Indonesia

Surabaya River Improvement Project (II-1)

Report Date: June 2000
Field Survey: February 2000

1. Project Profile and Japan's ODA Loan

(1) Background

When this project was planned in 1990, the city of Surabaya in East Java Province, Indonesia's second largest city and a political and economical center, had a population of more than 2 million. In addition, Surabaya was a strategic point for transportation and commerce and was enjoying rapid economic development. Surabaya is located along the left coast of the Brantas Delta. The average annual rainfall for this region is around 1,400mm, but 90% of it falls during the rainy season between November and May. Surabaya is frequently threatened by flooding due to the poor drainage capacity of the surrounding drainage channels and small rivers such as the Gunungsari Canal and the Kedurus River.

(2) Objectives

The objectives of this project was to reduce the amount of flood damage, by conducting river improvement to protect Surabaya urban area in East Java Province from frequent flooding, ultimately to provide the local residents with a greater sense of security and support development of this region.

(3) Project Scope

This project covered (a) improvement works for the Kedurus River and (b) detailed design for river improvements in southern and western regions of Surabaya. The Japan's ODA loan covered the foreign currency portion and some of the local currency portion for consulting services and civil works needed for carrying out the abovementioned project.

(4) Borrower/Executing Agency

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

(5) Outline of Loan Agreement

Loan Amount/Loan Disbursed Amount	¥4,220million / ¥3,527 million
Exchange of Notes/Loan Agreement	December 1990 / December 1990
Terms and Conditions	Interest rate: 2.5%, Repayment period: 30 years (10 years for grace period)
Final Disbursement Date	December 1996

2. Results and Evaluation

(1) Relevance

Flood control has become increasingly important as housing land around the municipal rivers in Surabaya was developed to cope with the increasing population in Surabaya. Therefore, the objective of this project was deemed to be relevant.

The goal of this project was planned to protect flooding in the residential area along the Kedurus River in Surabaya with 20-year probability. This plan was prepared on the basis of the results of E/S loan and made very careful technical considerations before the start of the project. Overall the project plan was judged to be relevant as the implementation of the project actually resulted in a decrease in flood damage for the target region, as mentioned later.

In terms of the project scope, some items were changed as the acquisition of land did not proceed as smoothly as planned, and some additional construction works were added in accordance with the need during the implementation of the project. These were suitable changes to the plan in accordance with achieving the overall objectives of the project.

(2) Efficiency

There were no particular problems in terms of the capabilities of the executing agency and the performance of the consultants, but the problem has arisen in acquiring the needed land. A major cause for the problem is that the rapid economic development in Indonesia produced skyrocketing land prices, and as a result, discussions with landowners over proper compensation fell apart. In fact, the money paid for the land acquisition was 3.7 times the amount originally planned. Accordingly, the project has still not been executed for some areas, and this could prove to be a hindrance to achieving the full intended effects of the project. Further, the constructions were only conducted for the sections where land could be obtained, and thus the sections where the land could not be obtained are like islands in a regulating pond, cut off from the improved areas. However, there were no problems in relocating residents from the land that was acquired as all of the legal procedures were followed.

(3) Effectiveness

The flood protection facilities constructed by this project were planned to prevent from 20-year return periodic flooding. There are still some sections where construction was not completed due to the delays in obtaining the needed land. However, the executing agency made an endeavor to change the location of the pump stations, digging the regulating ponds to a depth deeper than originally planned and taking other steps to insure that the planned functions would be realized.

According to the executing agency, this project helped to greatly reduce the land area stricken by floods. There are still sections along the Kedurus River where river improvement works have not been conducted and there are still some inundations almost every year. However, the spread and period of inundation have improved more than before project implementation thanks to the downstream sections completed by this project and the improved floodwater discharging capacity provided by the regulating ponds and pump facilities. It is considered that the land area that is susceptible to floods on the scale of 20-year probability was reduced by between 20% and 30% by this project, compared to before project implementation. However, when considering that the initial plan was to deal with 20-year return periodic flooding (that is, to

make zero the inundation area of 20-year probability), it is hard to say that the objective of the project has been fully achieved.

The consulting services provided by this project included technology transfers concerning the design and installation of the discharge pumps, and transfers were conducted through the project implementation. The executing agency has placed high value on the results of these technology transfers and was satisfied with the performance of the pump stations.

(4) Impact

This project helped to mitigate flood damage and contributed to the stabilization of the residents living in the Kedurus River region. Since the damage caused by inundation was greatly reduced, this project also contributed to the social welfare of the region.

