



# Report and Recommendation of the President to the Board of Directors

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Project Number: 44167  
June 2014

## Proposed Multitranche Financing Facility People's Republic of Bangladesh: Flood and Riverbank Erosion Risk Management Investment Program

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Asian Development Bank

## CURRENCY EQUIVALENTS

(as of 1 June 2014)

Currency unit – taka (Tk)

Tk1.00 = \$0.01288

\$1.00 = Tk77.6

## ABBREVIATIONS

ADB	–	Asian Development Bank
BWDB	–	Bangladesh Water Development Board
km	–	kilometer
MFF	–	multitranches financing facility
O&M	–	operation and maintenance
TA	–	technical assistance

## NOTES

- (i) The fiscal year (FY) of the Government of Bangladesh ends on 30 June. “FY” before a calendar year denotes the year in which the fiscal year ends, e.g., FY2014 ends on 30 June 2014.
- (ii) In this report, “\$” refers to US dollars.

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INVESTMENT PROGRAM<sup>a</sup> AT A GLANCE

<b>1. Basic Data</b>		<b>Project Number:</b> 44167-013		
<b>Project Name</b>	Flood and Riverbank Erosion Risk Management Investment Program	<b>Department /Division</b>	SARD/SAER	
<b>Country</b>	Bangladesh	<b>Executing Agency</b>	Bangladesh Water Development Board	
<b>Borrower</b>	People's Republic of Bangladesh			
<b>2. Sector</b>	<b>Subsector(s)</b>	<b>ADB Financing (\$ million)</b>		
✓ <b>Agriculture, natural resources and rural development</b>	Rural flood protection		177.53	
<b>Water and other urban infrastructure and services</b>	Rural water policy, institutional and capacity development		33.09	
	Urban flood protection		44.38	
		<b>Total</b>	<b>255.00</b>	
<b>3. Strategic Agenda</b>	<b>Subcomponents</b>	<b>Climate Change Information</b>		
Inclusive economic growth (IEG)	Pillar 2: Access to economic opportunities, including jobs, made more inclusive	Adaptation (\$ million)	222.00	
Environmentally sustainable growth (ESG)	Disaster risk management	Climate Change impact on the Project	Medium	
<b>4. Drivers of Change</b>	<b>Components</b>	<b>Gender Equity and Mainstreaming</b>		
Governance and capacity development (GCD)	Anticorruption	Effective gender mainstreaming (EGM)	✓	
	Client relations, network, and partnership development			
	Civil society participation			
	Institutional development			
	Public financial governance			
Knowledge solutions (KNS)	Application and use of new knowledge solutions in key operational areas			
	Pilot-testing innovation and learning			
Partnerships (PAR)	Bilateral institutions (not client government)			
	Civil society organizations			
	Official cofinancing			
	Private Sector			
<b>5. Poverty Targeting</b>		<b>Location Impact</b>		
Project directly targets poverty	Yes	Rural	High	
Geographic targeting (TI-G)	Yes	Urban	Low	
<b>6. Risk Categorization:</b>	Complex			
<b>7. Safeguard Categorization</b>	No Safeguards Categorization Available			
<b>8. Financing</b>				
<b>Modality and Sources</b>	<b>Indicative Tranches (\$million)</b>			<b>Amount (\$ million)</b>
	I	II	III	
<b>ADB</b>				<b>255.00</b>
Sovereign MFF-Tranche (Loan): Asian Development Fund	65.00	100.00	90.00	255.00
<b>Cofinancing</b>				<b>15.30</b>
Netherlands Fund (with LoA)	15.30	0.00	0.00	15.30
<b>Counterpart</b>				<b>103.40</b>
Government	23.30	45.30	34.80	103.40
<b>Total</b>	<b>103.60</b>	<b>145.30</b>	<b>124.80</b>	<b>373.70</b>
<b>9. Effective Development Cooperation</b>				
Use of country procurement systems		No		
Use of country public financial management systems		Yes		

## INVESTMENT PROGRAM<sup>a</sup> AT A GLANCE

### 10. Country Operations Business Plan

CPS

[http://www.adb.org/sites/default/files/cps-ban-2011-2015\\_0.pdf](http://www.adb.org/sites/default/files/cps-ban-2011-2015_0.pdf)

COBP

<http://www.adb.org/documents/bangladesh-country-operations-business-plan-2014-2016>

### 11. Investment Program Summary

The investment program will improve livelihoods of people in the project area along the main rivers in Bangladesh. It will reduce flood and riverbank erosion risks through strengthening flood and riverbank erosion management institutional systems, and establishing integrated and sustainable structural and non-structural risk mitigation systems in priority protection reaches. The investment program is the follow-on project of the Jamuna-Meghna River Erosion Mitigation Project. It will extend successful technologies of the Jamuna-Meghna project to other geographical areas with necessary improvements.

**Impact and Outcome:** The impact (of the facility) is improved livelihoods in the project area.

The outcome (of the facility) is reduced flood and riverbank erosion risks in the subproject areas.

