuna Bridge and the Barrage sites, the Jamuna and Ganges river courses are somewhat independent of upstream river developments. The program area covers 9,300 km<sup>2</sup> with a total population of 10.5 million in 40 upazilas and 431 unions, with an average population density of nearly 1,600 persons per km<sup>2</sup> of floodplain. The three high-priority subproject along lower Jamuna and upper Padma (named JRB-1, JLB-2, and PLB-1) have a total area of around 2,500 km<sup>2</sup> with a population of 2.9 million in 12 upazilas and 107 unions. The average population density is around 1,160 persons/km<sup>2</sup>.
21. Typical physical works comprise the following:
  - i) Riverbank Protection: Construction of riverbank protection typically involves the following activities. Labour sheds are constructed and stocked with construction materials (sand, cement, wood, shuttering materials etc.). Sanitation facilities for work crews are constructed, as well as installation of tubewells for safe drinking and cooking. A site is reserved for dumping solid waste generated from labour sheds, office and concrete manufacturing field, etc., at a safe distance away from residential areas. Riverbank slopes are developed with earth. Geo-textile bags are placed in a systematic manner onto the underwater slope, while the slope above water is protected by hard wave protection placed on the prepared slope covered with a geotextile filter.
  - ii) Embankments: Embankment construction/rehabilitation typically involves the following activities. Labour sheds are constructed and stocked. Sanitation facilities for work crews are constructed. The same sanitary arrangements are provided as above. Stripping topsoil for agriculture use up to a depth of 15 cm from the leased land and replacing the same to rehabilitate the land after the work. Under supervision of the engineer in charge, the embankment alignment is marked out per engineering designs. As required by resettlement plans, resettlement activities are undertaken in the embankment footprint such that inhabitants are relocated and structures emptied out, such that they are no longer in use and can be dismantled and removed. Surface vegetation is cleared. Sediment is excavated from the riverbed by dredgers and directly dumped at the construction site and then compacted, sloped, and shaped in layers. When the design section has been reached, if included in the design the embankment slope is turfed, watered, and fertilized to establish a layer of biological protection from runoff surface erosion.

- III) Regulators with fish passes: Pre-construction activities include labour shed construction and stocking with construction supplies; assembly of construction equipment and tools; construction of sanitation facilities (as above); and construction site preparation (implementation of required resettlement actions and removal of buildings and surface vegetation). To allow the construction site to be dewatered while maintaining the natural flow of water around it, ring bunds and diversion channels are constructed. Foundation construction involves excavation and concrete and reinforced concrete works. Construction of above-ground works involves cutting, bending and binding of rods. Approach roads are constructed; gates and hoisting devices fitted; and gates painted. Per design, the sluice intake and outfall are constructed; and upstream and downstream protection and pitching works provided.
- IV) Afforestation and/or vegetation: Afforestation and/or vegetation may be conducted on landside slopes and toe of the flood embankments, as part of livelihood support for local communities including project affected persons. Species for afforestation and/or vegetation will be selected based on preference of local communities, in consultation with BWDB and other relevant government agencies, to ensure that the species are suitable for livelihood support and for protecting embankment from surface erosion by high rainfall. Afforestation activities include establishing a temporary nursery to ensure seedling availability and seedling plantation at recommended intervals.

22. Road construction was included in the original DMF of the MFF, but was not carried out under Project 1 and has been removed from Project 2 for the following reasons:

- (i) Insufficient funds under Project 1 as the focus was on riverbank protection works and flood embankments, and
- (ii) The BWDB is not mandated to build roads and the Roads and Highways Division (RHD) as well as the Local Government Engineering Department (LGED) have indicated strong interest to build roads following the construction of flood embankments at a later stage beyond the timeline of this MFF. Therefore, the potential impacts are outside of Project 2 (and this MFF).

23. **Positive Project Impacts** – Construction of the works will require a large labour force (hundreds of workers) for prolonged periods of time. Labourers will be contracted mostly from local communities. This will increase income and thereby boost the local economy. After its completion, the program is expected to have multiple positive and beneficial effects on the people and economy of the area. Riverbank protection will discontinue the recurring bank erosion and loss of homesteads and cultivated land. The improved embankment will significantly reduce flooding events and economic losses. Roads constructed on embankments will facilitate local mobility as well as long-distance transportation. The permanent delineation of river and floodplain will provide stability and allow the riparian population to plan. Increased safety against riverbank erosion and flooding as well as improved mobility and connectivity will bring in further development and investment to the protected areas that is currently not possible because of the exposure of these areas to natural hazards coupled with the vulnerability due to relative isolation and poor infrastructure.

24. **Negative Project Impacts** – The following table provides expected negative impacts associated with the works. This table is only meant as a guide, and environmental assessments will be conducted for each project or subproject detailing impacts specific to subsequent projects.

