

**FRAMEWORK FINANCING AGREEMENT**  
**BAN: Flood and Riverbank Erosion Risk Management Investment Program**

**Parties** This Framework Financing Agreement (“FFA”) dated 12 May 2014 is between the People’s Republic of Bangladesh (“Bangladesh”), and Asian Development Bank (“ADB”).

**MFF Investment** Bangladesh is committed to and will implement the Flood and Riverbank Erosion Risk Management Investment Program (“Investment Program”) and the road map underlying the Investment Program, both of which are described in Schedule 1 hereto.

The total cost of the Investment Program over the period 2014 to 2023 is expected to be \$373.7 million equivalent.

**Multitranche Financing Facility** The Multitranche Financing Facility (the Facility) is intended to finance projects under the Investment Program, provided that such projects comply with the criteria set out in Schedule 4 hereto and that understandings set out in this FFA are complied with.

These projects may include:

- A. flood and riverbank erosion risk mitigation at subproject areas;
- B. strengthening the institutional system for flood and riverbank erosion risk management; and
- C. program management.

This FFA does not constitute a legal obligation on the part of ADB to commit any financing. At its sole discretion, exercised reasonably, ADB has the right to deny any financing request made by Bangladesh, cancel the uncommitted portion of the Facility, and withdraw Bangladesh’s right to request any financing tranche under the Facility. Financing tranches may be made available by ADB provided matters continue to be in accordance with the general understandings and expectations on which the Facility is based and which are laid out in this FFA.

This FFA does not constitute a legal obligation on the part of Bangladesh to request any financing. Bangladesh has the right not to request any financing under the Facility. Bangladesh also has the right at any time to cancel any uncommitted portion of the Facility.

Bangladesh and ADB may exercise their respective rights to cancel the Facility or any uncommitted portion thereof, and ADB may exercise its right to refuse a financing request, by giving written notice to such effect to the other parties. The written notice will provide an explanation for the cancellation or refusal and, in the case of a cancellation, specify the date on which the

cancellation takes effect. ADB may cancel the Facility or reject a financing request when there is a material noncompliance with ADB policies or FFA undertakings; or there are undue delays in the submission of the financing requests or the implementation of the investment program.

### ***Financing Plan***

The financing plan for the Investment Program is summarized below.

<b>Financing Source</b>	<b>Amount (\$ million)</b>	<b>Share of Total (%)</b>
Asian Development Bank Special Funds or ordinary capital resources (loan)	255.0	68.2
Netherlands Government (grant)	15.3	4.1
Government	103.4	27.7
<b>Total</b>	<b>373.7</b>	<b>100.0</b>

### **Financing Terms**

ADB will provide loans and administer cofinancing to finance projects under the Investment Program, as and when the latter are ready for financing, provided, Bangladesh is in compliance with the understandings hereunder, and the projects are in line with those same understandings. Each loan will constitute a tranche.

Each tranche may be financed under terms different from the financing terms of previous or subsequent tranches. The choice of financing terms will depend on the project, capital market conditions, and ADB's financing policies, all prevailing on the date of signing the legal agreement for such tranche.

Tranches may be provided in sequence or simultaneously, and some may overlap in time with each other.

There is no maximum size for a tranche. Each individual tranche will be for an amount of no less than twenty million Dollars (\$20 million), or its equivalent

Commitment charges or guarantee fees are not payable on the Facility. They are payable only on financing actually committed by ADB as a loan or guarantee. ADB rules on commitment charges and guarantee fees, which are in effect when the legal agreements are signed for a tranche, will apply with respect to such tranche.

### ***Amount***

The maximum financing amount available under the Facility is two hundred seventy million three hundred thousand US dollars (\$270,300,000), to be provided in individual tranches from ADB's Special Funds Resources, ordinary capital resources and/or ADB-administered cofinancing resources.

### ***Availability Period***

The loan closing date of any tranche will be on or before 30 June 2023. The last financing tranche is expected to be executed no later than 1 July 2020.

### ***Terms and Conditions***

Bangladesh will cause the proceeds of each tranche to be applied to the financing of expenditures of the Investment Program, in accordance with conditions set forth in this FFA and the legal agreements for each tranche.

### **Execution**

The Executing Agency will be the Bangladesh Water Development Board (BWDB) under the Ministry of Water Resources. The Executing Agency will implement the Investment Program in accordance with the principles set forth in Schedule 1 to this Agreement, and as supplemented in the legal agreements for each tranche.

### **Periodic Financing Requests**

Bangladesh may request, and ADB may agree, to provide loans or administer cofinancing under the Facility to finance the Investment Program and its related projects upon the submission of a Periodic Financing Request (PFR). Each PFR should be submitted by Bangladesh. Bangladesh will make available to BWDB, and through BWDB to the Department of Disaster Management, the proceeds of the tranche in accordance with the related PFR, and the legal agreements for the tranche.

Each individual tranche will be for an amount of no less than twenty million Dollars (\$20 million), or its equivalent. ADB will review each PFR and, if found satisfactory, prepare the related legal agreements.

The subprojects for which financing is requested under the PFR will be subject to the selection criteria set out in Schedule 4 hereto, satisfactory due diligence, and preparation of relevant safeguard and fiduciary frameworks and other documents. The Facility will be implemented in accordance with the general framework set out in Schedule 3 to this FFA, and the Facility Administration Manual agreed between Bangladesh and ADB.

Until notice is otherwise given by Bangladesh, Bangladesh Water Development Board will be Bangladesh's authorized representative for purposes of executing PFRs.

**General Implementation Framework**

The Facility will be implemented in accordance with the general framework set out in Schedule 3 hereto.

**Procedures**

Tranches to be provided under the Facility will be subject to following procedures and undertakings:

- (i) Bangladesh will have notified ADB of a forthcoming PFR in advance of the submission of the PFR.
- (ii) Bangladesh will have submitted a PFR in the format agreed with ADB.
- (iii) ADB may, in its sole discretion, decline to authorize the negotiation and execution of any legal agreement for a tranche.
- (iv) If ADB confirms acceptance of the PFR, the legal agreements will be negotiated and executed by the parties.

**PFR information**

The PFR will substantially be in the form attached hereto, and will contain the following details:

- (i) Loan, grant, guarantee, or cofinancing amount;
- (ii) Description of components/subprojects to be financed;
- (iii) Cost estimates and financing plan;
- (iv) Implementation arrangements specific to the components or subprojects ;
- (v) Confirmation of the continuing validity of and adherence to the understanding in this Agreement;
- (vi) Confirmation of compliance with the provisions under previous Loan Agreement(s) and Project Agreement(s), as appropriate; and
- (vii) Other information as may be required under the Facility Administration Manual, or reasonably requested by ADB.

**Safeguards**

Attached as Schedule 5 are references to the Safeguard Frameworks that will be complied with during the implementation of the Facility.

ADB's Safeguard Policies in effect as of the date of signing of legal agreements for a tranche will be applied with respect to the components and their subprojects financed under such financing tranche.

**Procurement**

All goods and services to be financed under the Facility will be procured in accordance with ADB's *Procurement Guidelines* (2013, as amended from time to time).

**Consulting**

All consulting services to be financed under the Facility will be

<b>Services</b>	procured in accordance with ADB's <i>Guidelines on the Use of Consultants</i> (2013, as amended from time to time).
<b>Advance Contracting and Retroactive Financing</b>	Under each tranche, ADB may, subject to its policies and procedures, allow on request (a) advance contracting of civil works, materials, equipment, and consulting/NGO services and (b) retroactive financing of eligible expenditures for civil works, materials, equipment, and consulting/NGO services up to 20% of proposed individual loan, incurred prior to loan effectiveness but not earlier than 12 months before the date of signing of the related legal agreement. Bangladesh acknowledges that any approval of advance contracting and/or retroactive financing will not constitute a commitment by ADB to finance the related project.
<b>Disbursements</b>	Disbursements will be made in accordance with ADB's <i>Loan Disbursement Handbook</i> (2012, as amended from time to time).
<b>Monitoring, Evaluation, and Reporting Arrangements</b>	<p>Schedule 2 hereto sets as the Design and Monitoring Framework (DMF) for the Facility, against which the implementation effectiveness will be evaluated. BWDB will establish a management information system (MIS) with the assistance of the consultants. Its project management module will be established within three years of effectiveness of the first loan. BWDB will annually collect relevant information, and update the data on the progress against each indicator in the DMF.</p> <p>BWDB will provide ADB with quarterly progress reports in the format within 45 days of the end of each quarter. DDM will quarterly provide necessary data and information to BWDB, and the quarterly progress reports provided by BWDB will contain the progress information of the sub-component implemented by DDM.</p> <p>The financial statements will be audited annually and reports will be submitted to ADB. ADB will regularly conduct project review missions. ADB will also conduct a midterm review mission for each project of the investment program. The reviews will include implementation progress, and contract awards and disbursement. The midterm review mission will identify issues and necessary measures or changes in implementation arrangement. Within 3 months of loan closure of each project under the facility, BWDB will submit an individual project completion report to ADB. Within 3 months of the completion of the facility, BWDB will submit a facility completion report to ADB.</p>
<b>Undertakings</b>	Attached as Schedule 6 are the undertakings provided by Bangladesh.

**BANGLADESH**

By \_\_\_\_\_  
Saifuddin Ahmed  
Joint Secretary  
Economic Relations Division  
Ministry of Finance

**ASIAN DEVELOPMENT BANK**

By \_\_\_\_\_  
Kazuhiko Higuchi  
Country Director

## SCHEDULE 1

### MFF CONSTITUENTS

#### A. Background

1. Riverbank erosion is one of the most prominent disasters in Bangladesh, especially along the Jamuna and the Padma rivers, caused by dynamic river channel shifting. An estimated 5,000 to 6,000 hectares (ha) of lands are lost annually during the period from 1960s till around 2000. Around 3,000 ha of lands is lost annually since around 2000. Approximately 2,000 km<sup>2</sup> of lands have been eroded along the Jamuna and Padma rivers over the last 40 years. This process annually affects about 100,000 people including the poor, who face significant social hardships, such as loss of homestead, lands, and/or crops, and are displaced to fringe lands or urban slums.