**Outputs:** (i) Flood and riverbank erosion risk mitigation functioning at priority reaches, (ii) Strengthened institutional systems for flood and riverbank erosion risk management, and, and (iii) Operational program management systems

**Implementation Arrangements:** Bangladesh Water Development Board will be the executing agency/ies.

**Project Readiness:** A. Status of Compliance with Detailed Design (80% completed)

- Riverbank Protection Works: completed. Embankments: Basic design completed. Detailed design being prepared by BWDB.

B. Status of Recruitment of Consultants

- Advertisement for expressions of interest to be released by 10 June 2014.

C. Status of Bidding Process for Civil Works

- Standard bid documents prepared by EA and sent to ADB for review/ comments

D. PMU established and core PMU staff designated (Yes / No) - Yes.

E. Status of Safeguard Clearances

1. Status of land acquisition (Yes = completed; No = not yet completed) - No.

2. Environmental clearances obtained.

F. Other

1. Status of local counterpart financing stage (Yes / No / Partial) - Yes.

2. Fund flow arrangements agreed between ADB and line ministry (Yes / No) - Yes.

3. Local permits and other clearances (ROW, utilities etc.) obtained (Yes / No) - NA.

4. Cofinancing Status - Being finalized

### 12. Milestones

Modality	Estimated Approval	Estimated Completion <sup>b</sup>
Multitranches financing facility	2014 June 26	2023 June 30
Tranche I	2014 June 26	2019 June 30
Tranche II	2016 October 14	2021 December 31
Tranche III	2020 September 30	2023 June 30

### 13. Linked Documents

PDS<sup>c</sup>

<http://www.adb.org/projects/44167-013/main>

<sup>a</sup> Multitranches Financing Facility (MFF).

<sup>b</sup> For MFF, this refers to the end of the availability period; for tranches, this refers to the tranche closing date.

<sup>c</sup> Safeguard documents can be viewed by clicking the Document's hyperlink in the Project Data Sheet (PDS) page.

## I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on a proposed multitranche financing facility (MFF) to the People's Republic of Bangladesh for the Flood and Riverbank Erosion Risk Management Investment Program.<sup>1</sup>

2. The investment program will improve the livelihoods of people in the project area along the Jamuna, Padma, and Ganges rivers in Bangladesh. It will reduce flood and riverbank erosion risks through strengthening flood and riverbank erosion management institutional systems, and establishing integrated and sustainable structural and nonstructural risk mitigation systems in priority protection reaches.<sup>2</sup> The investment program is the follow-on to the Jamuna–Meghna River Erosion Mitigation Project.<sup>3</sup> It will extend successful technologies of the Jamuna–Meghna project to other geographical areas, with necessary improvements.

## II. THE INVESTMENT PROGRAM

### A. Rationale

3. The livelihoods of people in Bangladesh are often affected by water-related disasters including floods, riverbank erosion, drought, cyclones, and tidal surges, some of which are directly related to the location of the country on a vast flat floodplain at the confluence of three main rivers—the Jamuna (and Padma), the Ganges, and the Meghna. Global climate change could exacerbate these disasters.<sup>4</sup> Riverbank erosion is one of the most prominent disasters in Bangladesh, caused by highly dynamic river morphology. About 5,000 to 6,000 hectares of floodplain land is lost annually. This process affects about 100,000 people annually, including the poor, who face significant social hardships, such as loss of homestead, lands, and crops, and are displaced to fringe lands or urban slums. The country loses about \$250 million because of riverbank erosions. Disaster risks increase as the population grows, and the high population density of the country restricts the scope for moving people away from disaster-prone areas. Erosion damage extends to infrastructure, including flood embankments. The high possibility of riverbank erosions hinders construction and rehabilitation of flood embankments. About 20% of the country is inundated annually during the monsoon season, resulting in loss of assets and crops. The threat of frequent flood and erosion disasters discourages investment and leads to lower economic growth of riverine areas. Effective flood and riverbank erosion risk management is essential for economic growth, livelihood improvement, and poverty reduction in these areas.

4. The government has adopted a road map aimed at long-term stabilization of the main rivers in Bangladesh. The road map includes a policy framework, which is required to achieve the country's aspirations under the road map. It builds on the progress of a sector policy, planning, and legal framework that the government has made since the 1990s to address water sector challenges. The National Water Policy was adopted in 1999 and the National Water Management Plan was approved in 2004. Operationalization and institutionalization of the policies and plans have been slow, but are expected to pick up with the enactment of the

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<sup>1</sup> The design and monitoring framework is in Appendix 1.

<sup>2</sup> The Asian Development Bank (ADB) provided project preparatory technical assistance. ADB. 2014. *Technical Assistance to the People's Republic of Bangladesh for Preparing the Main River Flood and Bank Erosion Risk Management Program*. Manila.

<sup>3</sup> ADB. 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, closed on 30 June 2011).