**Table 3-1. Probable impacts associated with the proposed interventions, and possible mitigation**

Activity	Potential impact	Mitigation measure
Movement of construction vehicles and operation of construction equipment and other activities	Noise and air quality	Cover construction materials with e.g. polythene during transportation and storage. Sprinkle water on open work surfaces to control dust generation as and where required. Use and maintain vehicles equipped with adequate,

Activity	Potential impact	Mitigation measure
		<p>functioning noise abatement.</p> <p>Locate noise-generating activities away from noise-sensitive areas (hospitals; settlements)</p> <p>Discuss with local population before starting any construction activity and address any complaints promptly.</p> <p>Burning of waste materials for disposal, particularly oil and petroleum wastes, rubber, plastics and similar materials will not be permitted.</p> <p>Concrete batching and mixing areas, asphalt (hot mix) plants, or other manufacturing or production facilities shall be sited at least 500 m from the nearest habitation. Emission outlets shall be fitted with pollution control devices.</p>
<p>Rehabilitation/construction of embankments and placing of geo-textile bags</p>	<p>Dredging of rivers to obtain sand for embankment construction will result in temporary reduction in river water quality due to sediment mobilization</p>	<p>Dredging operations to be done during dry season in approved areas without destroying used charland.</p>
	<p>Impacts on local fish habitat, biodiversity, and production, due to temporary damage to seasonal marginal vegetation turbidity; and disturbance</p>	<p>Selection of sites for dredging to avoid riverbeds with rocks, stones and boulders which serve as habitat for endemic species. All sites should be screened to ensure that there is no critical or natural habitat. If the area is a critical habitat dredging should not be undertaken at the site. If it is a natural habitat, the environmental assessment shall take into consideration the requirements of ADB's safeguard policy statement 2009 and government policies, and any activities proposed shall be in line with these policy requirements.</p> <p>Dredging activities not to be undertaken during spawning of different fish species.</p> <p>Dredging operations to be done during dry season in approved areas without destroying used char land.</p>
	<p>Impact on drainage and water logging</p>	<p>Embankment design to incorporate sufficient and appropriate drainage measures. (installing sluice gates or regulators)</p> <p>Sluices and outlets to drain water shall be operated by or involving local communities to ensure community requirements are met.</p>
	<p>Impact on flood plain fisheries</p>	<p>The connectivity of beels / lowlands with rivers for growth, and propagation of fish species should be re-established when rehabilitating existing embankments through provision of regulators.</p>
	<p>Impact on wetlands</p>	<p>Preserving the biodiversity of some wetlands after construction of new embankments through community driven wetland biodiversity activities and</p>

Activity	Potential impact	Mitigation measure
		appropriate operation of gated structures (sluice gates and regulators)
	Socio-economic impacts - negative impacts due to loss of land and livelihoods along embankment trace Positive impacts are reduction in damage to infrastructure, crops and livelihoods due to flooding.	Impacts related to loss of livelihoods and land covered under the resettlement framework and resettlement plans to be prepared under each tranche/ project.
Construction activities	Impact on river water quality	Washing of vehicles shall not be permitted in streams but only in specially designated and equipped areas. Use of temporary silt fences during construction activities to minimize sediment transport into streams/rivers/waterbodies.
Establishment of worker camps	Potential conflicts with local population	Discuss with local population prior to identifying sites for construction camps
	Impact on land and water resources due to improper waste disposal	Adequate sanitation facilities and solid waste management provided on site. Provision of separate male and female toilets. Sites restored after completion of work.
	Impact on health and safety of workers	Ensure worker camps are established following government norms. (i) an appropriate number of tubewells will be installed to supply water for construction and safe drinking water to laborers and the construction camps, (ii) latrines with septic tanks will be provided. Tubewells will be tested for arsenic and marked accordingly (green/red for safe/unsafe) and (iii) regular health and safety programs to be held for workers

#### 4. ENVIRONMENTAL ASSESSMENT FOR SUBPROJECTS AND/OR COMPONENTS

25. The environmental specialists of the ISPMC team will support the PMO of the BWDB to screen the subprojects to determine category of project based on ADB's SPS 2009 (or latest version, if available) and Government of Bangladesh's requirements. Following initial screening the BWDB will obtain ADB's endorsement of the proposed category.
26. In addition to the safeguard documents as required under the ADB SPS 2009, a Preliminary Strategic Environmental and Social Assessment for River Stabilization and Development: Jamuna-Padma and Dependent Areas' (referred to as SESA)<sup>2</sup> was conducted. The aim of the SESA is to assess the impacts of the proposed river stabilization plan and investment program as a whole, taking into consideration other factors and development plans that are

<sup>2</sup> Available on the FRERMIP website: [http://pipeline.nhcweb.com/website/index.php/mm/report\\_download/RSP\\_A.pdf](http://pipeline.nhcweb.com/website/index.php/mm/report_download/RSP_A.pdf)



known and likely to be implemented in the future. Also, the SESA informs stakeholders on potential environmental and social issues and generates discussion and dialogue. The SESA focuses on key issues, including changes in river morphology, access to agriculture, impacts on livelihoods, access to water, habitat changes (including impacts on wetlands), fisheries, land use, and community resilience to disasters. Key issues were identified through scoping exercises with key stakeholders and FDG meetings. Cumulative impacts of riverbank protection structures on downstream riverbank alignment were also examined. Comments on the SESA were provided throughout its development by BWDB and especially The Netherlands Commission for Environmental Assessment (NCEA), which culminated in the final SESA in April 2020, subsequently approved by BWDB as part of the River Stabilization Plan on 24 June 2020.

