

Ex-ante Evaluation

1. Name of the Project
Country: The Republic of Indonesia Project: Integrated Water Resources and Flood Management Project for Semarang (Loan Agreement: March 29, 2006; Loan Amount: 16,302 million yen; Borrower: The Republic of Indonesia)
2. Necessity and Relevance of JBIC's Assistance
<p>According to National Medium-term Development Plan (RPJM (2004-2009)), the Government of Indonesia have one of the important strategic programs of increasing stable water supply and minimizing flood damage through integrated water resource management.</p> <p>Semarang (population 1.38 million), the capital of Central Java Province, has been suffering from flood damage for many years for reasons of climate and topography, and in the 30 years following 1973, it was inundated four times by large-scale floods from overflowing rivers. Moreover, because floods in urban areas caused by rainwater directly on the urban areas are occurring every year, measures for floods are an urgent issue. Meanwhile, water shortages are a problem as a result of the population growth that is accompanying the industrialization and urbanization. Due to the lack of surface water, excessive groundwater is being pumped up, causing serious land subsidence. Whereas water demand in Semarang in 2005 was 4.0 m³/s, the amount of water supplied as of 2004 was only 2.3 m³/s, mainly due to lack of water sources. Given a population increase averaging 1.5% per year, it is predicted that the demand for water will increase to 6.2 m³/s in 2020, and so there is a strong need for development of new water resources.</p> <p>Japan's "Assistance Plan for Indonesia" (November 2004) states that assistance will be provided for natural disaster measures, such as frequently occurring floods, landslides, and droughts, etc., and that such measures are important from the standpoint of improving the investment climate. Moreover, in JBIC's current Medium-Term Strategy for Overseas Economic Cooperation Operations (April 2005), together with the emphasis placed on assistance for installation of disaster-prevention infrastructure, emphasis is placed on prevention, and prevention of reoccurrence, of disasters in the medium to long term. The strategy also states that continued efforts will be made to provide effective assistance through ODA loans for the water problem. Therefore, JBIC's assistance is highly necessary and relevant.</p>
3. Project Objectives
The objective of this project is to minimize flood damage and increase stable water supply through Floodway/River Improvement, Urban drainage system improvement, and multipurpose dam construction in the city of Semarang, the capital of Central Java Province, and thereby contribute to improvement of the investment climate and development of the local economy.
4. Project Description

(1) Target Area

City of Semarang, Central Java Province

(2) Project Outline

The following will be carried out in the city of Semarang to minimize flood damage and increase stable water supply in the area.

- (a) Garang River Improvement Works
- (b) Urban Drainage System Improvement
- (c) Jatibarang Multipurpose Dam Construction
- (d) Consultant services (tendering assistance, supervision of work, support of operation and maintenance, feasibility study of the water supply facilities, detailed design, etc.)

(3) Total Project Cost/Loan Amount

22,165 million yen (Yen Loan Amount: 16,302 million yen)

(4) Schedule

April 2006-December 2013 (93 months)

(5) Implementation Structure

- (a) Borrower: The Republic of Indonesia
- (b) Executing Agency: Directorate General of Water Resources, Ministry of Public Works, and Directorate General of Human Settlements, Ministry of Public Works
- (c) Operation and Maintenance System: PJT III (new public water corporation)

(6) Environmental and Social Consideration

(a) Environmental Effects/Land Acquisition and Resident Relocation

(i) Category: A

(ii) Reason for Categorization

This project is classified as Category A because it is in the dam sector and it has characteristics that make it likely to cause impact, under the “Japan Bank for International Cooperation Guidelines for Confirmation of Environmental and Social Considerations” (established April 2002).

(iii) Environmental Permit

The project’s EIA report, environmental management plan (RKL), and environmental monitoring plan (RPL) were approved by the governor of Central Java Province in October 2005.

(iv) Anti-Pollution Measures

For the reservoir of the Jatibarang Multipurpose Dam, tree cutting is planned, but there is likely to be no serious deterioration of the water quality due to abnormal proliferation of plankton. However, in the event that local standards are exceeded in water quality monitoring, measures will be taken, such as studying of additional water treatment methods. Moreover, measures will be taken to prevent diffusion during the dredging work. When

treating the dredged sludge, if the result of the elution test on the sludge components exceeds domestic standards, the sludge will undergo stabilization treatment (e.g., cement mixture) and controlled disposal.

