

Ex-Ante Evaluation

1. Name of the Project

Country: The Republic of the Philippines

Project: Pasig-Marikina River Channel Improvement Project (Phase II)

(Loan Agreement: February 27, 2007; Loan Amount: 8,529 million yen; Borrower: Government of the Republic of the Philippines)

2. Necessity and Relevance of JBIC's Assistance

Manila, the capital of the Philippines, is the nation's political, economic and cultural center. With a population of 9.93 million, it accounts for over one-eighth of the Philippines' total population of 76.5 million people. However, because it is located in the low-lying areas downstream of the Pasig-Marikina river, whose river basin of 635,000m² runs through the heart of the city and out to Manila Bay, the city suffers from river floods on a regular basis and experiences flood damage year after year. In 2002, ten deaths were attributable to flood damage, and nearly 100,000 households were inundated. Moreover, because of advancing urbanization and population concentration in the Metro Manila, low-income residents have flocked to the areas along the river banks. Meanwhile, illegal waste disposal and untreated wastewater flowing lead to a lower discharge capacity and an accumulation of polluted mud, thereby further exacerbating flood damage.

In keeping with the development issues in the Philippines and the Japanese government's aid policies towards the Philippines, JBIC enacted the Basic Strategy of Japan's ODA Loan in April 2002. This strategy emphasizes infrastructure development for economic growth, which is also critical for poverty reduction, as one of its priority areas. Based on this strategy, the assistance strategy for each country adopted in October 2002 stress that its assistance activities in the Philippines should target flood control and fire fighting in the heavily populated Metro Manila so as to help stabilize economic activity while reducing risks to the urban poor and improving residential environments. Consequently, this project is consistent with priority areas specified in the above strategies.

This project will provide assistance to counter flooding, which is an important issue for the Philippine government, in Metro Manila metropolitan area the economic and political heartland of the Philippines—and should thereby contribute to the nation's economic development. As such, JBIC's assistance to this project is highly necessary and relevant.

3. Project Objectives

This project aims to improve the environment along the Pasig-Marikina river and to mitigate flood damage by rehabilitating the dikes and promoting disaster prevention and environmental awareness among residents. In this way, the project will help protect residents of the river basin in Metro Manila—which is the political, economic, and cultural center of the Philippines—from 30-year return period magnitude floods, and thereby contribute to stable economic development in the area.

4. Project Description

(1) Target Area

Pasig-Marikina River Basin

(2) Project Outline

(a) Rehabilitation of the Pasig River dikes (16.4km)

(b) Dredging of the Marikina River and rehabilitation of dikes (13.3km)

(c) Construction of Marikina dam

Item (a) is the target of the Phase II. In addition, this phase also includes providing consulting services on construction supervision and education of residents on flood control, as well as resettlement site development under items (b) and (c).

(3) Total Project Cost/Loan Amount

9,909 million yen (Yen Loan Amount: 8,529 million yen)

(4) Schedule

Planned for February 2007-March 2013

(5) Implementation Structure

Department of Public Works and Highways (DPWH)

(6) Environmental and Social Consideration

(a) Environmental Effects/Land Acquisition and Resident Relocation

(i) Category: B

(ii) Reason for Categorization

As the characteristic of the project, rehabilitation of dikes does not correspond to Category A sector, region, or project type as described in the JBIC Guidelines for Environmental Considerations established in October 1999, this project was classified as Category B (Note that under the April 2002 JBIC Guidelines for Environmental and Social Considerations, this project corresponds to a Category A on account of the large-scale, involuntary resettlement).

(iii) Environmental Permit

The Environmental Impact Assessment (EIA) report was approved and Environmental Compliance Certificate (ECC) was issued by the Department of Environment and Natural Resources (DENR) in December 1998.

(iv) Anti-Pollution Measures

This phase of the project is limited to the rehabilitation of dikes. It is not expected to produce water-polluting contaminants or hazardous wastes.

(v) Natural Environment

This phase of the project targets both banks of the Pasig River, which runs through

Metro Manila. There are no economically or ecologically valuable fish or plants living in the river and no trees will be felled, so no negative impact on the natural environment is foreseen.