27. Screening and Categorization of Subprojects – The subprojects will be initially screened to understand the nature and significance of anticipated environmental impacts by using the ADB Rapid Environmental Assessment (REA) checklist (Appendix B). Following the initial screening, the PMO will propose and ADB will review the environmental categorization. Each tranche of the MFF, covering one or multiple subprojects depending on the project design, will be categorized by ADB to determine the environmental assessment requirement. The categorization will follow the classification approach of ADB SPS, 2009 stated above in paragraphs 15 and 16.
28. Preparation of Environmental Assessments – The terms of reference (TOR) for the environmental assessments, meeting GOB's and ADB's requirements, will be developed by the environmental specialists of the ISPMC. Once the TOR's for the necessary environmental assessments are endorsed by ADB and the BWDB, the environmental specialists will prepare the draft environmental assessment reports including EMPs and submit to BWDB. BWDB will submit the draft report to ADB for review and approval in the course of ADB's approval procedures for future tranches. BWDB should also ensure that necessary approvals are obtained from the DOE before the submission of the Development Project Proposal/Proforma to the Planning Commission for approval of individual tranches. The environmental assessment (either EIA or IEE, depending on result of screening and categorization) clearances from ADB and DOE will be obtained before commencement of any physical works. An outline TOR of the environment specialists is in Appendix A.
29. The environmental assessment will consider all potential impacts and risks of the project on physical, biological, socioeconomic (occupational health and safety, community health and safety, vulnerable groups and gender issues, and impacts on livelihoods through environmental media) and physical cultural resources in an integrated way. Impacts and risks will be analysed in the context of the project's area of influence, which encompasses (i) the primary project site(s) and related facilities; (ii) associated facilities that are not funded as part of the project; (iii) areas and communities potentially affected by cumulative impacts; and (iv) areas and communities potentially affected by impacts from unplanned but predictable developments caused by the project. Environmental impacts and risks will also be analysed for all relevant stages of the project cycle, including preconstruction, construction, and operations, and post-closure activities such as rehabilitation or restoration. The assessment will identify potential transboundary effects, such as air pollution, increased use or contamination of international waterways, as well as global impacts, such as emission of greenhouse gases and impacts on endangered species and habitats. The environmental assessment will examine whether particular individuals and groups may be differentially or disproportionately affected by the project's potential adverse environmental impacts because of their disadvantaged or vulnerable status, in particular, the poor, women and children, and Indigenous Peoples.
30. Environmental Management Plan – Environmental assessment report prepared under the project will include EMP that specify monitoring requirements for potential environmental impacts. Monitoring is aimed at assuring performance of mitigation measures, and involves specifying the method of measurement, relevant indicators, frequency of monitoring, and cost and responsible party for undertaking the monitoring. The EMP will form part of the contract documents and if required will be updated during the construction phase. All bid documents will include a requirement to incorporate necessary resources into the contractor's bid to implement mitigation measures specified in the EMP. Where unanticipated environmental

impacts become apparent during project implementation, the environmental assessment report including EMP will be updated.