<sup>4</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.

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.

5. The investment program the Asian Development Bank (ADB) will support forms an integral part of the road map, and includes the development and implementation of holistic planning strategies for the country's main rivers as well as physical and nonphysical investments in the central part of the country. The World Bank will support investments in the northern parts of the country. The road map requires investments in the amount of \$853.7 million, of which \$373.7 million is for the investment program.

6. The Jamuna–Meghna project established innovative riverbank protection technologies, applying unconventional cost-effective sand-filled geotextile bags or geo-bags, and systematic dumping of the geo-bags with stringent quality control and monitoring of underwater works. The technologies enable more stable riverbank protections, and easy adaptation to post-construction bathymetry changes. The investment program will expand the successful technologies to other geographical areas, with necessary improvements that include (i) more effective integration of structural and nonstructural measures with high stakeholder participation, (ii) building measures that ensure the sustainability of structures in the project design, (iii) addressing uncertainties caused by climate change, and (iv) institutional capacity strengthening to address these issues. It will introduce strategic planning for flood and erosion management of the main rivers, based on understanding of the long-term morphological trend of the entire rivers, as opposed to the current ad hoc and piecemeal approach. This strategic planning will be one of the contributors to long-term stabilization of the main rivers, and of higher economic growth of the country.

7. ADB will support the investment program through the MFF modality, which allows (i) flexible phased interventions that are technically appropriate to cope with the dynamic river morphology in Bangladesh; (ii) strategic and systematic interventions that can facilitate longer-term flood and erosion protection management planning; and (iii) longer, more effective, and strategic support for enhancing central-level institutional capacity. The comparison of financing modality provides further details.<sup>5</sup>

8. Under the investment program, flood and erosion management measures will be implemented at priority erosion reaches over successive tranches. The first tranche will provide urgently needed structural and nonstructural measures in three high priority subproject areas. Subsequent tranches will extend the protection structures and associated nonstructural measures to adjacent stretches, and the design will be adjusted to the latest riverbank erosion conditions. Future tranches may cover other high priority subproject areas, depending on actual river erosion status. Phased strategic support will be also applied to institutional capacity strengthening, which will be continued throughout the investment program.

9. The investment program is in line with government and ADB strategies. Economic growth and poverty reduction are the main objectives of the government's Sixth Five-Year Development Plan, 2011–2015.<sup>6</sup> Sustainable management of rivers and enhancement of climate change resilience, including riverbank erosion protection and disaster risk management, are considered essential to accomplish the objectives. The provision of infrastructure for flood and riverbank erosion disaster risk management is also a core area of operations in ADB's

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<sup>5</sup> Comparison of Financing Modality (accessible from the list of linked documents in Appendix 2).

<sup>6</sup> Government of the People's Republic of Bangladesh, Planning Commission. 2011. *Sixth Five Year Plan FY2011–FY2015: Accelerating Growth and Reducing Poverty*. Dhaka.



Strategy 2020.<sup>7</sup> ADB's country partnership strategy for Bangladesh, 2011–2015 emphasizes supporting climate-resilient economic growth and poverty reduction by encouraging sustainable management of natural disaster risks.<sup>8</sup>

## **B. Impact and Outcome**

10. The expected impact of the investment program will be improved livelihoods in the project area. The outcome of the investment program will be reduced flood and riverbank erosion risks in the subproject areas.

## **C. Outputs**

11. The anticipated outputs of the investment program are (i) flood and riverbank erosion risk mitigation functioning at priority river reaches, (ii) a strengthened institutional system for flood and riverbank erosion risk management, and (iii) an operational program management system. The same outputs are anticipated for the first tranche, and targets of the first tranche constitute part of those of the investment program. The focus of the first output will be on both structural and nonstructural flood and riverbank erosion risk mitigation measures, including riverbank revetments, flood embankments, community capacity development for sustainable operation and maintenance (O&M) of infrastructures and for flood and erosion risk management, and livelihood enhancement for project-affected people. The investment program will provide about 50 kilometers (km) of riverbank protection structures, 89 km of flood embankments (rehabilitation and new) with climate-resilient design, and emergency riverbank protection structures. The first tranche will provide about 15 km of riverbank protection, 23 km of flood embankments (rehabilitation and new), associated nonstructural activities, and urgent emergency riverbank protections at critical sites. The thrust of the second output is on an improved knowledge base and institutional capacity in sustainable asset management and strategic management of the main rivers, including safeguard monitoring capacity. The third output aims at sound program implementation and successful completion. Continuous support will be provided for the second and third outputs during the investment program.

## **D. Investment and Financing Plans**

12. The investment program is estimated to cost \$373.7 million (Table 1). The government has requested an MFF in an amount up to \$270.3 million to help finance part of the investment program. An amount not exceeding the equivalent of \$255.0 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>9</sup> The financing of the MFF will cover part of major items such as civil works, materials, vehicles, equipment, consulting services, training, and incremental costs for resettlement and project management. The MFF will consist of several tranches, subject to the government's submission of related periodic financing requests, execution of the related legal agreements for each tranche, and fulfillment of terms and conditions and undertakings set forth in the framework financing agreement.