2. Flood inundation also causes losses and slows down the economic growth. Combining with flat topography, unstable riverbank alignments have made flood protections in the country challenging. Active riverbank erosions breach existing flood embankments, and the lack of reliable and stable riverbank erosion protection structures discourages the construction, rehabilitation and/or restoration of systematic flood embankments. Around 20% of the country submerged under flood water during the monsoon season in every year. Inundation extends up to around two thirds of the country during large floods. Inundation causes loss of assets and infrastructure damages, and restricts agriculture productivities. Disaster risks increase with the growth of the population, and the high population density of Bangladesh restricts the scope for moving people away from disaster prone areas. These disasters would be exacerbated by global climate changes.<sup>1</sup> The poor landless are often shifted to disaster prone lands, and the poverty incidence tends to be high in riverine districts. The threat of frequent flood and riverbank erosion disasters discourages investment and leads to lower economic growth of riverine areas. Effective management of the flood and riverbank erosion risks of the main rivers is essential for the economic growth poverty reduction of riverine districts.

3. The government has been making progress in establishing a sound sector policy, planning, and legal framework since 1990s to address water sector challenges. The National Water Policy was adapted in 1999 and the National Water Management Plan was approved in 2004. The operationalization and institutionalization of the policies and plans have been slow, but is expected to pick up with the enactment of the Bangladesh Water Act 2013. The Disaster Management Act was approved in 2012, and the National Plan for Disaster Management was also formulated and provides overall guidance for managing disaster-related risks in all sectors.

4. The Bangladesh Water Development Board (BWDB) is the key agency for the implementation of investments for the flood and riverbank erosion risk management. While operationalizing and institutionalizing the existing well developed policy framework in their activities remains a challenge, BWDB has acquired experiences in implementing a range of water management projects, including those for flood and riverbank erosion. It has initiated self-driven institutional reform called “needs-based reform” for filling human resources deficit, especially at the younger entry level, and for institutional reform including the creation of the new Chief Engineer (River Management) position.

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<sup>1</sup> ADB. 2010. *Final Reports on Impacts of Climate Change on the Morphological Processes of the Main Rivers and Meghna Estuary of Bangladesh*. Consultant's report. Manila (Pilot and Demonstration Activities Program)

## **A. Road Map**

### **1. Visions and Objectives**

5. The government's Sixth Five-Year Development Plan for 2011 – 2015 considers sustainable management of the main rivers and enhancement of climate change resilience, including disaster risk management, one of essential means to accomplish the economic growth and poverty reduction. ADB's Country partnership strategy for Bangladesh (2011 – 2015) also emphasizes supporting climate resilient economic growth and poverty reduction by encouraging sustainable management of natural disaster risks.

6. To achieve these overarching objectives of the economic growth and poverty reduction, the stabilization of the main rivers has been a recent strong interest and long-term goal of the government. The river stabilization will generate more stable and useful lands. Currently, flood plains are partially protected by flood embankments and riverbanks protection structures which have been constructed by BWDB using their own funds or under externally aided projects, including the ADB funded Jamuna Meghna River Erosion Mitigation Project (JMREMP).<sup>2</sup> However, the existing riverbank protections are rather ad hoc piece meal works for emergency protections at critically eroded sites. Restoration and/or rehabilitation of flood embankments have been left behind due to potential progressive riverbank erosions, as described earlier. The management of the main river in Bangladesh should move towards the strategic management, based on the understanding of the long-term trends of the river morphological and long-term visions of socio-economy.

7. Towards the strategic management of the main rivers, the future investments for the flood and riverbank erosion risk management should explore the following improvements:

- (i) developing more strategic planning and intervention of flood and riverbank erosion management works, in due consideration of the long-term morphological trend of the entire river reaches towards the future long-term stabilization of the entire river course, oppose to the existing ad hoc piecemeal protections,
- (ii) establishing more effective integration of structural and non-structural measures,
- (iii) ensuring sustainability of infrastructures and non-structural measures provided,
- (iv) higher stakeholder participation to achieve the above,
- (v) establishing an approach to address uncertainties of unexpected natural disasters, including potential impacts of global climate change, and
- (vi) strategic institutional capacity strengthening to address these issues.

### **2. Strategic Directions**

8. The objectives of the strategic management of the main rivers can be achieved by (i) operationalization and institutionalization of the existing legal, policy and planning framework, and (ii) the implementation of physical and non-physical investments, including institutional capacity strengthening. The item (i) should be established through sound implementation of the physical and non-physical investments, especially with strategic institutional capacity strengthening.

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<sup>2</sup> Asian Development Bank. 2002. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to Bangladesh for the Jamuna-Meghna River Erosion Mitigation Project*. Manila (Loan 1941-BAN, \$42.2 million, approved on 25 November 2002, and closed on 30 June 2011).



## **(1) Physical investments**

9. Physical investments will provide direct protection from flood and riverbank erosion risks. They include:

- Construction and repair of riverbank protection revetments,
- Construction, restoration and rehabilitation of flood embankments, and associated structures, such as gated sluiceways and regulators, and

10. Scopes and estimated costs of the physical investments should cover associated safeguard requirements, including risk mitigation measures, particularly for land acquisition, involuntary resettlement, and environment. The safeguard consideration should also be extended to (i) project design and structural design to minimize potential adverse impact on the safeguard aspects, and (ii) institutional strengthening of monitoring the implementation of mitigation measures. (refer to below)

## **(2) Non-physical investments**

11. Non-physical investments consist of (a) non-structural measures which complement, supplement or enhance protection from the flood and riverbank erosion risk through facilitating high stakeholder participation and sustainability of infrastructure, and (b) institutional capacity strengthening for establishing and ensuring an enabling environment of the successful implementation of all activities.

### **a. Non-structural measures**

12. They will include:

- Community involvement and capacity development for community-based flood and erosion disaster management,
- Community involvement and capacity development for regular operation and maintenance (O&M) of infrastructure, including stakeholder awareness campaign,

### **a. Institutional capacity strengthening**

13. Institutional capacity strengthening will focus on BWDB as the key agency for the implementation of the road map. Institutional capacity of the following aspects need strengthening:

- sound implementation of the physical and non-physical interventions, including quality and financial management capacity.
- strategic planning of interventions and management of the main rivers,
- planning and implementing effective integration among various physical and non-physical interventions,
- establishing and implementing systems for achieving sustainability of infrastructure, including knowledge, data management, tool, funding for asset management, O&M planning, and river monitoring,

- assessing and monitoring social and environmental safeguard aspects, including involuntary resettlement, for large-scale physical interventions, meeting high level requirements of development partners,
- developing, maintaining and improving knowledge base, including database and guidelines,
- dissemination of its objectives, activities, achievements and lessons, for ensuring transparency and for better understanding of stakeholders on BWDB and its activities,
- effective coordination with other relevant government agencies, research institute and other stakeholders, including implementation coordination and information sharing.

14. The physical investments necessitate large-scale financing from externally aided development partners, including ADB, due to the scale of fund required for interventions to the large-schedule main rivers in Bangladesh. Strengthening the above aspects of BWDB's capacity is indispensable to assure enable the environment of externally physical investments.

### **3. Investment Plan**

15. Due to the requirement of large amount of physical investments to cover the large-scale main rivers in Bangladesh, the investment plan for the flood and riverbank erosion risk management works for the coming 10 years can cover high priority works. The funding size of the investment plan needs to be within reasonable and manageable for BWDB. Further, physical and non-physical interventions are geographically divided for different development partners, due to the size of the investment plan. The investment program funded by ADB, co-financer and the government will focus on the middle part of the country (the Jamuna downstream of Jamuna Bridge, the Padma and the Ganges, except upstream of planned Ganges Barrage), and state-level institutional strengthening. The Northern part of the Jamuna, upstream of Jamuna Bridge, will be covered by the World Bank. The government will continue existing emergency riverbank protection works at critically eroded sites.

**Table A1.1: Investment Plan Estimates for Flood and Riverbank Erosion Risk Management for the Main Rivers (2014/15 – 2023/14)**

Item	Amount (\$ million)
<b>I. Central part of the country (by ADB and co-financers)</b>	
<b>a. Physical investments</b>	<b>311.8</b>
Riverbank protections	225.9
Embankments with associated structures	85.9
<b>b. Non-physical investment</b>	<b>61.9</b>
Non-structural measures	11.1
Institutional strengthening including knowledge base development	14.2
Project management	
<b>Total</b>	<b>373.7</b>
<b>II. Northern part of the country (by World Bank) <sup>a</sup></b>	
<b>Total</b>	<b>300.0</b>
<b>III. Emergency riverbank protection works (by the government) <sup>b</sup></b>	
<b>Total</b>	<b>190.0</b>
<b>Grand Total</b>	<b>853.7</b>

<sup>a</sup> Approximate amount. The feasibility study and detailed design is on-going. Detailed investment costs would become available in late-2014.

<sup>b</sup> Estimated from the current expenditures for riverbank protection works along the main rivers.

16. In addition to the flood and riverbank protection works (flood embankments, bank protections, and associated structures and non-structural measures), the government has a plan to invest for the capital dredging in the main rivers maybe from 2014 or 2015 for 15 years, with the amount of around \$125 million equivalent (Tk 10.05 million) under the Capital Dredging and Sustainable River Management Project. The pilot dredging started, and the feasibility studies were conducted in 2013 till early 2014. Dredging would complement the flood and riverbank protection works towards the river stabilization, but as the investment plan for the flood riverbank protection already covers substantial scopes and amount and the nature of dredging works are considerably different from embankment and riverbank protection works, this road map focuses on riverbank protection, embankment, related structures and associated non-physical investments, and does not include the dredging works. Meanwhile, the investment program will duly consider findings of the capital dredging project.