## 5. CONSULTATION, INFORMATION DISCLOSURE, AND GRIEVANCE REDRESS MECHANISM

31. During planning and implementation, project beneficiary and affected communities shall be consulted, to ascertain their concerns and needs. The BWDB shall conduct meaningful consultation with affected people and other concerned stakeholders, including civil society, and facilitate their informed participation. The consultation process will (i) begin early in the project preparation stage and be carried out throughout the project cycle<sup>3</sup>; (ii) provide timely disclosure of relevant and adequate information that is understandable and readily accessible to affected people; (iii) be undertaken in an atmosphere free of intimidation or coercion; (iv) be gender inclusive and responsive, and tailored to the needs of disadvantaged and vulnerable groups; and (v) enable incorporation of all relevant views of affected people and other stakeholders into decision making. The consultation process and its results will be documented and reflected in environmental assessment reports. All environmental documents are subject to public disclosure; therefore, these documents will be made available to any member of the public, if requested, and made available on ADB's website.
32. Information Disclosure Arrangement: The information of Project objectives with its intervention will be disclosed through Focus Group Discussion (FGD) and Public meetings. Opinions of the stakeholders in the public consultation meetings before Project implementation will be disclosed and how it is being addressed by the Project will be disclosed in those meetings. Project information shall be disseminated in local languages and the environmental assessment report will be made available to project affected persons at publicly accessible locations such as Union Council Office, Upazila Nirbahi Officer's Office, Upazila Chairman's Office and local BWDB Office. The executive summary of the environmental assessment report will be made available in the Bangla language. Also, a signboard will be displayed containing the project objectives, along with project interventions and benefits.
33. The BWDB will determine a suitable grievance redress mechanism to address concerns related to environmental and social safeguards. The grievance redress system will include a system by which parties affected by project activities, could raise their concerns to contractors, relevant government officials, and officers of the BWDB.
34. Stakeholders with concerns have the option of contacting community-based organizations formed during implementation; the upazila chairman's office; and/or the local BWDB divisional office (Figure 1-1). Stakeholders may present complaints verbally or in writing. Complaints received will be logged and documented. Complaints received by community-based organizations (CBOs) will either be promptly resolved locally if possible or referred to the upazila chairman's office. At this level, complaints will be promptly resolved or referred to the local BWDB section office (sub-project management office, SMO). If not resolved at this level the complaints will be forwarded to the PMO level grievance redress committee. A grievance redress committee will be established including representatives of government, BWDB, affected persons and others as maybe considered necessary. The committee should establish a procedure on how complaints will be received and resolved and have regular meetings to discuss and resolve complaints. The meeting will be open to the public, and decisions will be recorded and distributed among those present. All records of the committee meetings and how grievances were addressed will be maintained by the respective section office, and the public will have access to these records. When obtaining the information from the complainant, either in verbal or written form, the receiving party should complete a Grievance Action Form (GAF). At a minimum, the information to be recorded in this form will include (i) basic information about the affected person (name, address, contact number); (ii) category of grievance filed (legal, social, environmental, technical/engineering, financial, etc.); (iii) detailed description of grievance; and (iv) type of action taken. The GAF will be filled out

---

<sup>3</sup> Due to health risks and government rules to manage COVID-19 pandemic, the PMO will use online platforms, brochures, questionnaires and other forms of media as applicable to provide project information updates and receive feedback from the people, beneficiaries, government agencies and other stakeholders.

by the person receiving a grievance and signed by the affected party and the receiver of the complaint. The affected party will receive a copy signed by both. Each sub-project management office will have on display a sign/notice board providing the public on the contact details of staff responsible for registering complaints.

35. The GRC will have two levels: the SMO (subproject) and the PMO (project) level.

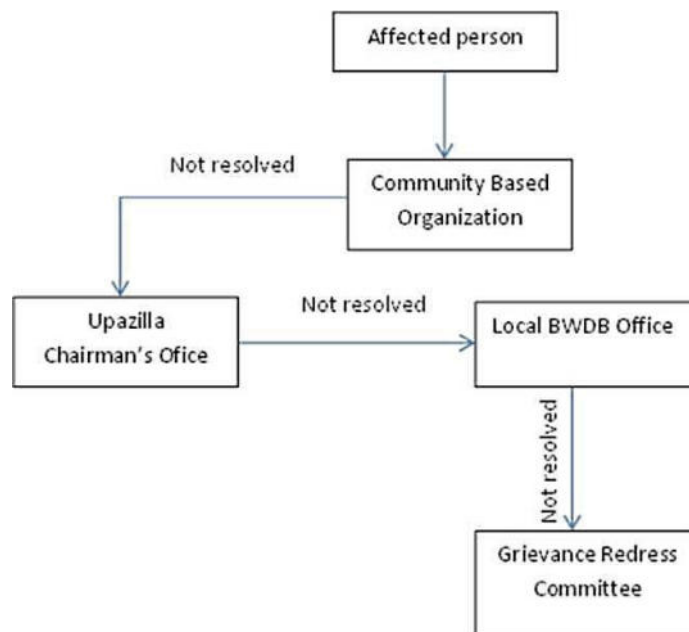


Figure 5-1: Grievance Redress Mechanism

## 6. INSTITUTIONAL ARRANGEMENT AND RESPONSIBILITIES

36. The PMO, established by the BWDB under Project 1 in Dhaka and three subproject management offices (SMOs) in the subprojects located in the project sites areas of Koitola, Tangail, and Manikganj (Figure 6-1) will continue under Project 2.

37. The PMO is headed by a Project Director with the rank of Additional Chief Engineer/Superintending Engineer. Further staffing for PMO and SMOs including number, qualification and responsibilities are shown in Table 6-1.

