

## Ex-Ante Evaluation

### 1. Project

Country: People's Republic of Bangladesh

Name of the Project: Haor Flood Management and Livelihood Improvement Project

Loan Agreement: June 16, 2014

Loan Amount: 15.270 billion yen

Borrower: The Government of the People's Republic of Bangladesh

### 2. Background and Necessity of the Project

#### (1) Current Status and Issues in the Haor Area in Bangladesh

Bangladesh is located in a low-lying delta formed by three international rivers: the Ganges, which runs a total length of 1,720,000 km<sup>2</sup>, the Brahmaputra, and the Meghna. More than 20% of the land is inundated during the rainy season each year due to the flooding that typically occurs, bringing over 80% of the region's annual precipitation. In the upper reaches of the Meghna River, in the northeastern part of the country, is a large basin wetland 3-5 meters above sea level that is known as a "haor". In the rainy season, the area becomes one large lake about 8,600 km<sup>2</sup> in size. The upstream areas of the Meghna River support people's livelihoods by producing a vast amount of rice in the dry season, and an abundant fish catch in the rainy season. However, flash floods in the pre-monsoon period frequently damage the area. Flash floods are those triggered by torrential rains in hilly areas, where water levels rise dramatically in a short period of time along the river.

People who live in the haor area depend on "boro" (single-crop rice, cultivated between May and December) as their primary source of income. However, the frequent flash floods can cause severe damage to the rice fields just before harvesting, which destabilizes their livelihoods. Although agricultural productivity is relatively low compared to other areas due to the heavy dependency on single-crop rice, people in the area have limited opportunities for employment in industries other than agriculture and fishing. Because development of rural roads and other basic infrastructure is behind other areas, and because people live scattered among slightly elevated areas, residents suffer from poor sanitation conditions. This results in poor social indicators in health care and education.

#### (2) Development Policies for the Haor Area in Bangladesh and the Priority of the Project

As the nation's top-ranked development strategy, the 6th Five-Year Plan (2011/2012–2015/2016) defines the Haor area as one requiring special consideration due to poor accessibility and vulnerability to natural disasters, including floods. On the other hand, the area is also identified as a promising one with lots of room for productivity improvements in terms of promoting agricultural and fishing activities. The

area is thus targeted for advancement in these areas.

The Bangladesh Haor and Wetland Development Board was established as a coordinating institution with the purpose of overcoming the vulnerabilities of the Haor area and promoting comprehensive regional development highlighting the area's potential. In April 2012, the Master Plan of Haor Areas was formulated as a comprehensive development plan for next two decades in the area. The Master Plan identifies flash flood measures, measures to combat wave erosion, drainage improvements, road and river navigation improvements, agricultural and fishery promotions as necessary and highly prioritized. The Haor Flood Management and Livelihood Improvement Project ("this project") will implement these measures as a part of the Master Plan.

### (3) Japan and JICA's Aid Policy/Actual Performance for Haor Area

In JICA Country Analytical Work (April 2013), "disaster management / climate change countermeasures" and "agriculture/rural development" are seen as the key to overcoming social vulnerabilities. The Japan's Country Assistance Program for Bangladesh (June 2012) also identified "disaster/climate change countermeasures" and "rural development" as priority areas. Key strategies from the perspective of disaster prevention were reducing damage from floods and contributing to better standards of living in the haor area. From the perspective of rural development, infrastructure improvements to mitigate socioeconomic gaps between urban and rural areas were identified as key. This project is thus consistent with Japan's and JICA's aid policies and analyses. Major assistances provided to Bangladesh are listed below:

- Loan assistance projects: The Small Scale Water Resources Development Project (SSWRDP, 2007) and Northern Bangladesh Integrated Development Project (2013)

### (4) Response from Other Donors

The Asian Development Bank (ADB) has supported SSWRDP through three phases. Under this scheme, support is provided for planning, operation, and maintenance of water resource-related facilities with resident participation in areas that include the haor area in the northeast. The World Bank (WB) has provided support for building a maintenance system for anti-flood facilities and developing rural infrastructure in the northeast and other areas. However, neither the ADB nor WB have provided support programs exclusively targeting the haor area.

