Indonesia

West Jakarta Flood Control System Project (I) (II)

Report Date: June 2000
Field Survey: March 2000

1. Project Profile and Japan's ODA Loan

(1) Background

Jakarta, the capital of Indonesia, is the political and economic center and has the largest population of any city in the nation. In fact, the population density in Jakarta was said to be an overcrowded 9,909 people/km^2 as of 1980. In addition to the increase of outflows along with this population concentration, heavy rains in the upstream and central Jakarta regions have resulted in frequent flooding due to the geographical conditions of Jakarta being located in a flat low-lying fan-shaped region intersected by 10 rivers originating from the mountains to the south. In particular, there were six major floods in the west Jakarta region in just the 10 years between 1972 and 1981.

(2) Objectives

The objective of this project was to construct the Sarinah/Thamrin Drainage Pump Station and the Grogol/Sekretaris Interceptor in order to better control floodwaters in the west Jakarta region.

(3) Project Scope

Japan's ODA loan covered the entire foreign currency amount related to procuring the equipment, materials and services needed for implementing this project. Loan agreements were concluded in fiscal 1983 and 1984 separately.

(4) Borrower/Executing Agency

The Government of The Republic of Indonesia / Directorate General of Water Resources Development, Ministry of Public Works

(5) Outline of Loan Agreement

	FY1983	FY1984	Total
Loan Amount Loan Disbursed Amount	¥5,275 million ¥4,918 million	¥5,774 million ¥1,082 million	¥11,049 million ¥6,000 million
Exchange of Notes	April 1983	September 1983	
Loan Agreement	October 1983	June 1984	
Terms and Conditions Interest rate Repayment period (Grace period) Procurement	 3.0% 30 years (10 years) General Untied (Partially Untied for Consulting Services)	 3.5% 30 years (10 years) Partially Untied	
Final Disbursement Date	October 1991	May 1992	

2. Results and Evaluation

(1) Relevance

Between 1972 and 1981 the western Jakarta region, the area to benefit from this project, suffered damage from six major floods. Considering the seriousness of the damage caused by these floods, the Indonesian government planned the construction of the Sarinah/Thamrin Pump Station, the Cengkareng Floodway (non-ODA loan project) and the Grogol/Sekretaris Interceptor. The former is to support smoother drainage for the Mentengdistrict in central Jakarta, and two of the latter are to protect the city from waters flowing through the four rivers passing through the west side of Jakarta.

Embankment improvement works were added to the construction of the Sarinah/ThamrinPump Station, and this helped to improve the capacity of the drainage network for this region. This project plan, including the above-mentioned additional works, was deemed to be relevant as it greatly contributed to reducing flood damage.

(2) Efficiency

The selection of consultants was vastly delayed than initially planned due to the Indonesia' s policy of giving priority to local businesses, and this gave an influence on the following bidding and start of civil works. In particular, construction of the Grogol/Sekretaris Interceptor was delayed by more than one year.

In terms of project costs, Phase I project was completed roughly in line with the loan amount as planned. However, Phase II project was cost-underrun for both the foreign and local currency portions due in part to cost cutting brought about by an improved cross-section design for the construction of the Grogol/Sekretaris Interceptor.

(3) Effectiveness

1) Qualitative effects

It can be inferred that by controlling flood damage this project made an economical impact for the city of Jakarta. According to records there were six major floods in the 10 years prior to the appraisal of this project. However, since the completion of the project in May 1992 there had only been two major floods, one in January and one in February of 1996. During this period there were no particular changes to weather patterns for Jakarta and the regions upstream, and there were still periods of very heavy rains in which more than 100mm of precipitation fell in one day. Further, no other flood control projects were being conducted from the upstream regions to the project target area, and therefore it is apparent that this project made a major contribution to flood control.

2) Quantitative effects

The EIRR (Economic Internal Rate of Return) was calculated with the reduced damage amount assumed at the appraisal stage being used as “benefit” and the expenses related to construction, operations and maintenance used as “cost” as a definition, and the project life set at 50 years. The result was an EIRR of 11.80%.