Table 6-1 Staffing for PMO and SMOs

Position	No.	Responsibility
<b>PMO (deputation from BWDB)</b>		
Project Director (Additional Chief Engineer or Superintending Engineer)	1	Overall project management responsibility
Deputy Project Director (Superintending Engineer)	2	1-Design, Quality Control, River Training and compliances of Loan covenants & DMF 1-Procurement, Planning, Monitoring and Environmental & Social safeguards
Executive Engineer	4	1-procurement, contract management 1-Safeguards: Chief Resettlement Officer and environment 1-Project management, office management, training coordination and administrative coordination (steering committees, DPP variations, communication) 1-Quality Control, planning, adaptation, monitoring
Subdivisional Engineer	2	1- procurement, contract management, Resettlement & GAP 1-Quality Control, adaptation, maintenance, Environment,
Assistant Engineer	2	1-procurement, contract management, project management and administrative activities 1- Monitoring, asset management and O&M system

Position	No.	Responsibility
Assistant Director	1	Land Acquisition, Resettlement
Revenue Surveyor	1	Land Acquisition, Resettlement
Systems Analyst	1	MIS, Inventory, Database
Programmer	1	MIS, Asset Management
Assistant Programmer	1	Inventory, Database
Deputy Director (Accounts)	1	Responsible for all payments and auditing and also responsible for financial management and ensuring that all loan covenants pertaining to financial management are complied with
Accounts Officer	1	Support Deputy Director
Senior Accountants Assistant	3	Contractors' invoice processing; responsible for keeping a record of the accounts, particularly for claims that will be claimed through SOEs
Data entry operator	1	Riverbank protection & embankment asset management system
<b>SMO (each)</b>		
Executive Engineer	1	Head of the SMO
Subdivisional Engineer	2	Exclusively implement FRERMIP works at the subprojects
Assistant Engineer	1	daily construction supervision at the subproject sites
Sub Assistant Engineers	3	daily construction supervision at the subproject sites
Senior Accounts assistant	1	Assist SMO in daily accounting activities
Data entry operator	1	Update asset management system
Revenue surveyor	1	Quantity check of contractors' invoices
Work assistant	6	Daily construction supervision

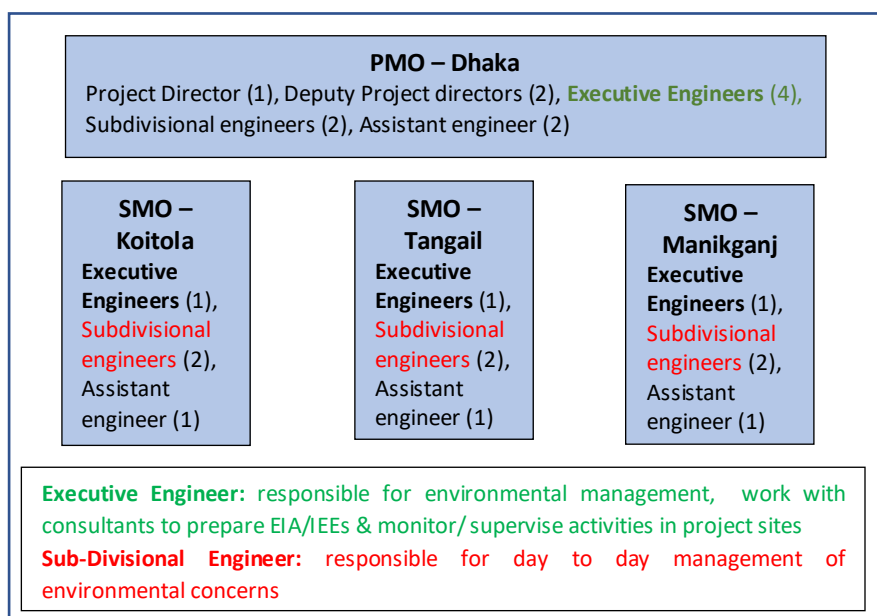


Figure 6-1 PMO/SMO responsibility framework for Project2 environmental management

- i) BWDBs' responsibilities (supported by consultants)
  - Determine the environmental category of subsequent tranches and obtain ADB's endorsement on classification.
  - Prepare relevant environmental assessment reports, including EMPs for projects classified as category A/B, and submit to ADB and DOE as required for review.
  - Obtain environmental clearance from ADB and DOE for environmental compliance before awarding any civil works contracts for that subproject.
  - Ensure mitigatory measures stated in the environmental assessment reports are incorporated in the project design and EMP requirements are described in the bidding documents. EMP including any specific requirements of DOE shall be incorporated in the contract documents.
  - During implementation ensure that EMP is been implemented and recommend corrective measures for any unforeseen impacts.

- Ensure that any grievances from any stakeholders are adequately addressed
  - Submit periodic monitoring reports to ADB and GOB.
- ii) ADB's responsibilities
- Review proposed classification of tranches and environmental assessment reports.
  - Disclose the findings of environmental assessment reports in accordance with ADB's Safeguard Policy Statement, 2009.
  - Monitor the implementation of mitigation measures through project review missions and conduct environmental performance monitoring as necessary.
38. **Training and Capacity Development.** Training and capacity building of various parties involved in the implementation and monitoring of project activities would need to be undertaken. The environmental specialist (international and national) will conduct periodic training and awareness on ADB environmental procedures, monitoring of EMP implementation and reporting requirements to project staff attached to PMO and SMOs. The environmental specialist will also conduct an orientation to the contractors at start of contract on implementation of EMP. While the BWDB employs some environmental staff in the planning wing, it does not have a dedicated environmental monitoring cell. Environmental management of projects has been monitored through consultants and staff dedicated to project implementation. Given the quantum of work managed by BWDB, through its own resources and donor funds, the possibility of establishing a permanent cell to undertake environmental planning and monitoring will be explored under Project 2. The institutional assessment and support, if necessary, to help establish the unit and train staff will be undertaken during Project 2 implementation.