### (5) Necessity of the Project

This project aims to mitigate flood damage and improve living conditions in the haor area located along upstream sections of the Meghna River, a region which is most severely affected by floods and in which infrastructure development has fallen behind. The project is in line with the problems and development policy set forth by the Government of Bangladesh as well as the cooperation policies of the Government of Japan and JICA. Therefore, the necessity and relevancy to implement of this project

are high.

### **3. Project Description**

#### **(1) Project Objectives**

The objective of the project is to mitigate flood damage and improve accessibility to basic infrastructure and productivity for the agricultural and fishing industries in the haor area, thereby contributing to the improvement of living standards and accelerating economic development.

(2) Project Site/Target Area: Five districts in northeastern Bangladesh (Kishoreganj, Netrokona, Sunamganj, and Habiganj, Brahmanbaria)

#### **(3) Project Components**

- 1) The Bangladesh Water Development Board (BWDB) sets up anti-flood facilities (e.g. renovating and newly constructing (through domestic bidding) embankments, submergible embankments, drainage facilities, and sluiceways)
- 2) The Local Government Engineering Department (LGED) creates rural infrastructure (e.g. renovating and newly constructing (through domestic bidding) rural roads, rural markets, and ghats).
- 3) BWDB conducts agricultural promotion activities (various forms of support that contribute to productivity), while LGED carries out fishery activities.
- 4) Consultation services (e.g. detailed designs, bidding support, supervision of construction work, improvement of agricultural and fishery promotion support activities) (short-list)

#### **(4) Total Project Cost**

26.141 billion yen (Yen Loan Amount: 15.270 billion yen)

#### **(5) Project Implementation Schedule**

Planned between June 2014 and April 2023 (total of 107 months) Project completion is defined as commencement of facility services (April 2022)

#### **(6) Project Implementation Structure**

- 1) Borrower: The Government of the People's Republic of Bangladesh
- 2) Executing Agency: Bangladesh Water Development Board and Local Government Engineering Department
- 3) Operation and Maintenance System: Executing agencies

#### **(7) Environmental and Social Considerations, Poverty Reduction, and Social Development**

##### **1) Environmental and Social Considerations**

- i. Category: B
- ii. Reason for Categorization: The Project is classified category B in accordance with JICA Guidelines for Environmental and Social Considerations (April 2010). There is no significant negative environmental and social impact caused by the Project both during the construction and

operation phases.

- iii. Environmental Permit: An Environmental Impact Assessment (EIA) Report for flood prevention–related sub-projects is required, as well as an Initial Environmental Examination (IEE) Report for rural infrastructure development under Bangladeshi law. The IEE and EIA Reports of the project were prepared by each sub-project. They will be approved by the Department of Environment of Bangladesh before sub-project civil construction begins. Executing agencies will report approval progress to JICA.
  - iv. Anti-Pollution Measures: In line with national regulations, a large amount of excavated soil and dredge soil generated during construction will be used to build embankments. Measures such as sprinkling water and adequate dust, noise, and vibration control for construction vehicles and heavy machinery will be taken; pollution is therefore expected to be minimal.
  - v. Natural Environment: The project site is not located in or around sensitive areas such as national parks, and adverse impact on the natural environment is assumed to be minimal.
  - vi. Social Environment: The project will involve the acquisition of 463 hectares (including those for sub-projects) and involuntary resettlement of 240 households, both of which will be carried out in accordance with the nation’s domestic procedures and the simplified resettlement action program.
  - vii. Other/Monitoring: Waste disposal measures, land acquisition, relocation for local residents, and similar aspects of the project will be monitored by each executing agency in charge.
- 2) Promotion of Poverty Reduction: As a part of agricultural and fishery promotion activities, the project supports income improvement activities for the poor through technical support for vegetable and fruit cultivation, fish hatcheries, and so on. The activities target micro farmers who own less than an acre of land, agricultural workers, and poor families headed by women.
  - 3) Promotion of Social Development (e.g. Gender Perspective, Measures to Prevent Infectious Diseases Including AIDS, Participatory Development, Consideration for the Handicapped, etc.): The project aims to increase incomes by providing employment opportunities for impoverished local women by outsourcing light work or repair work to the Labor Contracting Society (LCS), which mainly consists of poor women.