<sup>7</sup> ADB. 2008. *Strategy 2020: The Long-Term Strategic Framework of the Asian Development Bank, 2008–2020*. Manila.

<sup>8</sup> ADB. 2011. *Country Partnership Strategy: Bangladesh, 2011–2015*. Manila.

<sup>9</sup> ADB. 2008. *Mainstreaming the Multitranchise Financing Facility*. Manila. Para. 79.

**Table 1: Investment Program (\$ million)**

Item	Investment Program	Amount <sup>a</sup>		
		Tranche 1	Tranche 2	Tranche 3
<b>A. Base Cost<sup>b</sup></b>				
1. Component A: Flood and riverbank risk mitigation	275.3	70.5	111.4	93.3
2. Component B: Institutional strengthening	14.3	12.7	0.9	0.7
3. Component C: Project management <sup>c</sup>	27.1	10.9	10.3	5.9
<b>Subtotal (A)</b>	<b>316.7</b>	<b>94.2</b>	<b>122.7</b>	<b>99.9</b>
<b>B. Contingencies<sup>d</sup></b>	<b>50.1</b>	<b>6.9</b>	<b>20.4</b>	<b>22.8</b>
<b>C. Financing Charges During Implementation<sup>e</sup></b>	<b>7.0</b>	<b>2.5</b>	<b>2.3</b>	<b>2.2</b>
<b>Total (A+B+C)</b>	<b>373.7</b>	<b>103.6</b>	<b>145.3</b>	<b>124.8</b>

Note: Numbers may not sum precisely because of rounding.

<sup>a</sup> Includes taxes and duties to be financed by the government (\$10.2 million for the first tranche, and \$28.3 million for the investment program).

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

<sup>c</sup> Including preparation for the second and subsequent tranches, and program implementation management.

<sup>d</sup> Physical contingencies computed at 0%–10% depending on the item. Price contingencies computed at 2.2% in the first year, 1.9% thereafter on foreign exchange costs and 8.5% in the first 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>e</sup> Includes interest and commitment charges. Interest during construction for the estimated amount of Asian Development Bank (ADB) financing has been computed at 2.0% per year. For the first tranche, the financing charges include 2% of administration charges for ADB's administration of a grant from the Government of the Netherlands.

Source: Asian Development Bank estimates.

13. The financing plan is in Table 2. The first project is estimated to cost \$103.6 million. As the first tranche under the MFF, ADB will provide a loan from ADB's Special Funds resources in an amount equivalent to \$65.0 million and administer a grant from the Government of the Netherlands in an amount of \$15.3 million. The ADB loan will have a term of 25 years, including a grace period of 5 years, an annual interest rate of 2.0% throughout the loan maturity (the interest charges during implementation to be capitalized in the loan), and such other terms and conditions as will be set forth in the draft loan and project agreements. ADB will finance part of major items such as civil works, materials, vehicles, equipment, consulting services, training, and incremental costs for resettlement and project management. The Government of the Netherlands will finance \$15.3 million on a grant basis to cover 14.8% of the total project cost for the first tranche. The funds from the Government of the Netherlands will be administered by ADB, and will finance part of consulting services and pilot works. The Government of Bangladesh will provide about \$23.3 million. The government will make the ADB loan, the Netherlands grant, and counterpart funds available to the executing agency through budgetary allocation. Since the first tranche under the investment program is financed with ADB-administered cofinancing resources as well as Asian Development Fund resources, universal procurement will apply to all contract packages financed under the first tranche.<sup>10</sup>

<sup>10</sup> ADB. 2013. *Blanket Waiver of Member Country Procurement Eligibility Restrictions in Cases of Cofinancing for Operations Financed from Asian Development Fund Resources*. Manila.

**Table 2: Financing Plan**

Source	Investment Program		Tranche 1	
	Amount (\$ million)	Share of Total (%)	Amount (\$ million)	Share of Total (%)
A. Asian Development Bank Special Funds and/or ordinary capital resources (loan)	255.0	68.2	65.0 <sup>a</sup>	62.7
B. Government of the Netherlands (grant)	15.3	4.1	15.3	14.8
<b>Subtotal (A+B)</b>	<b>270.3</b>	<b>72.3</b>	<b>80.3</b>	<b>77.5</b>
C. Government of Bangladesh	103.4	27.7	23.3	22.5
<b>Total (A+B+C)</b>	<b>373.7</b>	<b>100.0</b>	<b>103.6</b>	<b>100.0</b>

Note: Numbers may not sum precisely because of rounding.

<sup>a</sup> Asian Development Bank financing for the first tranche is from Special Funds resources (loan).

Source: Asian Development Bank estimates.