There has been rapid development of housing land in this region, and it was confirmed that the development was partly adjacent to the rivers. According to statistics by Surabaya city, the population in the target region along the Kedurus River was 197,140 before starting this project in 1990, but swelled to 224,417 in 1998. It can be said that this project contributed to regional development by supporting residential development in areas that in the past were frequently inundated by floods. The acquisition of the land for this project resulted in the resettlement of some residents, including approximately 200 households or 800 people. However, the moves to different locations within the same area were included here, and in fact only 20 households, or about 80 people, moved completely out of the region. Still, no one was forced to change their occupations due to the relocation.

(5) Sustainability

As for the portion where the construction works were completed, the downstream cross-section has been ensured as planned. Even though there were problems involving the land acquisition, there have been reports that the stricken land area by flooding was reduced and the pumps are being put to good use.

There are some construction works left unfinished due to the fact that the land could not be fully obtained, and for this reason the operation and maintenance of the project has not been handed over to the Water Control Public Corporation, the original agency in charge. Therefore, the executing agency has provisionally been left in charge of maintaining the project. However, this agency does not have the necessary budget and most basic cleaning and repairs have not been conducted. Therefore, some of the completed sections up to date have become damaged and soiled. Except for the pump facilities, it is hard to say that the project is being adequately operated and managed.

3. Lessons Learned

Both at the time of the appraisal and afterwards during the project implementation stage, necessary measures, such as encouraging greater efforts of the executing agency and studying changes of plan, must be taken for projects that accompanies land acquisition, as well as confirming the condition of land acquisition and residents' relocation.

The main problem in executing this project was the acquisition of land. At the time of the appraisal, an

appropriate budget was in place and the executing agency agreed to provide compensation for acquiring the land. However, it is hard to say that this duty was properly executed. Even though this land acquisition is a major premise for the execution of this project, JBIC cannot directly participate in these efforts. There was also the unforeseen external factor of the sudden surge in land prices. Consideration needs to be given to the various risks associated with acquiring land.

If the project is started on the process of land acquisition, while there is still land that has not been acquired, there will be the unfortunate situation where the project cannot be abandoned, but cannot be moved forward as well. Therefore, the executing agency must prepare a suitable plan for obtaining the land and relocating the residents, and it must do this in a careful and timely manner to avoid such problems. JBIC cannot be directly involved in these efforts, but during the appraisal stage it must confirm the relevance of the schedule for obtaining land and resettling the residents, then check on the progress of this schedule during the implementation stage, call for further efforts on the part of the executing agency and consider changes to the plan when necessary.

4. Recommendations

Improvement of maintenance system

The target section of the project has yielded a certain extent of its effects . In order to preserve the deterioration of facilities, it is necessary to conduct appropriate operation and maintenance including the cleaning of rubbish from the residential district, it is essential for the Indonesian Government to conduct the following countermeasures; (a) the government should not adhere to the project completion and should transfer maintenance to the Water Management Corporation, Operation & Maintenance Body, and (b) even if the maintenance cannot be transferred to the Water Management Corporation, sufficient budget should be allocated to the executing agency.

Taking urgent measures against the uncompleted section

There still remains some uncompleted construction works, which results in the limited effects of the project. It is necessary to complete part of land acquisition and construction works that greatly influence the effects of the project in spite notwithstanding of the severe economic condition of Indonesia.