(8) Collaboration with Other Schemes and Donors:

This project will be implemented using the results of the Project for Capacity Development of Management for Sustainable Water Related Infrastructure (Technical Cooperation for Development Planning (and Development Study), August

2013–August 2016). The TCDP aims to build capacity in design, construction, and maintenance for the executing agency—the Bangladesh Water Development Board (BWDB).

(9) Other Important Issues: N/A

#### 4. Project Benefits

(1) Quantitative benefits

1) Evaluation Indicators (Operation and Effect Indicators)

| Component s                        | Indicators (unit)   | Baseline*<br>e* | Target (2024)<br>Two years after completion |
|------------------------------------|---|-----------------|---|
| Flood prevention measures          | Largest area flooded for the year (ha)  |                 | Decreased                                   |
|                                    | Highest water level for the year at reference point (m)                             |                 | -(indicators used in monitoring)            |
|                                    | Status of water management group formation  |                 | By sub-project<br>One or more groups        |
| Rural infrastructure               | Annual average traffic volume per day (cars/year)                                   |                 | Increased                                   |
|                                    | Average hours required  |                 | Decreased                                   |
|                                    | Number of stores, trade volume, and sales (store/BDT)                               |                 | Increased                                   |
| Agricultural and fishery promotion | <i>Boro</i> rice crop (ton/ha)  |                 | Increased                                   |
|                                    | Diversity in agricultural products produced   |                 | Increased                                   |
|                                    | Fish catch (ton/ha)   |                 | Increased                                   |
|                                    | Diversity in fish species   |                 | Increased                                   |
|                                    | Average household income and assets owned by agricultural or fishery families (BDT) |                 | Increased                                   |

Note: Indicators and reference values for the sub-project shall be set as sample figures when conducting the baseline survey.

2) Internal Rate of Return (IRR)

Based on the conditions below, the Economic Internal Rate of Return (EIRR) of this project was calculated as 15.4%.

EIRR:

Cost: Project costs (excluding taxes), O&M and administration cost

Benefits: Economic effects brought by reducing flood damage, lowering vehicle driving costs, spoilage reduction in perishable product, increasing income, etc.

Project Life: 30 years for flood prevention measures, and 20 years for rural infrastructure development

FIRR will not be calculated.

(2) Qualitative benefits

Higher standard of living for people in the haor area and vitalization of the local economy

## **5. External Risk Factors and Risk Control**

Delay in civil engineering work due to natural disasters such as floods

## **6. Evaluation Results and Lessons Learned from Past Projects**

(1) Evaluation Results of Similar Past Projects

It was learned in the ex-post evaluation of the Agusan River Basin Development Program for the Philippines that insufficient maintenance systems for flood control facilities and financial sources had a negative impact on the sustainability of the project. Another lesson learned was the importance of: (1) clarifying roles and responsibilities; (2) securing a sufficient maintenance budget; and (3) increasing the sense of ownership among beneficiaries.

(2) Lessons for the Project

The project provides support based on the lessons learned above to ensure appropriate allocation of the maintenance budget, especially for prioritized areas based on the policy formulated by the executing agencies through consultation services. At the same time, the project aims to support the formulation of a maintenance plan and manuals, enhance maintenance systems, and build the capacity of beneficiaries and the executing agencies.

## **7. Plans for Future Evaluation**

(1) Indicators for Future Evaluation:

- 1) Largest area flooded for the year (ha)
- 2) Highest water level for the year at reference point (m)
- 3) Status of water management group formation
- 4) Annual average traffic volume per day (cars/year)
- 5) Average hours required
- 6) Number of stores
- 7) Trade volume
- 8) Sales (store/BDT)
- 9) *Boro* rice crop (ton/ha)
- 10) Diversity in agricultural products produced
- 11) Fish catch (ton/ha)
- 12) Diversity in fish species
- 13) Average household income and assets owned by agricultural or fishery families (BDT)

- 14) Economic Internal Rate of Return (EIRR) (%)
- (2) Timing of Next Evaluation: Two years after completion