## E. Implementation Arrangements

14. The executing agency will be Bangladesh Water Development Board (BWDB) under the Ministry of Water Resources. A project management office for the MFF will be established within BWDB to manage project implementation, which will be undertaken by subproject management offices established in each subproject area. The Department of Disaster Management under the Ministry of Disaster Management and Relief will serve as the implementing agency for the community-based flood risk management subcomponent. A program steering committee will be formed for central level interministerial coordination. A technical committee will oversee the quality of technical aspects, including studies, planning, and structural design. A consulting team led by an international firm and comprising international and national experts will be engaged for project management and various studies, including preparation for subsequent tranches. The project management consultant that will be engaged for the first tranche may be engaged through the single-source selection method for subsequent tranches, at the request of the executing agency or the government, subject to satisfactory performance of the team. This is to ensure the continuity of project implementation. Nongovernment organizations will also be engaged for supporting community mobilization and stakeholder participation activities. All procurement and recruitment to be financed under the ADB loan will be carried out in accordance with ADB's Procurement Guidelines (2013, as amended from time to time) and Guidelines on the Use of Consultants (2013, as amended from time to time). The implementation arrangements are summarized in Table 3 and are described in detail in the facility administration manual.<sup>11</sup>

**Table 3: Implementation Arrangements**

Aspects	Arrangements
Implementation period	July 2014–June 2023
Estimated completion date	30 June 2023
Management	
(i) Oversight body	Program steering committee: Secretary, MOWR (chair) 21 members, representing MOWR, BWDB, DDM, and other relevant government agencies  Technical committee: Additional director general (planning), BWDB (chair) 12 members, representing BWDB, DDM, other relevant organizations

<sup>11</sup> Facility Administration Manual (accessible from the list of linked documents in Appendix 2).

Aspects	Arrangements		
(ii) Executing agency	BWDB		
(iii) Key implementing agency	DDM		
(iv) Implementation unit	Executing agency PMO in Dhaka: 12 professional staff 3 SMOs in subproject areas: 18 professional staff in total <sup>a</sup> Implementing Agency PMU in Dhaka, 1 project manager		
Procurement (for the first tranche)	ICB	11 contracts	\$49.2 million in total
	NCB	5 contracts	\$7.7 million in total
	Shopping	Multiple	\$1.4 million in total
Consulting services (for the first tranche)	QCBS (90:10)	666 + 216 person-months	\$14.4 million + \$0.9 million
	CQS	various person-months	\$2 million (total of 9 packages)
	SSS	1 contract	\$0.38 million
Advance contracting and retroactive financing	ADB may, subject to its policies and procedures, allow on request (i) advance contracting of eligible expenditures incurred for civil works, equipment, materials, and consulting and NGO services; and (ii) retroactive financing of eligible expenditures. <sup>b</sup> Any approval of advance contracting will not constitute a commitment by ADB to finance the project.		
Disbursement	The loan proceeds will be disbursed in accordance with ADB's <i>Loan Disbursement Handbook</i> (2012, as amended from time to time) and detailed arrangements agreed upon between the government and ADB.		

ADB = Asian Development Bank, BWDB = Bangladesh Water Development Board, CQS = consultants qualification selection, DDM = Department of Disaster Management, ICB = international competitive bidding, MOWR = Ministry of Water Resources, NCB = national competitive bidding, NGO = nongovernment organization, PMO = project management office, PMU = project management unit, QCBS = quality- and cost-based selection, SMO = subproject management office, SSS = single-source selection.

<sup>a</sup> The number and size of SMOs may be changed in the second and subsequent tranches, depending on the selected locations, types, and scale of civil works.

<sup>b</sup> The amount to be retroactively financed will not exceed the equivalent of 20% of the ADB loan, and may finance costs incurred before loan effectiveness but not more than 12 months before the signing of the loan agreement. Source: Asian Development Bank estimates.

### III. DUE DILIGENCE

#### A. Technical

15. The technical viability and economic feasibility have been confirmed through the project preparatory technical assistance (TA). Four priority reaches, which may be protected under the MFF as subprojects, have been identified. Required protection works have been prioritized, and grouped into three tranches. To avoid breaching of embankments, flood embankments will be constructed or rehabilitated after protecting riverbanks. The detailed feasibility studies and structural design for the first tranche were completed under the TA.

16. The investment program will apply innovative riverbank protection technologies established under the Jamuna–Meghna project. The structures constructed under the Jamuna–Meghna project demonstrated stability and technical efficiency during the three monsoon seasons after completion. Project completion reports of the government and ADB noted the efficiency of the new riverbank protection method, and the government's project completion report recommended application of the Jamuna–Meghna project method to other riverbanks in

the country.<sup>12</sup> Paved roads will be provided on flood embankments to prevent fast deterioration of embankments, and to ensure access for O&M and local transportation, including evacuation during floods.

