

## Ex-ante Evaluation

### 1. Name of the Project

Country: The Republic of Indonesia

Project: Urban Flood Control System Improvement in Selected Cities

Loan Agreement: March 31, 2009

Loan Amount: 7,490 million JPY

Borrower: The Republic of Indonesia

### 2. Background and Necessity of the Project

#### (1) Current State and Issues of the Flood Control Sector in Indonesia

Over the past 10 years, 47 floods have hit Indonesia, affecting 3.02 million individuals and causing 1,613 million USD in financial damage. Flooding, considered a major disaster risk, is caused in part by changes in rainfall patterns, changes which are thought to be the result of global warming. Flooding causes not only direct physical damage but also indirect economic and social damage, such as the stagnation of economic activities and an increase in the number of poor, which has an adverse affect on sustainable economic development in Indonesia. A response to increased flood damage and mid- and long-term responses to flood risks are urgently required, especially in major outlying cities where population and industries are concentrated; however, the bulk of flood control infrastructure development is concentrated on Java Island, and the safety level of flood control in the major outlying cities remains at low. In addition, the Government of Indonesia established the Law on Water Resources in 2004, for the purpose of promoting integrated water resource development and management, however, it is necessary for the future to establish an integrated river basin management plan for every river basin, including control of the destructive power of water, utilization and conservation of water resources in a comprehensive manner, to develop systems such as related detailed regulations as well as to enhance organizations for river basin development and management.

#### (2) [Development Policies for the Flood Control Sector in the Indonesia](#) and Priority of the Project

The Government of Indonesia stipulates in the Midterm National Development Plan (RPJM) 2004-2009 that the mitigation of flood damage under Integrated Water Resources Management is an important strategic program, and both structural and non-structural measures such as acceleration of construction and improvement of flood mitigation infrastructures centering on densely populated areas and major industrial areas and disaster mitigation activities with public participation are to be addressed.

#### (3) [Japan and JICA's Policy and Operations in the Flood Control Sector](#)

The Japan's Country Assistance Program for Indonesia (November, 2004) has set the goal of providing assistance for the creation of a fair and democratic society as one of the priority areas and issues. It also stipulates that Japan will provide assistance for 1) the development of measures to combat natural disasters such as frequent flooding, etc. to facilitate sustainable local development for the purpose of improving basic public services, and 2) to develop the urban living environment (including measures to combat natural disasters) for the purpose of environmental conservation and disaster prevention. In response to these goals, JICA has established disaster countermeasures as a cooperative

program, and the Project matches with this policy.

#### (4) Other Donor's Activity

The World Bank (WB) stipulates in its Country Partnership Strategy (CPS) 2009-2012 that investment in public institutions is necessary for the production of development effect, and in particular, the WB emphasizes assistance for environmental sustainability and disaster mitigation as one of five core engagements. For disaster mitigation, the WB considers it important to strengthen the capacity and capability of the State Ministry of Development Planning (BAPPENAS) and Disaster Management National Agency (BNPB) in preparing the national action plan and designing a framework for disaster-risk insurance. Currently, through the Water Resources Irrigation Sector Management Program, the WB provides assistance for improvement of the management structure in the water control sector (transfer and enhancement of the management function to irrigation associations).

The Asian Development Bank (ADB) stipulates in its Country Strategy and Program Update 2006-2009 that ADB will extend assistance for the establishment of an integrated water resource management structure taking into account the large-sized flood damage the country suffered recently. The ADB has provided technical assistance in forming projects for strengthening water resource management and disaster management functions through Flood Management in Selected River Basins and Integrated Citarum Water Resources Management.

#### (5) Necessity of the Project

The Project will be conducted for the purpose of providing assistance in upgrading the administrative capacity of river basin management offices and in developing flood damage management plans with a view to supporting the national agenda of adaptation to climate change, as well as in improving the river and flood control infrastructure and focusing on major outlying cities that have suffered from significant flood damage and which are considered vulnerable to natural disasters in Indonesia, and thereby, contribute to the mitigation of flood damage in the target areas and, consequently, contribute to economic and industrial development in the relevant outlying cities in the country. Supporting the Project with ODA loans is, therefore, highly necessary and relevant.

In addition, in September of 2008, JICA approved the Climate Change Program Loan to provide assistance and monitoring with the purpose of improving the integrated river basin development and management structure and accomplishing the actions of each policy, such as the enhancement of organization and the establishment of plans from the viewpoint of strengthening the response to the negative impact of climate change. The Project also contributes to promoting the implementation of such policy actions.

### **3. Project Description**

#### (1) Project Objective(s)

The objective of the Project is to mitigate flood damage in major outlying cities vulnerable to flood damage by improving flood control infrastructure, assisting in upgrading the administrative capacity of river basin management offices and preparing integrated water resources management plans with a view to supporting the national agenda of adaptation to climate change, and thereby, contribute to mitigation of flood damage in the target areas and, consequently, contribute to economic and industrial development in the relevant outlying cities in Indonesia.