#### **4. Policy Framework**

17. To implement the anticipated investments and to achieve the road map, the government has to adopt a policy framework which defines the actions, responsibilities and targeted timeframe to be implemented under the ADB's investment program. (**Table A1.2**)

**Table A1.2: Policy Framework**

Key Issues and Actions	Objectives	Responsibilities	Timeframe
<b>A: Policy and Planning Framework</b>			
A-1. Approve Bangladesh Water Act	<ul style="list-style-type: none"> <li>▪ Give effect to the National Water Policy for integrated management, development, utilization, and protection of water resources,</li> <li>▪ Regulates the distribution of responsibilities among different organizations concerned, and</li> <li>▪ Vests the ownership of water resources in the government.</li> </ul>	GOB,	Done in May 2013
A-2. Develop long-term stabilization plan for the main rivers	<ul style="list-style-type: none"> <li>▪ Formulate a strategic holistic long-term flood and riverbank erosion risk management plan, towards more stabilized river channels and systematic management of the main rivers.</li> </ul>	BWDB	During Tranche-1
A-3. Develop a preliminary river network management master plan for the main rivers and their tributaries and distributaries.	<ul style="list-style-type: none"> <li>▪ Formulate an overall preliminary future intervention plan for sustainable and multi-functional use of the main rivers including their tributaries and distributaries. This is to ensure to avoid disturbing other water and river uses by the flood and riverbank erosion risk management, and to explore most effective multi-functional use of the river system.</li> </ul>	BWDB, with close coordination with WARPO and other relevant organizations	During Tranche-1
A-4(1). Approve Disaster Management Act	<ul style="list-style-type: none"> <li>▪ Defines disaster and lays down the institutional arrangements for disaster management at national and field levels.</li> </ul>	GOB	Done in 2012
A-5(2). Approve Standing Order on Disaster	<ul style="list-style-type: none"> <li>▪ Define roles and responsibilities of different players at various levels of the government administrative structure at times of disaster</li> </ul>	GOB	Done in 2012
<b>B: Institutional Basis for Flood and Riverbank Erosion Risk Management</b>			
<b>1. BWDB</b>			
B-1. Establish Chief Engineer (River Management) position and his/her office, if the proposed multi-disciplinary need based set for BWDB is approved.	<ul style="list-style-type: none"> <li>▪ Establish the institutional core of the strategic and holistic management of the main rivers, with clear delineation of its functions.</li> </ul>	BWDB	Upon approval of the needs base set-up
B-2. Strengthen capacity of the office of Chief Engineer (River Management)	<ul style="list-style-type: none"> <li>▪ Operationalize a new office with competent technical knowledge and adequate capacity of institutional coordination with relevant parties like zonal chief engineers of BWDB and DDM, and with</li> </ul>	BWDB	Entire MFF period

B-3. Strengthen capacity of BWDB design circles	<ul style="list-style-type: none"> <li>▪ Establish competent, concrete and widespread knowledge of design of innovative riverbank protection structures in BWDB.</li> </ul>	BWDB	During Tranches 1 and 2.
B-4. Strengthening capacity for environment and safeguard monitoring for flood and riverbank erosion risk management works	<ul style="list-style-type: none"> <li>▪ Develop sustainable and competent environment and social safeguard implementation and monitoring capacity within BWDB for the flood and riverbank erosion risk management projects for the main rivers, which will involve significant physical interventions.</li> </ul>	BWDB	During Tranches 2 and 3
<b>2. Inter-ministerial coordination</b>			
B-6. Develop and sign holistic MOU between BWDB and DDM	<ul style="list-style-type: none"> <li>▪ Establish and operationalize long-term effective coordination mechanism of the two agencies for encouraging DDM's community level activities in BWDB's project areas.</li> </ul>	BWDB	During Tranche-2
B-7. Strengthening inter-departmental coordination and knowledge sharing and dissemination capacity of BWDB	<ul style="list-style-type: none"> <li>▪ Develop institutional and human resources basis for operationalizing the long-term effective coordination mechanism of BWDB with DDM and other institutions.</li> <li>▪ Develop institutional capacity of BWDB for disseminating its activities and achievements for better institutional coordination</li> </ul>	BWDB	Entire MFF period
<b>3. Community level operations</b>			
B-8. Formulate community level disaster management units in subproject areas, and establish administrative coordination with existing district level disaster management units and between DDM and BWDB's offices	<ul style="list-style-type: none"> <li>▪ Establish community-level institutional set-ups for operationalizing flood and riverbank erosion risk management.</li> </ul>	DDM, BWDB	During Tranche-1
B-9. Establish community participation systems for community-level flood disaster risk management and routine operation and maintenance of flood and riverbank protection infrastructure, and strengthen capacity of community organizations	<ul style="list-style-type: none"> <li>▪ Develop community-level mechanisms for self-dependent flood and riverbank erosion risk management and sustainable infrastructure management, through encouraging ownership of beneficiaries.</li> </ul>	BWDB, DDM	Entire MFF period

<b>C: Flood and Riverbank Erosion Risk Management Planning and Operation Platform and Tools</b>			
C-1. Establish flood and riverbank erosion risk management infrastructure asset MIS	<ul style="list-style-type: none"> <li>▪ Establish basis for strategic and transparent O&amp;M of infrastructure.</li> </ul>	BWDB	During Tranches 1 and 2
C-2. Establish 5-year flood and riverbank protection O&M and emergency work plan for the main rivers	<ul style="list-style-type: none"> <li>▪ Develop the strategic and transparent O&amp;M and budgetary planning system, with adequate understanding of overall infrastructure status and of river morphology.</li> </ul>	BWDB	During Tranche-1
C-3. Improve existing guidelines and tools including (i) short-term riverbank erosion prediction model, and (ii) design guidelines for riverbank protection works.	<ul style="list-style-type: none"> <li>▪ Explore more effective tools for the better management, and strengthen institutional capacity of BWDB for improving existing own capacity.</li> </ul>	BWDB	During Tranches 2 and 3.

BWDB = Bangladesh Water Development Board; DDM = Department of Disaster Management; MIS = management information system; MORW = Ministry of Water Resources; O&M = operation and maintenance; WARPO = Water Resources Planning Organization.

## D. Investment Program

### 1. Project Area, Subproject Areas and Overall Approach

18. The primary focus of physical interventions under the investment program is flood and riverbank erosion risk management along the main rivers in Bangladesh, i.e., the Jamuna River downstream of Jamuna Bridge, the Padma River, and the Ganges downstream of the proposed Ganges Barrage,<sup>3</sup> which is the project area of the investment program. While studies providing comprehensive planning morphological, hydrologic, hydraulic, socio-economic and other analyses under the investment program will also cover other reaches of the main rivers and major rivers interlinking to the main rivers, no structural or non-structural measures will be financed there under the investment program. .

19. The investment program is expected to comprise three tranches. Within the project area, four reaches (namely, JRB-1, JLB-2, PLB-1, and MRB-1. Refer to **Table A1.2**) were identified as priority subproject areas. The first tranche will finance infrastructure and associated non-structural measures to serve the most urgent needs in three out of the four priority subproject areas (JRB-1, JLB-2, and PLB-1). Subsequent tranches will ensure stability and sustainability of the structures financed under the first tranche by adding protection to adjacent stretches, again supplemented by non-structural measures provided under the investment program.

20. Physical works at remaining one subproject (MRB-1), which is near the confluence of the Padma and Meghna, may be conducted during the second or third tranche after completion of morphological and hydraulic analyses at the confluence, a feasibility study and detailed design. Other reaches within the project area may be selected as additional subproject areas, depending on the actual conditions of progressive riverbank erosion and the needs of protections, as indicated in Schedule 4.

21. The investment program will finance emergency riverbank protection works within the project area that are required to protect important sites from progressive riverbank erosions, even if these works are outside of the priority subproject areas,.

22. The investment program is a follow-on program of the Jamuna-Meghna River Erosion Mitigation Project (JMREMP).<sup>4</sup> JMREMP has established innovative riverbank protection technologies applying unconventional cost effective sand-filled geotextile bags, systematic dumping of the geo-bags, stringent quality control, and systematic monitoring methods of underwater works. These technologies enable more stable but flexible riverbank protections, and easy adaptation to the highly dynamic morphological changes of the main rivers in Bangladesh. JMREMP also developed a systematic construction process with stringent quality control measures, and other technical enhancements. The investment program will expand these successful innovative technologies to other river reaches, with necessary improvement that includes: (i) more effective integration of structural and non-structural measures, promoting stakeholder participation, and ensuring sustainability of structures; (ii) addressing uncertainties due to climate change; and (iii) strengthening institutional capacity to address underlying issues. Further, flood and erosion management in Bangladesh needs a more strategic planning in due

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<sup>3</sup> "Jamuna Bridge" is used in the Periodic Financing Request to be consistent with the ADB-funded project name Loan 1298-BAN: Jamuna Bridge Project, while the bridge is called Bangabandhu Bridge in Bangladesh.

<sup>4</sup> Loan 1941-BAN (SF). JMREMP was implemented from 2002 and closed on 30 June 2011.

consideration of the long-term morphological trend of the entire river reach, as opposed to the current ad hoc and piecemeal approach. This strategic planning will contribute to long-term stabilization of the entire river course, and thereby more stable economic growth in the riverine districts.

23. The approach is strengthened by applying the multi-tranche financing facilities modality, which allows (i) flexible and adaptive phased interventions which are technically suitable for coping with the dynamic river morphology in Bangladesh, (ii) support for strategic longer-term flood and erosion management planning aiming at future stabilization of river courses, and (iii) longer-term and more effective support for institutional capacity enhancement of the sector.

24. The following table summarizes the features of the three high priority subproject areas.

**Table A1.3: Overall Features of Three Priority subproject Areas**

<b>JRB-1</b>	<b>(Jamuna Right Bank -1)</b>
District	Sirajganj District
Population	1.5 million
Area (km <sup>2</sup> )	582 km <sup>2</sup>
Location	On the right bank (west bank) of the Jamuna River. Immediately downstream of Jamuna Bridge, between the bridge and the first major tributary.
<b>JLB-2</b>	<b>(Jamuna Left Bank -2)</b>
District	Manikganj, Sirajganj, and Tangail Districts
Population	1.1 million
Area (km <sup>2</sup> )	1,212 km <sup>2</sup>
Location	On the left bank (east bank) of the Jamuna River, between an off-take of the Dhaleswari River and the end of the Jamuna at the confluence with the Ganges.
<b>PLB-1</b>	<b>(Padma Left Bank -1)</b>
District	Dhaka and Manikganj Districts
Population	0.74 million
Area (km <sup>2</sup> )	682 km <sup>2</sup>
Location	On the left bank (east bank) of the Padma River. Downstream of JLB-2

## 2. Activities of Each Component

### Component A: Flood and Riverbank Erosion Risk Mitigation Measures at Priority Reaches

25. This component will provide specific measures to protect selected priority river reaches from flood and riverbank erosion risks. The measures will consist of (i) infrastructure development, (ii) community-based flood risk management, (iii) participatory regular operation and maintenance (O&M), and (iv) livelihood support for project affected people.