17. Adaptation to potential climate change impacts has been built into the design of the investment program through risk screening, vulnerability assessment, and options analysis. Existing analyses indicate that by 2040 flood river discharges could increase by 6%–15% as a result of global climate change, but other analyses concluded that increases in discharge are unlikely to result in increased flood water levels because of the large width of the main rivers. For the climate change adaptation, the investment program focuses on responding to potential climate change impacts. Flood embankments have been designed to enable them to be heightened easily in the future. Community-based flood risk management activities will establish the preparedness of local residents against potential extreme flooding. The project area is not located in coastal zones, so it is unlikely to be affected by the sea level rise and associated floods.

## **B. Economic and Financial**

18. Economic and financial analyses undertaken for the investment program indicate that the MFF and the first tranche are both economically viable and financially sustainable. Benefits of the MFF will be derived from (i) reduced flood damages on assets and crops, (ii) reduced land losses caused by erosion, and (iii) improved transportation connectivity by constructing paved roads on the embankments. BWDB's revenue budget can cover incremental O&M costs for infrastructure. The economic analysis was conducted for the three subproject areas that cover the high priority river reaches. The economic internal rate of return is 15.0% for the first tranche and 21.9% for the MFF. That for the first tranche may be reduced to 12.5% if the cost increases by 15.0%, and 12.1% if benefits are reduced by 15.0%. The proposed investment will remain economically feasible under these scenarios. Besides, the investment program will bring nonquantifiable benefits such as reduced cost for relief and reconstruction of households, and more stable livelihoods of people living in riverine areas. It could also bring increased incomes for direct beneficiaries through improved agricultural productivity on protected lands.

## **C. Governance**

19. The financial and procurement management capacity of BWDB was confirmed to be generally sound through assessments conducted in 2013. The project completion report of the Jamuna–Meghna project concluded that BWDB's institutional capacity as the executing agency was satisfactory and that it was strengthened through the project. The investment program set clear input and output targets to ensure good governance. Risk mitigation measures have been identified and incorporated in the project design and risk management plan (Table 4).

20. ADB's Anticorruption Policy (1998, as amended to date) was explained to and discussed with the government and BWDB. The specific policy requirements and supplementary measures are described in the facility administration manual (footnote 11).

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<sup>12</sup> ADB. 2013. *Completion Report: Jamuna-Meghna River Erosion Mitigation Project in Bangladesh*. Manila.

## D. Poverty and Social

21. Despite recent improvements, poverty remains the dominant problem in Bangladesh, with 31.5% of its population living below poverty line.<sup>13</sup> Riparian fringe lands, which are prone to riverbank erosion and flooding, are typically occupied by the landless poor, and the majority of them are people displaced by previous riverbank erosions. Riverbank erosion forces repeated displacement and loss of livelihoods. Poverty incidence appears higher in riverine districts. The investment program will directly protect these poor residents, including women, in riverine fringe areas from frequent riverbank erosion and flood inundation, and will contribute to developing more sustainable livelihoods for them. The poor will also benefit from increased farm productivity. The farm income of tenant farmers is projected to increase by 35%–48% in the protected subproject areas. Increased farm activity will raise the overall demand for farm labor by 30%, all of which is expected to be provided by landless and marginal farmers. The investment program will significantly contribute to poverty reduction in the project area.

22. The first tranche is classified effective gender mainstreaming. Women will benefit from (i) being heads of community disaster committees for the community-based flood risk management activities, with a minimum 33% female heads; (ii) receiving training for community-based flood risk management and regular O&M of flood and erosion protection structures; and (iii) receiving livelihood improvement support for project-affected people. Women will also have increased opportunities for earning cash income during the construction, which will adopt a labor-intensive construction method developed under the Jamuna–Meghna project. The subsequent tranches are also likely to be classified effective gender mainstreaming.

## E. Safeguards

23. **Environment.** The first tranche is categorized A for environment. The project interventions will result in positive impacts such as reduced flood damage to crops, security of land from erosion, and improved agricultural and investment conditions. However, changes in floodplain hydrology resulting from construction of flood embankments will bring some negative impacts. The key potential negative impacts are impacts on floodplain-dependent open water fish species and floodplain aquatic habitats, and potential loss of natural wetland production areas. Measures to mitigate these impacts have been built into the project design and addressed in the government's environmental impact assessment, which contains the environmental management plan. Additional environment studies will be conducted during the first tranche to formulate measures to offset residual impacts. In addition to these studies, a strategic environmental assessment, which will assess the impacts of the investment program, will also be carried out during the first tranche. The environmental impact assessment was uploaded on ADB's website, meeting the 120 days disclosure requirement. An environmental assessment and review framework has also been developed for the MFF. Stakeholders to be affected have been consulted and a grievance redress mechanism has been established. Subsequent tranches are also likely to be categorized A for environment.