#### (2) Project Site/ Target Area

Whole Indonesia

### (3) Project Component(s)

1) Firstly, major outlying cities vulnerable to flood damage are selected from the view of recent flood frequency, and secondly, subprojects in certain cities among the said outlying cities are put on the long list as immediate priorities based on interregional gross production, population, flood damage, and thirdly, certain subprojects with high level of maturity for the initiation of the following programs are put on the short list:

- ① Development of flood control infrastructure: River improvement work, diversion construction work, drain pump procurement, etc.
- ② Enhancement of river basin management structure: assistance for upgrading the administrative capacity of river basin management offices and preparing an integrated water resource management plan with a view to adaptation to climate change.
- ③ Consulting services: detailed design, tender assistance, supervision of construction, monitoring for environment and land acquisition, etc.

2) Executing agencies will prepare implementation plans for each subproject containing project scope, analysis of technical feasibility, procurement plans, project costs/schedules/ disbursement plans, project implementation/ operation/ maintenance & management plans, assessment and monitoring of natural and social environmental impact & resettlement plan (if necessary), operation & effect indicators, and economic internal rate of return (EIRR). After review and concurrence by JICA, the review of detailed design of subprojects will be conducted sequentially.

3) The subprojects considered to be implemented at present are subject to change according to the content of the implementation plans and status of preparation.

### (4) Estimated Project Cost (Loan Amount)

8,840 million Yen (Loan Amount: 7,490 million Yen)

### (5) Schedule

Scheduled from March, 2009 to May, 2014 (63 months in total)

The Project will be deemed complete when the civil work is completed.

### (6) Project Implementation Structure

- 1) Borrower: The Republic of Indonesia
- 2) Executing Agency: Directorate General of Water Resources, Ministry of Public Works
- 3) Operation & Maintenance System: Balai/ Balai Besar Wilayah Sungai, Directorate General of Water Resources, Ministry of Public Works

### (7) Environmental and Social Considerations/Poverty Reduction/Social Development

#### 1) Environmental and Social Considerations

① Category (A, B, C, or FI): FI

② Reason for Categorization:

Subprojects are not specified before the loan is approved by JICA and said subprojects are considered to have an impact on the environment, as identified in the JBIC Guidelines for Confirmation of Environmental and Social Considerations (established in April, 2002). Submission and concurrence of the Implementation Plan containing the Assessment and Monitoring of Natural and Social Environmental Impact and Resettlement Plan (if necessary) are required prior to the commencement of the review of Detailed Design of each subproject, as a condition for the implementation of the subproject.

③ Environmental permit: None in particular

④ Anti-Pollution Measures: None in particular

- ⑤ Natural Environment: None in particular
- ⑥ Social Environment: None in particular
- ⑦ Other/Monitoring: None in particular
- 2) Promotion of Poverty Reduction: None in particular
- 3) Promotion of Social Development (e.g. Gender Perspective, Measures for Infectious Diseases Including HIV/AIDS, Participatory Development, Consideration for the Handicapped etc.): None in particular
- (8) Collaboration with Other Donors: None in particular
- (9) Other Important Issues: None in particular

#### 4. Targeted Outcomes

##### (1) Performance Indicators (Operation and Effect Indicator)

Effect indicators currently being considered are as shown below. Reference and target values are to be determined after subprojects have been selected.

Indicators	Baseline (Actual Value in 2008)	Target (2016) 【Expected value 2 years after project completion】
Maximum channel capacity (m <sup>3</sup> /s) at the water-level measurement point or the initially scheduled construction section		
Maximum flood inundation area caused by dike damage or overflow (km <sup>2</sup> )		
Maximum number of inundated households caused by dike damage or overflow		

##### (2) Internal Rate of Return

Based on the conditions listed below, the economic internal rate of return (EIRR) of the Project will be calculated when the subprojects are determined.

Costs: Project cost (excluding tax and duty), Operation & maintenance cost

Benefits: Decrease of cost of damage caused by flood and immersion

Project life: 50 years

#### 5. External Factors and Risk Control

Delay of the construction period and changes in the scope of the Project due to the flood event during construction

#### 6. Lessons Learned from Past Project

According to post-evaluation for similar water control sector ODA loan projects implemented in the past, it is necessary for projects requiring land acquisition to confirm the progress of land acquisition plan and take appropriate measures not only in the process of screening but also in the process of project implementation. Based on this lesson, in the Project, JICA will provide close monitoring and confirm the validity and progress of land acquisition plan by taking appropriate measures through consulting services.

In addition, according to the evaluation, it is necessary to provide assistance for developing countries where disasters occur constantly and frequently with measures not only on the hardware side by installation of facilities, but also on the software side, including project design, implementation, technology, educational campaigns, etc., so as to make such measures more effective and efficient, and, if necessary, to accelerate the procedures necessary for the implementation of the Project with advice and consultation.

Based on these lessons, the Project will assist both the hardware and software sides.

Sector loan projects of which subprojects are usually determined after signing of the loan agreement may cause delays in the progress of the projects due to the time necessary for submitting the implementation plans created by the executing agencies. According to the need, JICA will provide assistance to accelerate the progress of the implementation of the Project.

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

(1) Indicators to be used

- 1) Maximum channel capacity ( $\text{m}^3/\text{s}$ ) at the water-level measurement point or the initially scheduled construction section
- 2) Maximum flood inundation area caused by dike break or overflow ( $\text{km}^2$ )
- 3) Maximum number of inundated households caused by dike break or overflow
- 4) Economic Internal Rate of Return (EIRR) (%)

(2) Timing: 2 years after the completion of the Project