#### i. A1: Infrastructure improvement

26. This sub-component will provide flood and riverbank erosion protection infrastructure in the subproject areas. More specifically, the investment program will include the provision of the following infrastructure in the selected subproject areas:

- Construction of riverbank erosion protection structures using appropriate technology with innovative cost effective materials and a systematic efficient construction method, and



- Rehabilitation/construction of flood embankments with associated structures like gated sluiceways and paved roads on the embankments.

27. Design and quantity of riverbank protection works may be adjusted during the implementation, depending on changes in the river morphology. The provisions include emergency and/or adaptive riverbank protections works in the project area, including reaches other than the selected three subproject areas. The project will also plan and implement requisite social and environmental safeguards, following relevant policies and guidelines of the government and ADB.

**ii. A2: Community-based flood risk management**

28. This sub-component will be implemented by the DDM. The project will support the formulation of community disaster management units and their capacity development in the subproject areas. The community disaster management units will be formulated at the ward level (under Upazila and union levels), following existing procedures and guidelines of DDM, with necessary improvements. The new units will be established within the DDM's existing institutional framework. The support will also cover capacity development of the units and volunteer, particularly on flood and riverbank erosion risk management.

**iii. A3: Participatory regular operation and maintenance (O&M)**

29. This sub-component will be implemented by BWDB with close coordination with DDM's community-based disaster management activities (Sub-component A2). The sub-component aims at contributing to sustainability of infrastructures to be provided under the project, through involvement and support for capacity development of communities in regular (minor) O&M activities of flood management infrastructures in the three subproject areas.

30. The support will be initiated from awareness campaign to communities to provide knowledge of roles, functions and importance of flood and riverbank erosion risk management infrastructure. The communities, then, will be trained in regular O&M of infrastructure concerned. O&M activities will be linked with livelihood support activities for the communities and will be determined based on results of needs' surveys of each community.

**iv. A4: Livelihood support for project affected people**

31. This sub-component will provide support for project affected people, largely by involuntary resettlement, who are usually landless vulnerable population. Vulnerable villagers in villages which will receive resettlers may also be benefitted from the sub-component.

**Component B: Strengthening Institutional System for Flood and Riverbank Erosion Risk Management**

32. This component will support for strengthening the national-level institutional system of the flood and riverbank erosion risk management for the main rivers in Bangladesh, including knowledge base development, with special attention to the strategic river management and sustainable asset management.

i. **B1: Institutional capacity strengthening for sustainable river management**

33. This sub-component will support BWDB for its capacity enhancement of flood and riverbank erosion risk management for the main rivers. It will include: (i) capacity enhancement of BWDB staffs, (ii) support for the initial set-up of the new Office of Chief Engineer River Management (if established), and (iii) development of sustainable asset management.

ii. **B2: Knowledgebase Development**

34. This sub-component will support BWDB for establishing data, information and knowledge base for flood and riverbank erosion management of the main rivers, which will become the basis for the strategic planning and sustainability. The provision may include the following:

35. **Comprehensive studies for long-term strategic river management.** The comprehensive studies for long-term strategic river management will include (i) long-term river stabilization study for the Jamuna-Padma-Lower Meghna river system and (ii) preliminary river network study for the Jamuna-Padma-Meghna river system.

36. The long-term stabilization study will formulate a holistic long-term river stabilization program of the Jamuna-Padma-Lower Meghna rivers with strategic future interventions for addressing flooding and riverbank erosion. The study will be supported by a comprehensive morphology analysis. The study will also verify the selection of priority protection reaches for the subsequent tranches, and will be reflected on the design of the future tranches.

37. The preliminary river network study will consider major rivers within the hydrological network of the Jamuna-Padma-Meghna rivers. The study will identify required future in-depth studies for addressing various aspects related to sound river management, including river morphology, riverbank erosion, river training/stabilization, and associated land recovery. The study will also consider multi-functional use of the major rivers, such as water uses for domestic and industrial water supply and irrigation, dry season water quality, navigation, and socio-economic implications of these water uses. The comprehensive flood management of the river system will also be examined in due consideration of such water uses.

38. Local hydraulic analyses at important locations with complex hydraulic conditions will also be conducted for further discussions of required and appropriate riverbank protection works at sensitive areas. They may include confluences of the Padma and the Meghna, and the Jamuna, Ganges and Padma.

39. **Land recovery/river training piloting.** This subcomponent will be conducted during the first tranche. The piloting may be continued during the subsequent tranches, at the request of the government, subject to findings during the first tranche. The project includes physical works to stimulate recovery (creation and/or stabilization) of lands. Piloting locations and technologies will be selected in line with the comprehensive morphology analysis for the above studies. The piloting will be started in the smaller rivers (major rivers, small rivers, or other rivers), not in the main rivers.

40. **Flood and river survey database establishment and data analysis capacity enhancement.** This will include support for regular flood and river bathymetry surveys. Existing survey data accumulated since the JRMEMP implementation period and future survey data will

be compiled as database during the subsequent tranche. The support will cover training to BWDB staffs.

41. **Improvement of existing short-term riverbank erosion prediction model.** The necessary improvement of the existing model will be examined as part of the long-term stabilization study. The project will support the improvement of the existing model, which could be used for the preparedness to disasters.

42. **Information dissemination,** such as the establishment of the project web-site, preparation of technical papers in international conferences, and participation of BWDB staffs in the international conferences will be supported.

### **Component C: Program Management**

43. This component will support project implementation management for timely implementation, quality control, sound financial management, and timely completion of the investment program. It will include support for the preparation of the subsequent tranches, such as verifying site selection from the latest river morphology conditions, feasibility studies, detailed design of structures, and the preparation of all documents necessary for approvals of the government and ADB, including draft EIAs, and resettlement plans.

### **E. Financing Plan**

44. The total cost of the Investment Program is estimated at \$373.7 million. The government has requested an MFF in an amount up to \$270.3 million to help finance a part of the investment program. An amount not exceeding the equivalent of \$255 million will be provided from ADB's Special Funds resources in accordance with ADB's policies applicable to Special Funds resources and/or from ADB's ordinary capital resources in accordance with ADB's London interbank offered rate (LIBOR)-based lending modality. The remaining facility amount will be converted to ADB-administered cofinancing resources.<sup>5</sup> The Government of Netherlands will finance \$15.3 million on a grant basis for the first tranche. The government will make the ADB loan, the Netherlands grant, and counterpart funds available to the executing agency through budget allocation.

**Table A1.4: Investment Program (\$ million)**

<b>Item</b>	<b>Amount</b>
<b>A. Base Cost<sup>b</sup></b>	
1. Component A: Flood and riverbank protection	275.3
2. Component B: Institutional strengthening	14.3
3. Component C: Project management	27.1
<b>Subtotal (A)</b>	<b>317.0</b>
<b>B. Contingencies<sup>c</sup></b>	<b>50.1</b>
<b>C. Financing Charges During Implementation<sup>d</sup></b>	<b>6.7</b>
<b>Total (A+B+C)</b>	<b>373.7</b>

Note: Figures may not sum precisely because of rounding.

<sup>a</sup> Includes taxes and duties to be financed from government resources. (\$10.2 million for the first tranche, and \$28.3 million of the MFF)

<sup>b</sup> In mid-2013 prices.

<sup>c</sup> Physical contingencies computed at between 0% and 10% depending on item. Price contingencies computed at 2.2% in the first year, 1.9% thereafter on foreign exchange costs and 8.5% in the first

<sup>5</sup> ADB. 2008. *Mainstreaming the Multitranchise Financing Facility*. Manila. Para. 79.

year, 7.5% in the second year and 7.0% thereafter on local currency costs; includes provision for potential exchange rate fluctuation under the assumption of a purchasing power parity exchange rate.  
<sup>d</sup> Includes interest and commitment charges. Interest during construction for ADB loan has been computed at 2.0% per year. Commitment charges for an ADB loan are 0.15% per year to be charged on the undisbursed loan amount.

**Table A1.5: Financing Plan (Total Investment Plan)**

<b>Financing Source</b>	<b>Amount (\$ million)</b>	<b>Share of Total (%)</b>
Asian Development Bank		
Special Funds and or ordinary capital resources (loan)	255.0	68.2
Netherlands Government (grant)	15.3	4.1
Government	103.4	27.7
<b>Total</b>	<b>373.7</b>	<b>100.0</b>

## SCHEDULE 2

### DESIGN AND MONITORING FRAMEWORK FOR THE FACILITY

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
<p><b>Impact</b></p> <p>Improved livelihood in the project area</p>	<p>By 2028 in program districts</p> <p>Monsoon crop average yields increased to 3.75 t/ha (2.75t/ha in 2013)</p> <p>Average annual per capita income increased to Tk136,000 (Tk74,380/capita in 2012)</p>	<p>BBS and other government-published reports and statistics</p> <p>BBS, DAE, DAM and other government-published reports and statistics</p>	<p><b>Assumption</b></p> <p>The government continues to attach high priority to flood and riverbank erosion protection</p> <p><b>Risk</b></p> <p>Climate change impacts exceed projections</p>
<p><b>Outcome</b></p> <p>Reduced flood and riverbank erosion risks in the subproject areas</p>	<p>By 2023:</p> <p>122,000 ha of land protected from inundation damages (baseline = 0)</p> <p>Around 2 million of population protected from inundation damages (baseline = 0)</p> <p>461 ha of lands with assets protected from bank erosion (43 ha in 2013)</p>	<p>Districts' flood damage records</p> <p>Districts' flood damage records</p> <p>BWDB's dry season satellite image analysis</p>	<p><b>Assumption</b></p> <p>BWDB allocates adequate O&amp;M budget</p> <p><b>Risks</b></p> <p>Floods exceed design return periods</p> <p>River morphological changes exceed the planned range</p>
<p><b>Outputs</b></p> <p>1. Flood and riverbank erosion risk mitigation functioning at priority reaches</p>	<p>By 2023 in subproject areas</p> <p>60 km of riverbank protected by applying appropriate technology and methodology (baseline=10 km)</p> <p>89 km of climate-resilient flood embankment constructed/ rehabilitated/upgraded against 100-year probable floods (baseline= 0 km in good condition)</p> <p>66 km of paved roads on embankments (baseline=0)</p> <p>8 regulators and other hydraulic structures installed. (baseline=0)</p> <p>200 community-based disaster management units operate disaster-resilience action plan against flood and erosion</p>	<p>BWDB project progress and completion reports</p> <p>BWDB project progress and completion reports</p> <p>BWDB project progress and completion reports</p> <p>BWDB project progress and completion reports</p> <p>Implementation NGO's reports</p> <p>BWDB benefit survey</p>	<p><b>Risk</b></p> <p>Delay in land acquisition by Deputy Commissioners</p>