24. **Involuntary resettlement.** The first tranche is categorized A for involuntary resettlement. About 94 hectares of land will be acquired for the Jamuna right bank 1 subproject area. The land is required for (i) restoration of an embankment along the Jamuna River (12.5 km), (ii) rehabilitation of embankments along tributaries (10.5 km), and (iii) riverbank protection works along the Jamuna River (1.0 km). The land acquisition will affect

<sup>13</sup> Poverty headcount rate at the upper poverty line by the cost of basic needs method. Bangladesh Bureau of Statistics. 2011. *Statistical Year Book of Bangladesh–2010*. Dhaka.

1,184 households comprising 8,953 persons, of which 4,393 persons will lose 10% or more of their productive assets. The remaining 4,560 persons will be physically displaced. The affected persons are also direct beneficiaries of the flood and riverbank erosion protection. Impacts of the land acquisition include loss of land, structures, and trees. A resettlement framework and a resettlement plan have been finalized and were agreed with the executing agency, following government laws and regulations and ADB's Safeguard Policy Statement. They were disclosed on the ADB website with endorsement by the executing agency. The resettlement plan includes a relocation plan as well as economic rehabilitation of the affected persons. Extensive consultations with the affected persons were conducted during the TA, and relevant information from the resettlement plan was explained to them. BWDB has developed institutional capacity for mitigating social risks through executing a number of externally funded projects.

25. Two more resettlement plans for the remaining two subproject areas will be prepared under the first tranche, for resettlement and land acquisition of 14 km of riverbank protection works along the Jamuna and Padma rivers. Resettlement plans for these areas will be prepared after approval of the first tranche by ADB's Board of Directors, and just before the construction of structures, in accordance with the resettlement framework; the estimated budget is included in the project cost. This flexibility will facilitate dealing with significant riverbank alignment changes resulting from progressive erosions. Stakeholders in the two subproject areas have been consulted during the TA. Subsequent tranches are likely to be categorized A for involuntary resettlement.

26. **Indigenous people.** The first tranche is categorized C for indigenous peoples. There are no indigenous peoples as defined for operational purposes by ADB's Safeguard Policy Statement in any of the identified subproject areas of the first tranche and subsequent tranches under the investment program. As the subsequent tranches will also be categorized C, an indigenous peoples planning framework for the investment program was not prepared.

## F. Risks and Mitigating Measures

27. Major risks and mitigating measures are summarized in Table 4 and described in detail in the risk assessment and risk management plan.<sup>14</sup> The overall benefits of the investment program are expected to outweigh the potential costs from the risks.

**Table 4: Summary of Risks and Mitigating Measures**

Risks	Mitigating Measures
Delayed commencement of civil works for embankments caused by delays in land acquisition by deputy commissioner	(i) Advance action for detailed design of embankments, followed by the advance initiation of land acquisition and resettlement plan implementation, and (ii) preparation of and compliance with time-bound action plan for advanced actions.
Potential decline of financial management capacity due to changes of PMO staff	(i) Regular training of PMO staff on project management and financial management; (ii) regular internal and external auditing; and (iii) ensuring transparency, including the establishment of a management information system and project website.
Underachievement of technical and financial compliance related to underwater protections	(i) Regular underwater surveys during and after construction, (ii) systematic and detailed recording of the physical progress of underwater works, and (iii) adequate inputs of quality control experts under the project management consulting services.
Inefficient interagency coordination, especially between	(i) Establishment of a program steering committee comprising representatives from MOWR, BWDB, DDM, and other government

<sup>14</sup> Risk Assessment and Risk Management Plan (accessible from the list of linked documents in Appendix 2).

<b>Risks</b>	<b>Mitigating Measures</b>
BWDB and DDM	agencies; (ii) signing of MOU to define clear distribution of responsibilities; (iii) holding regular workshops for information sharing; and (iv) engaging only one consultant team for project implementation support to both BWDB and DDM.

BWDB = Bangladesh Water Development Board, DDM = Department of Disaster Management, MOU = memorandum of understanding, MOWR = Ministry of Water Resources, PMO = project management office.

Source: Asian Development Bank.

#### **IV. ASSURANCES AND CONDITIONS**

28. The government and BWDB have assured ADB that implementation of the investment program and the projects thereafter shall conform to all applicable ADB policies including those concerning anticorruption measures, safeguards, gender, procurement, consulting services, and disbursement as described in detail in the facility administration manual and loan documents.

29. The government and BWDB have given ADB certain undertakings for the MFF, which are set forth in the framework financing agreement. Specific covenants agreed by the government and BWDB with respect to individual tranches under the MFF are set forth in the loan agreement and project agreement for the respective tranches.

30. No ADB loan proceeds may be withdrawn for the disaster risk management subcomponent under the investment program until BWDB and the Department of Disaster Management have entered into a memorandum of understanding acceptable to ADB, setting out the terms and practical arrangements for their collaboration.