## 7. MONITORING AND REPORTING

39. The PMO and SMOs, under the guidance of the environmental consultants, will monitor implementation of the EMP. The contractor will submit results of environmental monitoring in its progress reports to the PMO. Quarterly progress review reports submitted by BWDB to ADB should include the progress of environmental monitoring and highlight any other environmental issues that may have arisen during implementation, and measures taken to address the issues. In addition, BWDB shall submit semi-annual environmental monitoring reports for Category A projects, and annual monitoring reports for Category B Projects to ADB, and DOE. The PMO shall ensure that all environmental assessment documents, including the environmental monitoring reports, are maintained systematically as part of the project specific records. Environmental Monitoring reports will be made available to the public and will be posted on ADB's website. Project budgets will reflect the costs of monitoring and reporting requirements.

## APPENDIX A

### OUTLINE TERMS OF REFERENCE FOR ENVIRONMENTAL SPECIALISTS

#### A1 International Environmental Specialist

The consultant must have a graduate degree, preferably post-graduate degree, in environmental sciences, environmental engineering, or other relevant natural science, and have at least 10 years of experience undertaking similar assignments, preferably in South Asia. The main tasks of the specialist will include:

- I. Providing advisory support for the national environment specialist in: (a) training and capacity building of BWDB staff on environmental management, supervision, reporting and monitoring of implementation of environmental management plans (EMP); and (b) orienting contractors on implementation of EMP.
- II. Assisting PMO on reporting requirements on environmental monitoring to ADB and GOB.
- III. Assisting PMO to engage consultants/NGOs for the mitigation actions and supervising the mitigation activities of the consultants/NGOs.
- IV. Recommending any corrective actions on any unforeseen environmental impacts.
- V. Support the team leader to identify requirements to establish an environment cell in BWDB.

#### A2 National Environmental Specialist

The consultant will hold a graduate degree, preferably post-graduate degree, in environmental sciences, environmental engineering, fisheries or relevant social science, and have at least 7 years of experience in undertaking environmental assessments and/or monitoring environment management plan activities. Experience in externally aided projects will be given advantage. The main tasks will include:

- I. Implement: (a) training and capacity building of BWDB staff on environmental management, supervision, reporting and monitoring of implementation of environmental management plans (EMP); and (b) orienting contractors on implementation of EMP.
- II. Support the international environment specialist in assisting PMO to engage consultants/NGOs for the mitigation actions and supervising the mitigation activities of the consultants/NGOs.
- III. Periodic supervision of construction activities for ensuring appropriate implementation of environment management plans.
- IV. Supporting BWDB on reporting requirements on environmental monitoring to ADB and BWDB.
- V. Recommending any corrective actions on any unforeseen environmental impacts.

**APPENDIX B**

**EXAMPLE RAPID ENVIRONMENTAL ASSESSMENT (REA) CHECKLIST**

For screening of subprojects, a REA checklist will be used, based on templates provided in ADB’s Environmental Guidelines (2003). One example relevant to the FRERMIP works is provided.

**Instructions:**

(i) The project team completes this checklist to support the environmental classification of a project. It is to be attached to the environmental categorization form and submitted to the Environment and Safeguards Division (SDSS), for endorsement by Director, SDES and for approval by the Chief Compliance Officer.

(ii) This checklist focuses on environmental issues and concerns. To ensure that social dimensions are adequately considered, refer also to ADB's (a) checklists on involuntary resettlement and Indigenous Peoples; (b) poverty reduction handbook; (c) staff guide to consultation and participation; and (d) gender checklists.

(iii) Answer the questions assuming the “without mitigation” case. The purpose is to identify potential impacts. Use the “remarks” section to discuss any anticipated mitigation measures.

**Country/Project Title:**

**Sector Division:**

Screening Questions	Yes	No	Remarks
<b>A. PROJECT SITING</b> Is the project area adjacent to or within any of the following environmentally sensitive areas?			
▪ Cultural Heritage Site			
▪ Legally Protected Area (Core Zone Or Buffer Zone)			
▪ Wetland			
▪ Mangrove			
▪ Estuarine			
▪ Special Area For Protecting Biodiversity			
<b>B. Potential environmental impacts</b> Will the project cause...			
▪ Impairment of historical/cultural areas; disfiguration of landscape or potential loss/damage to physical cultural resources?			
▪ Disturbance to precious ecology (e.g. Sensitive or protected areas)?			
▪ Alteration of surface water hydrology of waterways resulting in increased sediment in streams affected by increased soil erosion at construction site?			