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
	disasters with min. 33% of units led by women (baseline=0)	reports	
	11 community groups with at least 50% of women participants operate livelihood support programs (baseline=0)	Implementation NGO's reports BWDB benefit survey reports	
2. Strengthened institutional systems for flood and riverbank erosion risk management	MIS for flood and riverbank erosion with sex-disaggregated data developed and operated by BWDB by 2021  5-year budgetary plan for riverbank protection O&M and emergency work for the main rivers endorsed by BWDB by 2018  Long-term strategic river stabilization plan taking climate change impact into account endorsed by BWDB by 2016  BWDB project website contained database of flood and river survey and knowledge products by 2023	BWDB project progress and completion reports  BWDB's annual budgetary plan BWDB's construction material stockade plan  BWDB project progress and completion reports  BWDB project progress and completion reports BWDB project web-site	
3. Program management systems operational	Outputs completed on time within budget	BWDB project progress and completion report	

Activities with Milestones	Inputs (\$ million)
<b>1. Flood and riverbank erosion risk mitigation measures at priority reaches</b>	
1.1 Infrastructure improvement	ADB (loan): 255.0 Government of Netherlands (grant): 15.3
1.1.1 Complete land acquisition (2016, 2018, and 2021)	
1.1.2 Complete construction works of structural measures (June 2023)	Government: 103.4
<b>1.2 Community-based flood risk management</b>	<b>Total 373.6</b>
1.2.1 Engage NGO, and develop project specific methodologies and instructions for implementation NGOs (July 2014– March 2015)	
1.2.2 Formulate community disaster management units, with necessary training (December 2022)	
<b>1.3 Community capacity enhancement for participatory regular O&amp;M</b>	
1.3.1 Complete awareness campaign and training (December 2022)	
1.4 Complete livelihood support for project affected people (June 2023)	

Activities with Milestones	Inputs (\$ million)
<p><b>2. Strengthening institutional system for flood and riverbank erosion risk management</b></p> <p>2.1 BWDB institutional capacity strengthening for river management and sustainable asset management</p> <p>2.1.1 Conduct training for BWDB staff in river management, and O&amp;M (January 2015–2022)</p> <p>2.1.2 Support initial set-up of CE River Management office (2014–2023)</p> <p>2.1.3 Develop flood MIS: Project management module by December 2016, asset inventory by 2016 followed by O&amp;M module by 2018</p> <p>2.1.4 Conduct annual workshops for information sharing inviting other agencies (2015–2023)</p> <p>2.2 Data and knowledge base development</p> <p>2.2.1 Complete studies and preliminary river master planning for long-term strategic river management (June 2016)</p> <p>2.2.2 Complete land recovery/river training piloting (April 2014–June 2021)</p> <p>2.2.3 Conduct flood and river surveys (June 2015–June 2023) and establish improved flood and river survey database (December 2017)</p> <p>2.2.4 Update existing short-term erosion prediction model (September 2016) and Guidelines for Riverbank Protection Works (December 2022)</p> <p><b>3. Program management</b></p> <p>3.1 Engage ISPMC (2014, 2017, and 2020)</p> <p>3.2 Loan processing of Tranche-2 (signed in 2017), and of Tranche-3 (signed in 2020)</p>	

ADB = Asian Development Bank, BBS = Bangladesh Bureau of Statistics, BWDB = Bangladesh Water Development Board, CE = Chief Engineer, DAE = Department of Agriculture Extension, DAM = Department of Agricultural Marketing, DDM = Department of Disaster Management, ha = hectare, ISPMC = Institutional Strengthening and Project Management Consultant, MIS = management information system, NGO = nongovernment organization, O&M = operation and maintenance.

## **SCHEDULE 3**

### **IMPLEMENTATION FRAMEWORK**

#### **A. Implementation Arrangements**

1. The executing agency will be the Bangladesh Water Development Board (BWDB) under the Ministry of Water Resources. A project management office (PMO) for the MFF will be established within BWDB to manage project implementation that will be undertaken by subproject management offices (SMO) established in each subproject area. The Department of Disaster Management (DDM) will serve as the implementing agency for a community-based disaster management sub-component. A program steering committee will be formed for central level inter-departmental coordination, while a technical committee will oversee quality of technical aspects, including studies and planning, and structural design. A consulting team led by an international firm and comprising international and national experts will be engaged for project management. The project management consultant which will be engaged for the first tranche may be engaged through the single source selection modality for subsequent tranches, at a request of the executing agency/ government, subject to the performance of the team, to ensure the continuity of the project implementation. Nongovernment organizations (NGOs) will also be engaged for supporting community group formation and other stakeholder participation activities.



## B. Project Implementation Organizations – Roles and Responsibilities

### 1. Organizations: Management Roles and Responsibilities

Organizations	Management Roles and Responsibilities
<ul style="list-style-type: none"> <li>• Program/Project Steering Committee (PSC)</li> </ul>	<ul style="list-style-type: none"> <li>• Provide policy guidance to program formulation, particularly for Tranche 2 and Tranche 3, and oversee its implementation.</li> <li>• Ensure smooth inter-ministry/agency coordination.</li> <li>• Oversee project implementation and guide resolve implementation problems and issues that require higher level interventions.</li> </ul>
<ul style="list-style-type: none"> <li>• Technical Committee</li> </ul>	<ul style="list-style-type: none"> <li>• Review and advise on complex and/or controversial technical issues encountered during program formulation, particularly during the Tranche 2 and Tranche 3 feasibility studies, other studies to be conducted under the implementation program, such as long-term river stabilization study, detailed structural design, and project implementation.</li> <li>• Review and monitor the progress of studies and design work.</li> <li>• Recommend findings to the PSC.</li> </ul>
<ul style="list-style-type: none"> <li>• BWDB (Executing agency)</li> </ul>	<ul style="list-style-type: none"> <li>• Overall responsibility for executing the program/project and ensuring achievement of project objectives.</li> <li>• Prepare annual work plans and budgets meeting government requirements, and arrange necessary institutional support and services for project implementation.</li> <li>• Award and manage contracts for procurement of works and goods, and for recruitment of consulting and NGO services.</li> <li>• Manage project finance and accounts, and monitor the use of funds provided by government, ADB and a co-financer(s).</li> <li>• Communicate and coordinate with the Department of disaster Management (DDM), and other relevant agencies and institutions.</li> <li>• Prepare/cause to prepare and submit periodic progress reports, annual audit reports, and other reports meeting government and ADB requirements.</li> <li>• Collect and collate expenditure statements, including for expenditures incurred by DDM, and prepare and submit withdrawal applications for funds to ADB.</li> <li>• Prepare environmental impact assessment (EIA)/summary environmental impact assessment (SEIA), development project proforma/proposal (DPP) and other necessary documents for subsequent tranches meeting ADB and government requirements.</li> <li>• Establish a Project Management Office (PMO) as the focal point of the Project and Program, including BWDB</li> </ul>

Organizations	Management Roles and Responsibilities
	<p>responsibilities and tasks listed above.</p> <ul style="list-style-type: none"> <li>• Establish 3 Subproject Management Offices (SMO) for the first tranche to manage and supervise day-to-day implementation of works in respective subproject areas under the guidance of the Division Offices concerned. Establish other SMOs, as necessary, in respective subproject areas for the subsequent tranches.</li> <li>• SMOs will coordinate with Upazilla and Union level institutions and local communities at subproject level.</li> </ul>
<ul style="list-style-type: none"> <li>• DDM (Implementing agency) PMU</li> </ul>	<ul style="list-style-type: none"> <li>• Implement community-based flood risk management sub-component, including recruitment and supervision of NGOs, and procurement of related goods. ensure timely and quality outputs of the sub-component.</li> <li>• Manage finance accounts, and monitor the use of funds provided by ADB for the sub-component. submit statements of expenditures to PMO, BWDB,</li> <li>• Prepare and submit quarterly physical and financial progress reports in prescribed formats to BWDB.</li> <li>• Coordinate with BWDB on project related problems and issues and recommendations.</li> <li>• Establish a Project Management Unit (PMU) and appoint a Deputy Director/Deputy Secretary as Project Manager and the focal point for subproject implementation.</li> </ul>
<ul style="list-style-type: none"> <li>• ADB</li> </ul>	<ul style="list-style-type: none"> <li>• Review overall project implementation including compliance with ADB loan regulations, loan agreement and project agreement.</li> <li>• Select, following ADB guidelines and as agreed in response to the BWDB request project implementation consultants on behalf of BWDB.</li> <li>• Review project documents that require ADB's approval or no-objection.</li> <li>• Provide funding for eligible items of expenditures.</li> </ul>
<ul style="list-style-type: none"> <li>• The Netherlands Embassy</li> </ul>	<ul style="list-style-type: none"> <li>• Review overall project implementation together with ADB.</li> <li>• Provide funding for eligible items of expenditures.</li> </ul>

## 2. Program Organization Structure

2. The organization structure of the facility is shown in **Figure A3.1**. **Figure A3.2** shows the organization structure within BWDB for the implementation of the facility. This organization structure in **Figure A3.2** is under the existing institutional set-up of BWDB without Chief Engineer (River Management) position. Once the proposed “need-based set-up” of BWDB, which includes the creation of the new Chief Engineer (River Management) position is approved, the organization structure within BWDB shall be restructured with mutual agreement between BWDB and ADB, Any change in implementation arrangement in the FAM requires ADB's approval.