(vii) Social Environment

The project area for this phase is limited to within 3m of the Pasig River banks (the exact distance depends on the location). It is thus included within the target area covered by the Pasig River Environmental Management and Rehabilitation Sector Development Program, which is currently being implemented through financing from the Asian Development Bank (ADB). (The scope of the program is 10m from both river banks.) Accordingly, resident relocations (targeting 80 households as of October 2003) for this phase of the project are being conducted in accordance with a Resettlement Action plan agreed between the ADB and the Pasig River Repair Committee (PRRC), which is comprised of representatives from Philippine government institutions and Local Government Units (LGUs). The Malacañan Palace and Intramuros¹ are located within in the project area. The pre-existing banks around the Malacañan Palace only need rehabilitations, so no land acquisition is needed. In addition, the width between the Intramuros and the Pasig River is more than 3m therefore, no effect on above cultural heritages is expected.

(viii) Others/Monitoring

The executing agency will monitor resident relocations and environmental considerations during construction.

(7) Other Important Issues

If typical construction methods for the river bank rehabilitations were used in this project phase, it would result in a substantial level of vibrations and noise, because the underlying ground is mostly hard in the project area, the construction phase would necessarily be long, and the effectiveness could not be ensured quickly. For this reason, steel pipe sheet piles will be driven in using the water jet vibro technique², as this method will reduce vibrations and noise while shortening the required construction period and reducing overall costs.

¹ This is a historical area enclosed by castle walls built back in the 16th century, when Spain governed the Philippines.

² A technique developed in Japan to drive steel pipe sheet piles, characterized by the parallel use of a vibro hammer which generates vertical oscillation, and a water jet cutter which blasts high-pressure water. The greatest advantage of this process is the ability to rapidly construct steel products on rock bed and other hard soil. Japan has many experiences of construction using this technique, and has thus accumulated know-how and expertise.

5. Outcome Targets

(1) Evaluation Indicators (Operation and Effect indicators)

(a) For entire project

	2-year flood scale		5-year flood scale		10-year flood scale		30-year flood scale	
	Baseline	Target (at time of project completion)	Baseline	Target (at time of project completion)	Baseline	Target (at time of project completion)	Baseline	Target (at time of project completion)
Flood damage (000,000 pesos)	1,792	0	10,925	0	20,518	144	52,786	962
Affected population (000 people)	55	0	379	0	599	2	1,221	13
Inundated houses (households)	11,650	0	80,720	60	127,427	324	259,753	2,830

(b) For Phase II only

	2-year flood scale		5-year flood scale	
	Baseline	Target (at time of project completion)	Baseline	Target (at time of project completion)
Flood damage (000,000 pesos)	1,554	12	4,821	2,999
Affected population (000 people)	43	1	170	131
Inundated houses (households)	8,050	115	36,272	27,823

(a) The baseline and target figures for the entire project apply to all area that will be flood-controlled through rehabilitations undertaken up to Phase IV.

(b) Baseline and target figures for Phase II apply to area that will be flood-controlled through rehabilitations undertaken in this phase only.

All figures are estimations.

(2) Internal Rate of Return (Economic Internal Rate of Return: EIRR): Entire project: 32.3%
Phase II only: 18.3%

(a) Cost: Construction costs for river bank rehabilitations and diversion channels, additional operation and maintenance costs incurred by this project

Benefit: Reduction in flood damage costs (with 30-year flood scale and below; for Phase II, with 2-year flood scale and below)

(b) Project life: 50 years

6. External Risk Factors

(1) Extraordinarily inclement weather, typhoons, and other natural disasters accompanied by floods exceeding a certain scale (for this phase of the project, excessive flooding would mean floods with more than 2-year return period; and for the entire project, it means floods with more than a 30-year return period.)

(2) Changes in expected flow volume caused by additional urbanization or the like

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

In the ex-post evaluations of previous ODA loan projects for urban flood control, the lesson has been learned that cross-sector project planning and implementation is needed to ensure the effectiveness. This project is part of a cross-sector master plan on improving the Pasig River channels that is comprised of flood control, waste management, and housing management. The plan was devised by the Pasig River Repair Committee that is comprised of representatives from Philippine government institutions and Local Government Units. Based on this master plan, the ADB is providing assistance for the Pasig River Environmental Management and Rehabilitation Sector Development Program. In undertaking this project, JBIC will monitor the progress of each of the projects based on the master plan, in cooperation with the ADB.

8. Plans for Future Evaluation

(1) Indicators for Future Evaluation

(a) Flood damage costs due to floods with a certain scale ('000,000 pesos)

(b) Affected population due to floods with a certain scale ('000 people)

(c) Number of inundated houses due to floods with a certain scale (households)

(2) Timing of Next Evaluation

At time of project completion.