Screening Questions	Yes	No	Remarks
▪ Deterioration of surface water quality due to silt runoff and sanitary wastes from worker-based camps and chemicals used in construction?			
▪ Increased air pollution due to project construction and operation?			
▪ Noise and vibration due to project construction or operation?			
▪ Involuntary resettlement of people? (physical displacement and/or economic displacement)			
▪ Disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?			
▪ Poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of communicable diseases (such as STI's and HIV/AIDS) from workers to local populations?			
▪ Creation of temporary breeding habitats for diseases such as those transmitted by mosquitoes and rodents?			
▪ Social conflicts if workers from other regions or countries are hired?			
▪ Large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?			
▪ Risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during project construction and operation?			
▪ Risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during construction and operation?			
▪ Community safety risks due to both accidental and natural causes, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning?			
▪ Generation of solid waste and/or hazardous waste?			
▪ Use of chemicals?			
▪ Generation of wastewater during construction or operation?			

**A Checklist for Preliminary Climate Risk Screening**

**Country/Project Title:**

**Sector :**

**Subsector:**

**Division/Department:**

Screening Questions		Score	Remarks <sup>4</sup>
<b>Location and Design of project</b>	Is siting and/or routing of the project (or its components) likely to be affected by climate conditions including extreme weather related events such as floods, droughts, storms, landslides?		
	Would the project design (e.g. the clearance for bridges) need to consider any hydro-meteorological parameters (e.g., sea-level, peak river flow, reliable water level, peak wind speed etc)?		
<b>Materials and Maintenance</b>	Would weather, current and likely future climate conditions (e.g. prevailing humidity level, temperature contrast between hot summer days and cold winter days, exposure to wind and humidity hydro-meteorological parameters likely affect the selection of project inputs over the life of project outputs (e.g. construction material)?		
	Would weather, current and likely future climate conditions, and related extreme events likely affect the maintenance (scheduling and cost) of project output(s)?		
<b>Performance of project outputs</b>	Would weather/climate conditions, and related extreme events likely affect the performance (e.g. annual power production) of project output(s) (e.g. hydro-power generation facilities) throughout their design life time?		

Options for answers and corresponding score are provided below:

Response	Score
Not Likely	0
Likely	1
Very Likely	2

Responses when added that provide a score of 0 will be considered low risk project. If adding all responses will result to a score of 1-4 and that no score of 2 was given to any single response, the project will be assigned a medium risk category. A total score of 5 or more (which include providing a score of 1 in all responses) or a 2 in any single response, will be categorized as high risk project.

**Result of Initial Screening (Low, Medium, High):** \_\_\_\_\_

**Other Comments:** \_\_\_\_\_

**Prepared by:** \_\_\_\_\_

<sup>4</sup> If possible, provide details on the sensitivity of project components to climate conditions, such as how climate parameters are considered in design standards for infrastructure components, how changes in key climate parameters and sea level might affect the siting/routing of project, the selection of construction material and/or scheduling, performances and/or the maintenance cost/scheduling of project outputs.

## APPENDIX C

## First review of revised EARF

## ADB COMMENTS &amp; PMO RESPONSE MATRIX (March 2018)

A revised version of the EARF was prepared (dated 8 March 2018) by ISPMC and submitted to ADB for their review. The following comments were subsequently received from ADB on 15 March 2018, and these have been addressed as indicated in the below comments/response matrix.

	<b>ADB comment (15/3/2018)</b>	<b>PMO response</b>
1	<i>Include table of Contents</i>	Included
2	<p><i>Based on the ADB SPS 2009 (page 70), the following is the outline of an Environmental Assessment and Review Framework.</i></p> <ul style="list-style-type: none"> <li><i>A. Introduction</i></li> <li><i>B. Assessment of Legal Framework and Institutional Capacity</i></li> <li><i>C. Anticipated Environmental Impacts</i></li> <li><i>D. Environmental Assessment for Subprojects and/or Components</i></li> <li><i>E. Consultation, Information Disclosure, and Grievance Redress Mechanism</i></li> <li><i>F. Institutional Arrangement and Responsibilities</i></li> <li><i>G. Monitoring and Reporting</i></li> </ul> <p><i>The “Assessment of Legal Framework and Institutional Capacity” in the draft EARF appears under the “Introduction”. “Assessment of Legal Framework and Institutional Capacity” should be a separate section.</i></p>	Restructured
3	<i>Indicate the title of the table after Paragraph 18.</i>	Included
4	<i>In the sub-section B of Project Activities and Anticipated Environmental Impacts, include also a summary discussion of the anticipated positive impacts of the project.</i>	Included as (now) paragraph 18.
5	<p><i>Under the Environmental Assessment, provide a sub-section for the requirements and schedules for Screening and Classification. See an example of in page 7 of the link: <a href="https://www.adb.org/sites/default/files/linked-documents/49228-001-earfab.pdf">https://www.adb.org/sites/default/files/linked-documents/49228-001-earfab.pdf</a>. As prescribed in the SPS 2009, Rapid Environmental Assessment (REA) Checklist is used for screening and categorization of the project. Please discuss the use of REA and include the ADB REA Checklist in the Appendix B.</i></p>	Sub-section (now 22) and example REA checklist (now Appendix B) included.
6	<i>Similar to the sub-section “Preparation of Environmental Assessments”, Environmental Management Plan should be a sub-section of Environmental Assessment.</i>	Re-structured
7	<i>Under the section of “Consultation, Information Disclosure, and Grievance Redress Mechanism”, it seems there are no description of the Information Disclosure arrangements. Please provide discussion on the information disclosure arrangements of the project and disclosure procedures of environmental impact reports in accordance with ADB policy.</i>	These arrangements are described in paragraph 26 and 27. The main source for public access is through ADB’s website.