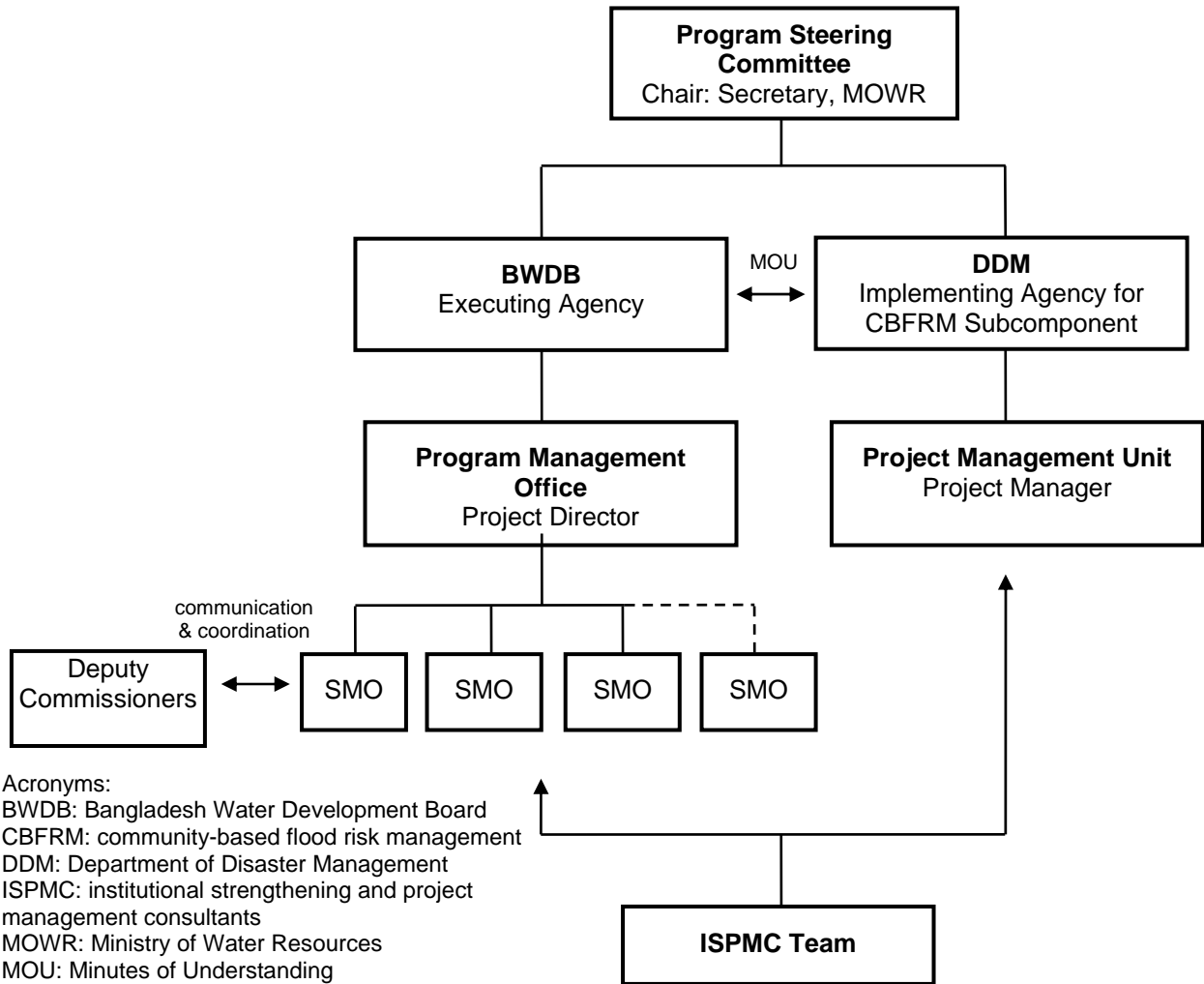
3. The program steering committee will be chaired by the Secretary, MOWR, and will comprise with the following members:

<b>Sl. No.</b>	<b>Name with Designation</b>
1.	Senior Secretary, Ministry of Water Resource
2	Additional Secretary, Ministry of Water Resources
3	Director General, Bangladesh Water Development Board
4	Director General, DDM
5	Additional Director General (Planning), BWDB
6	Additional Director General (West)
7	Additional Director General (East), BWDB
8	Joint Secretary, Ministry of Water Resources.
9	Joint Chief, Ministry of Water Resources
10	Chief Planning, BWDB, Dhaka
11	Director/Project Manager, DDM
12	Director-DoE
13	Deputy Chief, MoWR
14	A representative of ERD
15	A representative of Planning Commission
16	A representative of IMED
17	A representative of Ministry of Land
18	A representative of Ministry of Agriculture
19	A representative of BIWTA
20	Representative from Department of Fisheries (DoF)
21	Project Director, PMO, BWDB (Committee secretary)

4. The technical committee will be chaired by the Additional Director General (Planning), and will comprise with the following members:

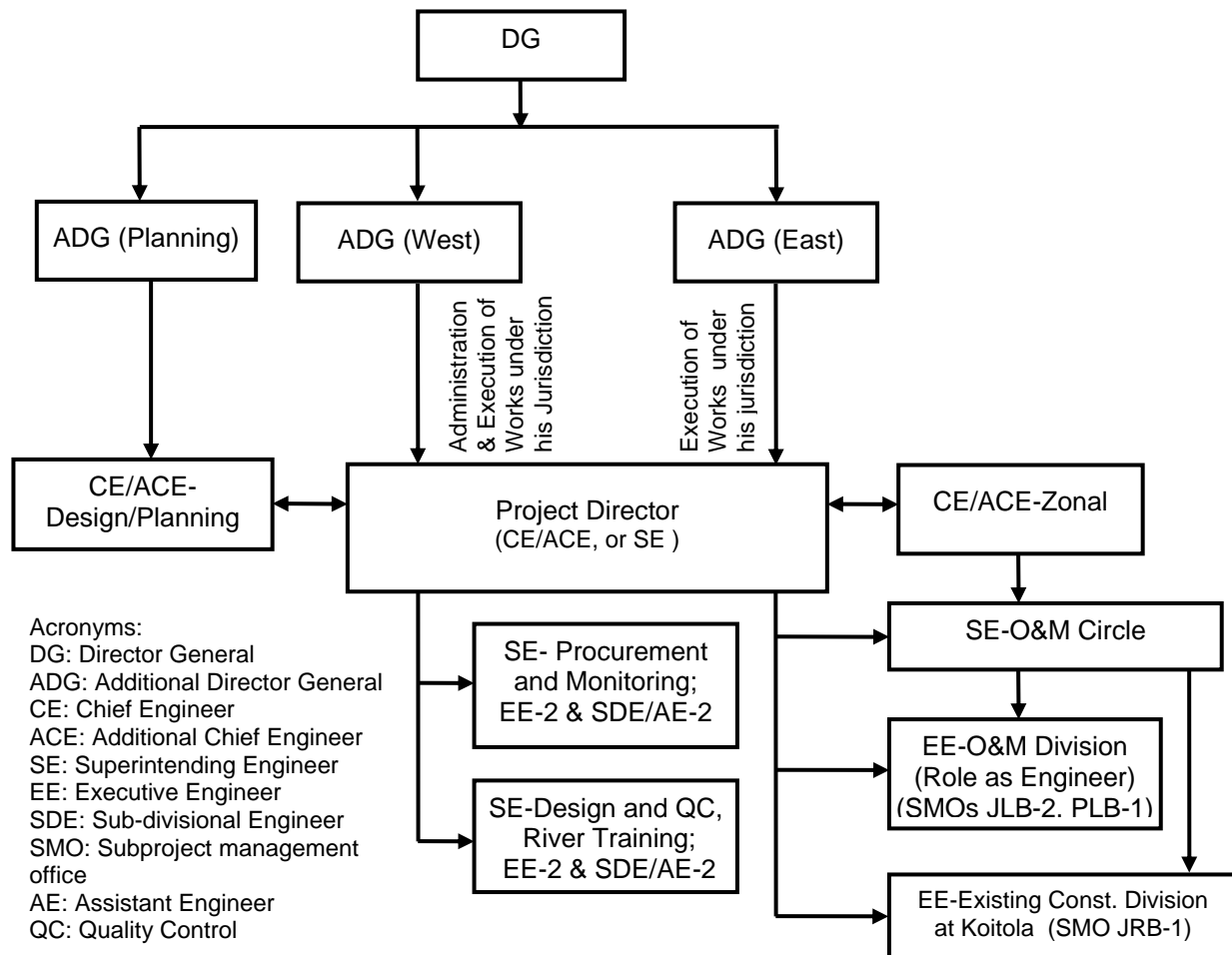
<b>Sl. No.</b>	<b>Name with Designation</b>
1	Additional Director General (Planning), BWDB
2	Chief Planning, BWDB, Dhaka
3	Chief Engineer, Design, BWDB
4	Professor, BUET
5	Morphologist, CEGIS
6	Superintending Engineer, Design and Quality Control, PMO
7	Superintending Engineer, Pabna O &M Circle, BWDB, Pabna
8	Superintending Engineer, Mymensingh O &M Circle, BWDB, Mymensingh
9	Superintending Engineer, Dhaka O &M Circle, BWDB, Dhaka
10	Executive Engineer, Office of the Chief Planning, BWDB, Dhaka.
11	Executive Engineer, PMO, BWDB, Dhaka.
12	Project Director, PMO, BWDB (Committee secretary)

**Figure A3.1: Organization Structure of the Facility**



Acronyms:  
 BWDB: Bangladesh Water Development Board  
 CBFRM: community-based flood risk management  
 DDM: Department of Disaster Management  
 ISPMC: institutional strengthening and project management consultants  
 MOWR: Ministry of Water Resources  
 MOU: Minutes of Understanding  
 SMO: Subproject Management Office