(v) Natural Environment

There are no national parks or nationally designated protected areas in the area around the project site. Moreover, because dam construction will cause an increase in minimum flow volume and because there is already an existing dam downstream, no significant negative impact on the river ecology, including fish that swim upstream, is foreseen.

(vi) Social Environment

The project requires land acquisition of 194 ha, resident resettlement of 264 households, and relocation of 553 shops, etc., not attached to residences. Monetary compensation will be implemented by Semarang's land acquisition committee, in accordance with the land acquisition and resident resettlement plans as well as the country's domestic laws. In addition, it is planned to provide support to residents for retraining of their livelihoods. Furthermore, no particular opposition has been expressed by attendees at residents' discussions.

(vii) Other/ Monitoring

The executing agencies will implement monitoring of water quality, etc., in accordance with RKL and RPL, etc.

(b) Promotion of Poverty Reduction

None

(c) Promotion of Social Development (e.g. Gender Perspective)

None

(7) Other Important Issues

None

5. Outcome Targets

(1) Evaluation Indicators (Operation and Effect Indicator)

Indicator	Baseline (2005)	Target (2016, 2 years after completion)
(1) Garang River improvement and Jatibarang Multipurpose Dam construction		
Annual Highest Water Level at Simongan Weir (m)	7.2	6.9
Inundated Area by Levee Breach or Overflow (km ²) (at 50-year floods)	4.9	0
Number of Inundated Houses by Levee Breach of Overflow (houses) (at 50-year floods)	14,700	0
Amount of Water Supply from Jatibarang Dam to Semarang City Water Company (m ³ /s)	-	1.820

Discharge Capacity at Semarang River Mouth (m ³ /s)	40	54
Inundated Area due to poor drainage (km ²) (at 5-year floods)	6.62	0
Number of inundated Houses due to poor drainage (houses) (at 5-year floods)	19,700	0

(2) Internal Rate of Return (Economic Internal Rate of Return)

Based on the conditions below, the project's economic internal rate of return (EIRR) is 15.2%

- (a) Cost: Project cost (excluding tax), operation and maintenance expense
- (b) Benefit: Reduction in damage amount due to floods, savings on price of supplying water, savings on purchasing other forms of electric power
- (c) Project Life: 50 years

6. External Risk Factors

Plan preparation and design support for the expansion of the water facilities that use the Jatibarang Multipurpose Dam as their water source is scheduled to be carried out by TOR, the consultant for this project. It should be implemented as planned, including the fund allowances.

7. Lessons Learned from Findings of Similar Projects Undertaken in the Past

In the ex-post evaluations of previous ODA loan projects in the flood control sector, it has been learned that it is necessary to devise appropriate measures for the land acquisition accompanying the project, while checking the progress of the land acquisition plan not only in the appraisal stage but also in the project implementation stage. Based on this, it is planned to conduct close monitoring in this project, and after confirming the suitability and progress of the land acquisition plan, to support appropriate measures through the consultant service.

Moreover, evaluation results have shown that, in developing countries where disasters occur regularly and frequently, in addition to hardware measures such as facility installation, it is necessary to conduct assistance for software aspects (legal, technological, public relations, and educational aspects, etc.) simultaneously in order to make the hardware measures more effective and efficient, and furthermore to survey the state of implementation of the software measures, and in the event that implementation is insufficient, to stimulate implementation with advice and suggestions. Based on this, it is planned to implement hardware measures and software measures in a unified manner in this project.

8. Plans for Future Evaluation

(1) Indicators for Future Evaluation

- (a) Annual Highest Water Level at Simongan Weir (m)
- (b) Inundated Area by Levee Breach or Overflow (km²) (at 50-year floods)
- (c) Number of Inundated Houses by Levee Breach of Overflow (houses) (at 50-year floods)
- (d) Amount of Water Supply from Jatibarang Dam to Semarang City Water Company (m³/s)
- (e) Discharge Capacity at Semarang River Mouth (m³/s)
- (f) Inundated Area due to poor drainage (km²) (at 5-year floods)
- (g) Number of inundated Houses due to poor drainage (houses) (at 5-year floods)

(h) Economic internal rate of return (EIRR) (%)

(2) Timing of Next Evaluation

After project completion