8	Provide a framework that is described in paragraph 26. Attach the framework as a figure in section "Institutional Arrangement and Responsibilities"	Figure of framework included in (now) paragraph 30 and Figure-2
---	---	---

**Second review of revised EARF May 2020**

**ADB COMMENTS & PMO RESPONSE MATRIX (May 2020)**

A revised version of the EARF was prepared (dated 28 April 2020) by PMO and submitted to ADB for review. The following comments were subsequently received from ADB on 12 May 2020, and these have been addressed as indicated in the below comments/response matrix.

.	Issue	Suggested action	PMO Response
1	Paragraph numbers are missing	Please insert paragraph numbers throughout the document	These have been added
2	Figure 1: Old map is being used	Please replace with an updated map	This has been updated
3	Introduction: Information is not specific to Tranche 2	Please update information and make it specific to Tranche 2	The introduction has been updated to make it more specific to Tranche 2 (now referred to as Project 2)
4	Subsection on Positive Project Impacts refers to road construction and improved mobility and connectivity. This is not consistent with the project description provided.	Please remove any reference to road construction <u>if</u> this activity is not going to happen during T2 (note however that road construction is included in the original DMF of the MFF). If road construction is not going to occur during T2, then state clearly the reasons of dropping this in the project description.	This has been updated in the document with notes about not including roads in either T1 or T2.
5	Section 4 reference to Strategic Environmental and Social Assessment (SESA) is outdated	Please update the status of SESA	This has been updated
6	Subsection on Preparation of Environmental Assessments refers to EIA alone, requirement for EIA or IEE will be determined after project categorization	Please indicate EIA or IEE	These have been added
7	Subsection on Preparation of Environmental Assessments: Annex number is missing	Please insert annex number	All references to Annex have been changed to appendix, and lettering (A, B, C) is now included.

**Third review of revised EARF May 2020**

**ADB COMMENTS & PMO RESPONSE MATRIX (2 June 2020)**

No.	Issue	ADB Suggested action	Response from PMO
1	Para 1.3 Project 2 specific activity is an useful addition, however, please add some quantification (numbers, km,	Please add quantification in Project 2 description	The lengths of the proposed riverbank protection and flood defense embankments and the area of land reclamation have been added to the

	etc.), so that scope and scale of Project 2 is clearer.		Project 2 description.
2	Para 4.3 Last sentence on project categorization is incorrect, as there will be a separated categorization for Project 2.	Please delete/modify	This sentence has been modified to show that Project 2 will be subject to its own categorization but that cumulative impacts will be the basis for categorization due to the inter-connectedness of the interventions
3	Para 3.2. It is not clear what is the relation between Project 2 and reference to JRB-1, JLB-2, and PLB-1-- a total area of around 2,500 km <sup>2</sup> with a population of 2.9 million in 12 upazilas and 107 unions	Please clarify if JRB-1, JLB-2, and PLB-1 are the proposed subprojects under Project 2.	JRB-1, JLB-2 and PLB-1 are the proposed subproject areas under Project 2. The executive summary has been updated to clarify this point.
4	Para 2.2, Bullet 1. ...management requirements for the period 1995 to 2005..., appears outdated, what is its current relevance?	Please clarify	The bullet points under 2.2 listing acts, rules and plans, “expand(s) on and provides a basic framework for environmental action and the set of broad sectoral action guidelines for sustainable development”. NEMAP is the first listed, and although initially time-bound for implementation of the NCS, it was not followed up with a NEMAP-2 and still serves as a guideline for environmental management.
5	Paragraph numbers are not in ADB standard format, numbers should flow continuously throughout the report (not broken by the sections) <b>Note: this numbering way is valid for all documents to be submitted to ADB.</b>	Please adjust paragraph numbers accordingly	The paragraph numbers have been updated to be continuous throughout the document