**Figure A3.2: Organization Structure in BWDB**

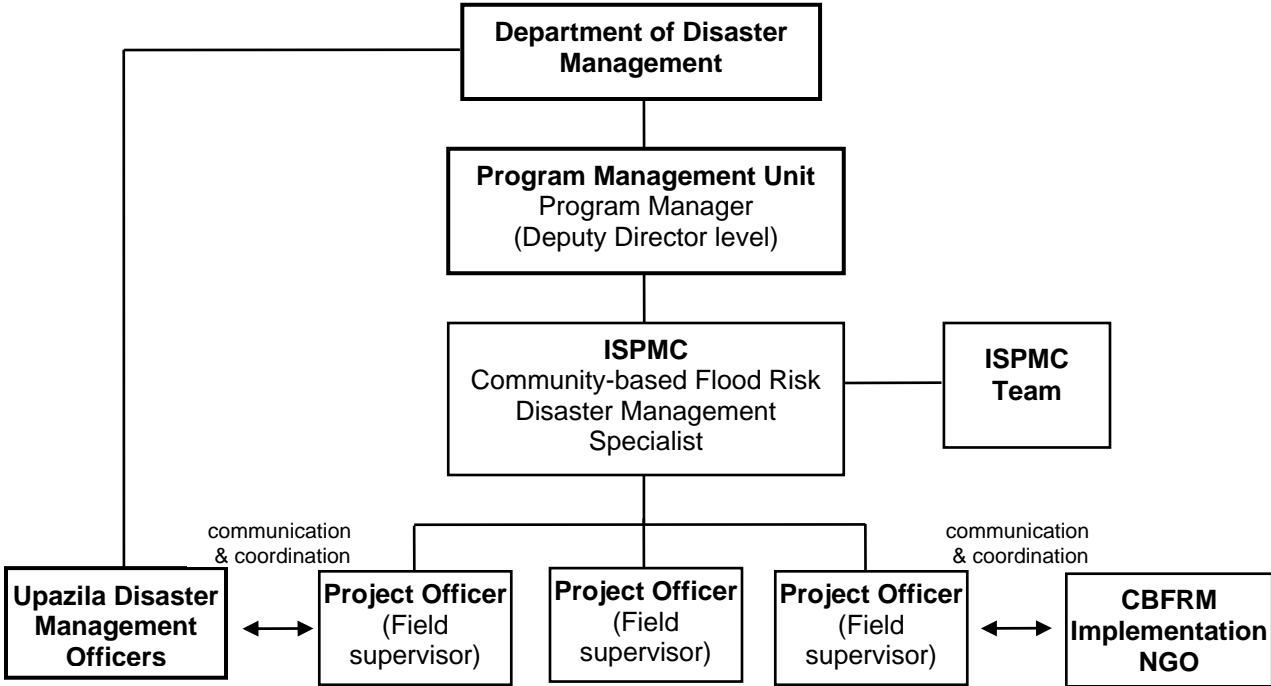


5. The investment program will be executed through BWDB's Divisional offices under the administrative control of BWDB's existing set up following the BWDB's procedures of supervision, monitoring and Delegation of Financial Power (DOFP). The Project Management Office (PMO) will be responsible for overall project management and monitoring. The PMO will be established to provide the following support of the project.

- (i) Co-ordination of Management of Project activities;
- (ii) Monitoring of construction of civil works;
- (iii) Quality assurance and control;
- (iv) Fund placement;
- (v) Project benefit monitoring and evaluation;
- (vi) All Planning and Design of the works, preparation of the tender documents, Bid evaluation, supervision and verification of bills before payments.

6. The Executive Engineer Construction Division at Koitola was created under JMREMP and still exists. The division will work as SMO for the Jamuna Right Bank-2 subproject including bank protective work from Koijuri to Hurashagor-Bhagabari and adaptive maintenance of protective works completed under JMREMP from Koitola to Koijuri.

**Figure A3.3: Organization Structure in DDM**



Acronyms:  
 CBFM: community-based flood risk management  
 ISPMC: institutional strengthening and project management consultants  
 NGO: nongovernment organization

## SCHEDULE 4

### SELECTION CRITERIA AND APPROVAL PROCESS FOR SUBPROJECTS

1. **Components and Subprojects.** The investment program will improve incomes and livelihoods of period along the Jamuna, Padma and Ganges rivers in Bangladesh. The project area of the investment program covers the Jamuna River downstream of Jamuna Bridge, the Padma River, and the Ganges downstream of the proposed Ganges Barrage. It will enhance resilience to flood and riverbank erosion risks through activities under the following components and subcomponents:

Component A: Functioning Flood and Riverbank Erosion Risk Mitigation at Priority Reaches

- A1. Infrastructure improvement
- A2. Community-based flood risk management
- A3. Community capacity enhancement for regular O&M
- A4. Livelihood support for project affected people

Component B: Strengthening Institutional System for Flood and Riverbank Erosion Risk Management

- B1. Institutional capacity strengthening for river management and sustainable asset management
- B2. Data and knowledge base development

Component C: Program Management

- C1. Implementation management
- C2. Preparation for Tranches 2 and 3

This Schedule sets out the process for selecting and approving specific river reaches as subproject areas where the components and subcomponents of the investment program will be implemented.

2. The first tranche will finance physical and non-physical investments in three pre-selected subproject areas - JRB-1, JLB-2, and PLB-1 - and will focus on the most urgent needs, such as riverbank protection structures at critically eroded sites. Subsequent tranches will finance physical and non-physical investments at adjacent stretches within these three priority subproject areas to ensure stability and sustainability of the protection, with designs adjusted to morphological changes of the river. The second and the subsequent tranches may also include physical and non-physical interventions in additional subproject area(s) satisfying the selection criteria set out below.

3. Activities under Components B and C will be conducted over the period of the Investment Program and are not restricted to any particular subproject areas.

4. **Selection Criteria.** The following criteria apply for the selection of subproject areas where (sub)components will be financed under the Facility.

- (i) The subproject area will be located within the target river reaches in the project area along the Jamuna, Padma and Ganges rivers, except the Jamuna upstream of Jamuna Bridge and the Ganges upstream of the proposed Ganges Barrage.
- (ii) The subprojects involve strengthening and restoration of the existing flood embankment systems with provision of requisite riverbank protection and

associated infrastructure as appropriate, including sluice gates and drainage channels.

- (iii) The subproject areas and the technology to be applied in the subproject areas is in line with the long-term river stabilization strategies, which will be established through the long-term stabilization river study under the first tranche of the investment program. The stabilization strategy will be supported by holistic river morphology analyses.
- (iv) Before commencement of activities in the three pre-selected subproject areas (JRB-1, JLB-2, and PLB-1), the relevant feasibility studies will be updated, including with respect to the following aspects: (i) technical design; (ii) economic and financial viability; (iii) social assessments including social safeguards plans as applicable; (iv) environmental assessments; (v) implementation schedule; and (vi) procurement plan. The implementation arrangement will also be reviewed as necessary.
- (v) To assess the feasibility of other subproject areas than the three pre-selected subproject areas (JRB-1, JLB-2, and PLB-1), the following criteria apply.
  - a. The subproject area is located in river reaches with ongoing active erosion,
  - b. The proposed physical investments do not conflict or overlap with similar on-going or planned works by development partners or the government agencies,
  - c. The proposed measures in the subproject area are technically feasible; do not pose technical risks in terms of potential negative impacts of riverbank protections on adjacent riverbanks.
  - d. There is significant general consensus and support from the local communities to plan, implement, and operate the proposed structural and nonstructural measures in the subproject area.
  - e. The proposed intervention in the subproject area is financially and economically viable with an economic internal rate of return of over 12% based on the detailed economic and financial analysis, and is robust under sensitivity and risk analysis.
  - f. The planning and design of the proposed intervention in the subproject area minimize involuntary resettlement and/or land acquisition if any, or has minimal impacts on any affected persons of and acquisition or their livelihoods.
  - g. The proposed intervention in the subproject area is socially and environmentally sound, and does not have significant adverse impacts. The intervention also includes measures to mitigate social and environmental adverse impacts, if any.
  - h. Each subproject will meet the safeguards requirements of the Government of Bangladesh and ADB as referred to in Schedule 5.

## 5. Approval Procedures.

- (i) **Tranche 1** – Analysis and assessment were conducted on selected priority river reaches under the ADB’s project preparatory technical assistance (including both banks of the Jamuna River specifically the right bank of Siraiganj District and the left bank at Manikganj District; and the left bank of the Padma River, specifically



in the area of Manikganj District). The preparation of the implementation plan is divided into three tranches on the basis of the priorities and implementation readiness.

- (ii) **Subsequent tranches** - The subsequent tranches, if required, will be processed in accordance with the following procedures:
- a. BWDB will conduct feasibility studies, including consultation with local stakeholders, design of structural and non-structural works, and cost estimate. Under the feasibility studies, BWDB will also have to prepare or/update (i) screening of sites from technical and social aspects, (ii) poverty and social assessment including gender actions, (iii) resettlement surveys; and (iv) environmental assessment. Documents are to be submitted to ADB for review and categorization.
  - b. Based on the above, BWDB with the support of the project management consultant team, will prepare the updated appraisal reports for all the subprojects together with required attachments, i.e., draft resettlement plan (RP), draft environmental assessment, as applicable, and submit the same with the draft periodic financing request to ADB for review, together with an assessment on the compliance with the FFA undertakings and the provisions of the legal agreements for the previous tranche(s).
  - c. ADB will review the updated appraisal report together with the required attachments. If ADB finds that a proposed subproject is not likely to satisfy the eligibility criteria and/or the agreed procedures, ADB will advise BWDB either (a) to modify the subproject proposal in a manner that will make it eligible for approval or (b) that the subproject is rejected.
  - d. All necessary approvals of the Government of Bangladesh will have been obtained prior to submission of a PFR. BWDB will be responsible for obtaining all such approvals and will provide ADB with a report showing that all approvals have been obtained prior to submission of the tranche appraisal report.
  - e. BWDB will submit the periodic financing request to ADB for its approval. BWDB will also assess the implementation progress and performance of the ongoing tranche. Specific measures to enhance the effectiveness of interventions will be identified for incorporation into the subsequent tranches.

## SCHEDULE 5

### SOCIAL DIMENSIONS AND SAFEGUARD REQUIREMENTS

1. Bangladesh will ensure that all the requirements prescribed in this Schedule, and the following social and safeguard frameworks and plans that have been prepared with respect to the Facility and the first tranche and of which ADB has been provided full copies, and which are deemed incorporated herein by reference, are complied with during the processing and implementation of the components/ subprojects under the Facility.

- (i) environmental assessment and review framework, dated February 2014,
- (ii) resettlement framework dated February 2014,
- (iii) environmental management plan, and resettlement plan dated February 2014 for the first tranche, and/or
- (iv) gender action plan.

2. The frameworks cover the Facility-specific information and requirements in accordance with ADB's safeguard policies: (i) the general anticipated impacts of the components or projects likely to be financed under the MFF on the environment, involuntary resettlement, and indigenous peoples; (ii) the safeguard criteria that are to be used in selecting components, projects; (iii) the requirements and procedure that will be followed for screening and categorization, impact assessments, development of management plans, public consultation and information disclosure (including the 120-day disclosure rule, if required), and monitoring and reporting; and (iv) the institutional arrangements (including budget and capacity requirements) and the client's and ADB's responsibilities and authorities for the preparation, review and clearance of safeguard documents.

3. Prior to the preparation of each PFR, the applicability and relevance of each safeguard framework for environmental assessment, involuntary resettlement, and indigenous people will be reviewed and updated to ensure relevance and consistency with applicable country legal frameworks and ADB's safeguard policies, as amended from time to time.