#### **V. RECOMMENDATION**

31. I am satisfied that the proposed multitranche financing facility would comply with the Articles of Agreement of the Asian Development Bank (ADB) and recommend that the Board approve the multitranche financing facility to the People's Republic of Bangladesh for the Flood and Riverbank Erosion Risk Management Investment Program in an aggregate principal amount not exceeding the equivalent of \$270,300,000, which comprises:

- (i) the provision of loans from ADB's Special Funds resources, with interest and other terms to be determined in accordance with ADB's applicable policies relating to Special Funds resources;
- (ii) the provision of loans from ADB's ordinary capital resources, with interest and other terms to be determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility; and
- (iii) the administration of cofinancing to be provided by the Government of the Netherlands and any other development partner;

and is subject to such other terms and conditions as are substantially in accordance with those set forth in the framework financing agreement presented to the Board.

Takehiko Nakao  
President

3 June 2014



### DESIGN AND MONITORING FRAMEWORK FOR THE INVESTMENT PROGRAM

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
<p><b>Impact</b></p> <p>Improved livelihoods in the project area</p>	<p>By 2028 in program districts:</p> <p>Monsoon crop average yields increased to 3.75 t/ha (2.75 t/ha in 2013)</p> <p>Average annual per capita income increased to Tk136,000 (Tk74,380/capita in 2012)</p>	<p>Bangladesh Bureau of Statistics and other government-published reports and statistics</p> <p>Bangladesh Bureau of Statistics, Department of Agriculture Extension, Department of Agricultural Marketing, 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>About 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, or 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 disasters, with a minimum of 33% of units led by women (baseline = 0)</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 NGOs' reports</p> <p>BWDB benefit survey reports</p>	<p><b>Risks</b></p> <p>Long delays in land acquisition by deputy commissioners</p> <p>High turnover of project management office staff</p>

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
	11 community groups, with at least 50% women participants, operate livelihood support programs (baseline = 0)	Implementation NGOs' reports BWDB benefit survey reports	
2. Strengthened institutional system for flood and riverbank erosion risk management	<p>MIS for flood and riverbank erosion, with sex-disaggregated data, developed and operated by BWDB by 2021</p> <p>5-year budgetary plan for riverbank protection O&amp;M and emergency work for the main rivers endorsed by BWDB by 2018</p> <p>Long-term strategic river stabilization plan taking climate change impact into account, endorsed by BWDB by 2016</p> <p>BWDB project website containing database of flood and river survey and knowledge products by 2023</p>	<p>BWDB project progress and completion reports</p> <p>BWDB's annual budgetary plan</p> <p>BWDB's construction material stockade plan</p> <p>BWDB project progress and completion reports</p> <p>BWDB project progress and completion reports</p> <p>BWDB project website</p>	
3. Operational program management system	Outputs completed on time within budget	BWDB project progress and completion report	
<b>Activities with Milestones</b>		<b>Inputs</b>	
<p><b>1. Flood and riverbank erosion risk mitigation functioning at priority reaches</b></p> <p>1.1 Infrastructure improvement</p> <p>1.1.1 Complete land acquisition (2016, 2018, and 2021)</p> <p>1.1.2 Complete construction works of structural measures (June 2023)</p> <p>1.2 Community-based flood risk management</p> <p>1.2.1 Engage NGO, and develop project-specific methodologies and instructions for implementation NGOs (July 2014–March 2015)</p> <p>1.2.2 Formulate community disaster management units with necessary training (December 2022)</p> <p>1.3 Community capacity enhancement for participatory regular O&amp;M</p> <p>1.3.1 Complete awareness campaign and training (December 2022)</p> <p>1.4 Complete livelihood support for project-affected people (June 2023)</p>		<p><b>Loan:</b> <b>ADB: \$255,000,000</b></p> <p><b>Grant:</b> <b>Government of the Netherlands: \$15,300,000</b></p> <p><b>Government of Bangladesh: \$103,400,000</b></p>	

Activities with Milestones	Inputs
<p><b>2. Strengthened 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 setup of Office of Chief Engineer (River Management) (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 and 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. Operational program management systems</b></p> <p>3.1 Engage institutional strengthening and project management consultant (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, BWDB = Bangladesh Water Development Board, ha = hectare, km = kilometer, MIS = management information system, NGO = nongovernment organization, O&M = operation and maintenance, t = ton.

Source: Asian Development Bank.

### **LIST OF LINKED DOCUMENTS**

<http://www.adb.org/Documents/RRPs/?id=44167-013-3>

1. Framework Financing Agreement
2. Periodic Financing Request for Project 1
3. Sector Assessment (Summary): Flood Protection
4. Facility Administration Manual
5. Contribution to the ADB Results Framework
6. Development Coordination
7. Economic and Financial Analysis
8. Country Economic Indicators
9. Summary Poverty Reduction and Social Strategy
10. Gender Action Plan
11. Environmental Impact Assessment
12. Environmental Assessment and Review Framework
13. Resettlement Plan
14. Resettlement Framework
15. Risk Assessment and Risk Management Plan

### **Supplementary Documents**

16. Comparison of Financing Modality
17. Project Climate Risk Assessment and Management Report
18. Economic Analysis Supporting Documents