The actual maintenance costs could be obtained for this evaluation, but it is almost impossible to simulate how much possible flood damage was avoided through the implementation of this project. Therefore, the “benefit” established at the time of appraisal was used as the “benefit” for the EIRR of this project and prices were standardized with those of 1982. As was indicated in the above 2. (2), the recalculation which was same with during appraisal resulted in cost under run and came to 12.67%, higher than the figure obtained at the time of the appraisal.

(4) Impact

Flood damage in Jakarta decreased after the completion of this project. In view of the fact that there were no particular changes to rain patterns and there were no other flood control projects in the target region, this project made a major impact on reducing flood damage in the city of Jakarta. As a result, it can be judged that this project also contributed to economic development and improved sanitary environment for the target region.

(5) Sustainability

After completion of the project, the Jakarta Special Municipal Government, the Department of Public Works has been responsible for the operations and maintenance of the facilities, and the budget for these operations and maintenance is allocated by both the Indonesian government and the Jakarta Municipal Government.

The Department of Public Works of the Municipal Government regularly removes trash from the drainage channels. However, there has been the problem of trash accumulating temporarily at the screens put in place to capture the floating trash. Therefore, it is thought that the municipal government will need to increase its budget for trash collection and take further measures.

3. Lessons Learned

There are no notable lessons learned.

4. Recommendations

The flood control facilities improved by this project have been performing as effectively as expected, and it is considered that the project effects can be assured to a certain level with suitable operations and maintenance. However, there is the strong possibility that the unlawful dumping of waste into the waterways will be accumulated and hamper the manifestation of effectiveness for the project. This is due to the inadequacy of the trash collecting system and insufficient measures for removing trash from the drainage channels by the Jakarta Special Municipal Government. In order to drastically improve this situation, there is an idea being considered for asking the Indonesian government and the Jakarta Special Municipal Government to ardently address the enforced measures for unlawful damping of trash to begin with, including the expansion of the trash collection system, starting with an increase in the number of garbage tracks.

In the Cengkareng Floodway Construction Project, which is not covered by the ODA loan, some of the floodgates of debouchments to the existing rivers (the Pesanggrahan and Angke Rivers) are damaged. The damage hampers the realization of initially planned floodwater discharge amount, which is an integral part of the Cengkareng Floodway Construction Project, and thus prompt repairs are desired to be made.

Control Panel Inside the Sarinah Tamrin Pumping Station

Comparison of Original and Actual Scope

Item	Plan	Actual
1. Project Scope Construction of Cengkareng Floodway (non-ODA loan)	Drainage discharge: 390m^3/s, One gate, Bridge-building: Seven roads, one railway	Same as left
Construction of Sarinah/ThamrinPump Station -Extension of Siantar Waterway	Drainage discharge:43m^3/s Total length: 450m, Width: 15m, One outlet, Bridge-building Three roads	Same as left
-Construction of SiantarPump Station -Repairs of Melati Regulating Pondage, Cideng Thamrin Waterway, and Krukut Waterway	6.7m3/sec. x 6 stations (Additional works)	Same as left Repair works of revetment Melati Regulating Pondage: 23,860m^2, Cideng ThamrinWaterway: 3,885m, Krukut Waterway: 3,487m
-Improvement of outlet works for Pruit Regulating Pondage	(Additional works)	Construction of outlet works: 2 units Repair of outlet works: 1unit
Construction of Grogol/Sekretaris Catch Drain	Drainage discharge Grogol/Sekretaris: 80m^3/s Sekretaris/Angke: 130m^3/s Total length: 2,985m Bridge-building: 5 roads, one railway Outlet, gate: One for each Channel cross-section design: Upright revetment method	Same as left 3,170 m Same as left Same as left Trapezoidal slope lining method
2. Implementation Schedule Start ~ Completion	Nov. 1984 ~ May 1988	Aug. 1987 ~ May 1992
3. Project Cost Foreign currency Local currency Total Exchange rate	 ¥11,049 million Rp. 24,042 million ¥19,193 million Phase I Project ¥1 ＝Rp.2.8260 Phase II Project ¥1＝Rp.3.04335	 ¥6,000 million Rp. 28,688 million ¥8,324 million Actual ¥1＝Rp.12.3418 (Average value for each calendar year)