4. In all cases, for each new PFR preparation, the client will review ongoing projects to check on the status of compliance with the social and safeguard plans and frameworks, and submit the review reports to ADB, together with other required safeguard documents relevant to the projects/ subprojects included in the tranche being processes. In any case if major noncompliance is discovered in the course of the review of ongoing projects, a corrective action plan will be prepared and submitted to ADB.

## SCHEDULE 6

**Undertakings** Bangladesh undertake as follows:

1. In addition to the standard undertakings regarding the preparation and implementation of the Flood and River Bank Erosion Risk Management Investment Program (“Investment Program”) and individual projects thereunder (each, a “Project”) in accordance with (i) the laws and regulations of the People’s Republic of Bangladesh (“Borrower”) on environment, involuntary resettlement and indigenous peoples; and (ii) ADB’s Safeguard Policy Statement and the environmental and social safeguard documents developed pursuant thereto, the Borrower and Bangladesh Water Development Board (“BWDB”) agree to the undertakings set out below.

### Road Map and Policy and Institutional Reforms

2. The Borrower and BWDB shall remain committed to the road map and the policy framework underlying the Investment Program and implement the policy and institutional reform actions identified under the road map in accordance with the time schedule set out therein.

### Policy Dialogue and Coordination with Development Partners

3. The Borrower and BWDB shall keep ADB informed, through the Water Consultative Committee or otherwise, of discussions (a) among government and quasi-government bodies with responsibility for water sector development and (b) with Japan International Cooperation Agency (“JICA”), the Kingdom of the Netherlands, World Bank and other multilateral and bilateral agencies, that have implications for the implementation of the Investment Program, and shall provide ADB with an opportunity to comment on any proposed interventions in the water sector resulting from such discussions. The Borrower and BWDB shall take ADB’s views into consideration before finalizing and implementing any such proposals.

### Investment Program Implementation

4. The Borrower and BWDB shall ensure that the Investment Program and each Project are implemented in accordance with the detailed arrangements set forth in the facility administration manual for the Investment Program, as updated or supplemented from time to time (“FAM”). Any subsequent change to the FAM shall become effective only after approval of such change by the Borrower, BWDB and ADB. In the event of any discrepancy between the FAM and the legal agreements pursuant to which ADB finances a Project, the provisions of the legal agreements shall prevail.

5. The Borrower and BWDB shall ensure that the program management office (to be established at BWDB (“PMO”), the subproject management offices to be established at the site of each subproject (“SMO”) and the project management unit to be established at the Department of Disaster Management (“DDM”) employ sufficient staff for the duration of the Investment Program with adequate and relevant expertise in the field of project management, financial management, engineering, procurement, environmental and social safeguards implementation. The Borrower and BWDB shall keep the PMO, the SMOs and the PMU equipped with the necessary office space, facilities, equipment, transport arrangements, support staff and management information systems for the entire duration of the Investment Program.

6. The Borrower and BWDB shall (a) ensure that all counterpart staff assigned to the PMO and each Subdivisional Engineer assigned to the SMOs are allocated to the Investment Program and the relevant Project on a full-time basis and (b) undertake best efforts to ensure that all persons assigned to the PMO, the SMOs and the PMU remain in their position for a reasonable period of time and that staff replacements will not unduly disrupt implementation of the Investment Program. The Borrower and BWDB shall provide ADB reasonable opportunity to comment on any proposed appointment of persons to key positions in the PMO and SMOs, including, without limitation, the position of Program Director of the PMO and Executing Engineer of each SMO.

7. The Project Director of the PMO shall hold the position not less than the rank of Superintending Engineer.

8. ADB acknowledges that BWDB is in the process of seeking approval for its proposal entitled "Need-Based Set-up of BWDB 2013", and that, if adopted, the new set-up would create a separate office in BWDB with responsibility for flood and riverbank erosion risk management of the main rivers, led by the 'Chief Engineer River Management'. Should this proposal, or any other proposal to reorganize BWDB that may have implications for the implementation of the Investment Program, be adopted, the Borrower and BWDB shall consult in good faith and agree with ADB on any changes to the implementation arrangements laid down in the FAM and/or the FFA before taking any affirmative action thereon.

#### Counterpart Support

9. The Borrower shall make available to BWDB all counterpart funds required for timely and effective implementation of the Investment Program, including, without limitation, any funds required to keep the PMO and the SMOs fully equipped and fully staffed in accordance with the requirements set out in the FAM, to mitigate unforeseen environmental and social impacts, and to meet additional costs arising from design changes, price escalation in construction costs and/or unforeseen circumstances. The Borrower shall make the resources thus required available to BWDB on a quarterly basis for each fiscal year.

10. The Borrower shall reimburse BWDB for any taxes and duties imposed in the territory of the Borrower for goods, works and services used in the carrying out of the Investment Program no later than the fiscal year after the year in which the taxes and duties were incurred.

#### Selection of Subproject areas

11. The Borrower and BWDB shall ensure that each Subproject area under the Investment Program is selected and approved in accordance with the selection criteria and approval process set out in Schedule 4 of the framework financing agreement for the Investment Program ("FFA"). The Borrower and BWDB shall ensure that all relevant documents forming the basis for screening, selection and processing of Subproject areas are made available to ADB upon request and are kept available for such purposes for a minimum period of five years from the date of the project completion report for the relevant Project.

#### Labor Standards

12. The Borrower shall ensure that all bidding documents and contracts for construction or civil works under a Project contain provisions that require contractors:

- (a) to comply with applicable core labor standards, labor laws and incorporate applicable workplace occupational and health and safety principles;
- (b) to eliminate discrimination in respect of employment and to not differentiate payment between men and women for work of equal value;
- (c) not to employ child labor; to eliminate forced or compulsory labor; to allow for freedom of association;
- (d) to maximize employment of local poor and disadvantaged persons for construction purposes to the extent possible, provided that the requirements for efficiency are adequately met;
- (e) to disseminate, or engage appropriate service providers to disseminate, information on the risks of sexually transmittable infections, including HIV/AIDS, to their employees and to members of the local communities surrounding the Project facilities, particularly to females; and
- (f) to implement the applicable provisions of the gender action plan developed for the Investment Program and each Project (“Gender Action Plan”).

#### Gender and Development

13. The Borrower and BWDB shall comply with and implement the Gender Action Plan in accordance with its terms, allocate adequate resources for such implementation, and shall monitor and report to ADB on key gender outcome and output targets in accordance with the project performance and monitoring system to be developed for the Investment Program and the Projects.

#### Quality Assurance

14. To ensure that all underwater works of riverbank protection facilities to be constructed under the Project are carried out in accordance with the applicable design standards, specifications and construction methods, external experts shall inspect each section completed under a works contract using high-resolution underwater echo sound surveying equipment with technical specifications acceptable to ADB and through diving inspections. BWDB shall ensure that all survey and inspection results are made available to ADB upon request and are kept available for such purposes for a minimum period of five years from the date of the project completion report for the relevant Project.

#### Panel of Experts

15. If and when ADB may so request from time to time, BWDB shall recruit and engage experts with qualifications, experience and terms of reference acceptable to ADB in order to analyze difficulties or constraints encountered in implementing the Investment Program or any Project, and advise on remedial measures or technological innovations to promote efficiency in project implementation.

#### Inter-agency Coordination

16. BWDB shall timely notify the Bangladesh Inland Water Transportation Authority, DDM and other relevant agencies of any areas where riverbank protection infrastructure will be or has been constructed. BWDB shall take necessary measures in consultation with such agencies to ensure that dredging or construction works undertaken by such agencies do not cause any damage to the riverbank protection infrastructure.

#### Operation and Maintenance of Project facilities

17. The Borrower and BWDB shall ensure that (a) BWDB inspects and maintains the embankments, regulators and riverbank protection works rehabilitated or constructed under the Investment Program in accordance with the operation and maintenance plans to be developed under the Investment Program; (b) BWDB submits annually to the Ministry of Water Resources budget requests with a separate line item to cover the cost of maintenance and repair of the embankments, riverbank protection works and regulators in accordance with such operation and maintenance plans; and (c) the Borrower will allocate in its annual budget adequate resources for BWDB to carry out such maintenance and repair works and make the resources thus allocated available to BWDB on a quarterly basis.

18. BWDB shall create strategic stockpiles for emergency riverbank protection works and repairs in accordance with the emergency and operation and maintenance plans to be developed under the first Project under the Investment Program.

19. BWDB shall provide local communities with land use rights for embankment slopes rehabilitated or constructed under the Investment Program through five-year lease contracts that are designed to promote livestock grazing, cultivation of trees or other suitable vegetation, or other activities conducive to embankment maintenance in a manner consistent with the operation and maintenance plans to be developed under the Investment Program.

#### MOU between DDM and BWDB

20. No ADB loan proceeds may be withdrawn for the disaster risk management subcomponent under the Investment Program until BWDB and DDM have entered into a memorandum of understanding, acceptable to ADB, setting out the terms and practical arrangements for their collaboration.

#### Governance and Anticorruption

21. The Borrower, BWDB and each implementing agency shall (a) comply with ADB's Anticorruption Policy (1998, as amended to date) and acknowledge that ADB reserves the right to investigate directly, or through its agents, any alleged corrupt, fraudulent, collusive or coercive practice relating to the Project; and (b) cooperate with any such investigation and extend all necessary assistance for satisfactory completion of such investigation.

22. The Borrower, BWDB and each implementing agency shall ensure that the anticorruption provisions acceptable to ADB are included in all bidding documents and contracts, including provisions specifying the right of ADB to audit and examine the records and accounts of the executing and implementing agencies and all contractors, suppliers, consultants, and other service providers as they relate to the Investment Program.

23. The Borrower and BWDB shall announce the Investment Program and business opportunities associated with the Investment Program on their websites. In addition, the

websites shall at least disclose (a) the following information in relation to goods, works and services procured for each Project: (i) the list of participating bidders, (ii) the name of the winning bidder, (iii) the amount of the contracts awarded, and (iv) the goods, works and services procured; and (b) a copy of the five-year lease contracts concluded pursuant to paragraph 19 of this Schedule.

24. The Borrower shall conduct periodic inspections and random spot checks of civil servants' and contractors' activities related to the procurement of goods, works and services and to fund withdrawals and settlements under the Investment Program.