Comparison of Original and Actual Scope

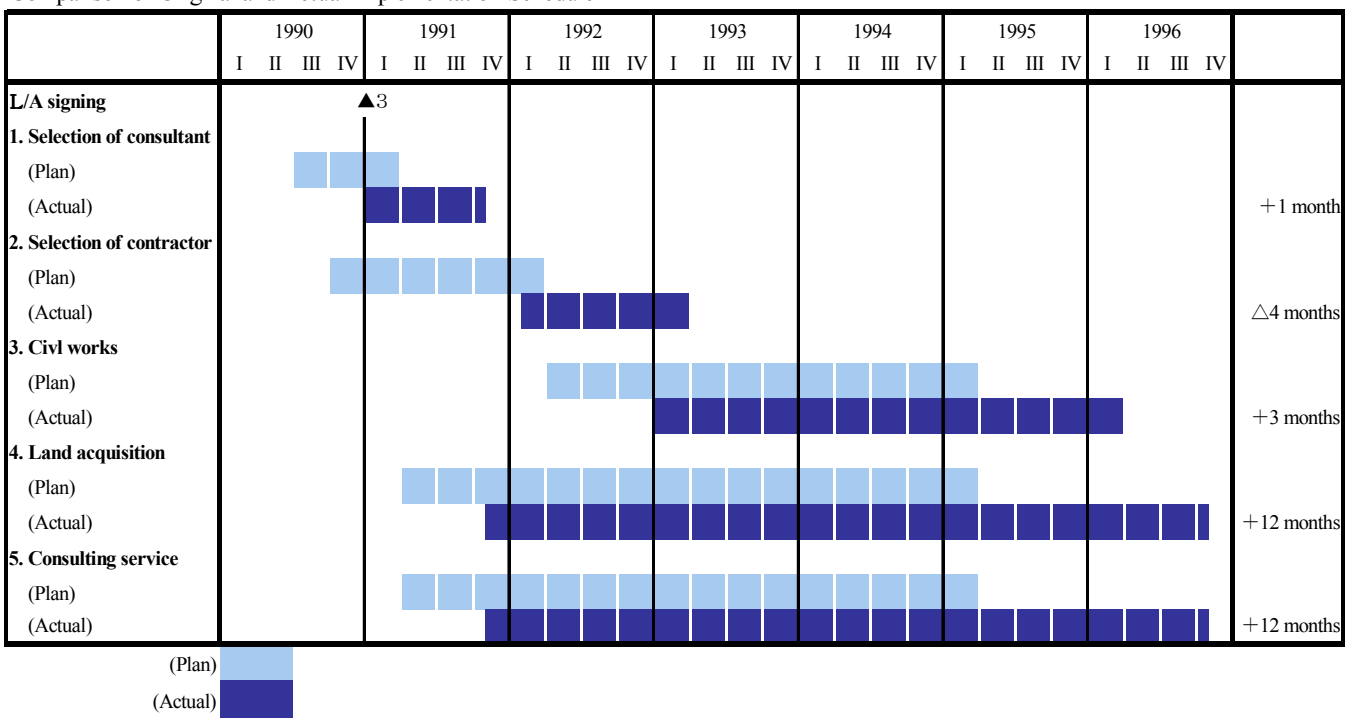
Project Scope	Plan	Actual	Difference
Civil Works			
Extension of channel	8,350m	8,370m	20m
Width of channel	14～24m	14～24m	0m
Excavated soil volume	1,455,200Cu.m	1,646,755Cu.m	191,555Cu.m
Embankment	201,100Cu.m	240,752Cu.m	39,652Cu.m
Slope work	49,480Sq.m	50,487Sq.m	1,007Sq.m
Retaining wall	2,410m	2,441m	31m
Monitoring road	17,800m	15,634m	△2,166m
Street drain	10,000m	9,681m	△319m
Irrigation channel	7Nos	28Nos	21Nos
Syphon	9Nos	7Nos	△2Nos
Viaduct	2Nos	5Nos	3Nos
Viaduct for monitoring road	3Nos	3Nos	0
Pump capacity	10Cu.m/s	10Cu.m/s	0
Regulating pond area	35Ha	21Ha	△14Ha
Drain ditch	400m	470m	70m
Consulting service Bidding assistance, detailed design, construction supervision etc.	587M/M Foreign currency: 176M/M Local currency: 411M/M	608M/M Foreign currency: 176M/M Local currency: 432M/M	21M/M 0 21M/M

River Wall Rehabilitated by the Project (near Jogoroyo Bridge)

Item	Plan (at the time of appraisal)		Actual		Difference	
	Foreign currency	Local currency	Foreign currency	Local currency	Foreign currency	Local currency
① Civil works	2,237	10,894	593	46,678	△1,644	35,784
② Consulting service	734	706	418	4,514	△316	3,808
④ Land acquisition cost	0	14,225	0	16,427	0	2,202
⑤ Tax	0	6,648	0	4,608	0	△2,040
⑥ Physical contingency	224	1,089	-	-	△224	△1,089
Total	3,195	33,562	1,011	72,227	△2,184	38,665

(Foreign currency: ¥million, Local currency: Rp. million)

Comparison of Original and Actual Implementation Schedule



Item	Plan (at the time of appraisal)		Actual		Difference	
	Foreign currency	Local currency	Foreign currency	Local currency	Foreign currency	Local currency
① Civil works	2,237	880	593	2,260	△1,644	1,380
② Consulting service	734	57	418	219	△316	162
④ Land acquisition cost	0	1,149	0	795	0	△354
⑤ Tax	0	537	0	223	0	△314
⑥ Physical contingency	224	88	-	-	△224	△88
Total	3,195	2,711	1,011	3,497	△2,184	787

(All comparisons are made based on yen conversions. Unit: ¥million)

Source: PCR

[Exchange rate] At the time of appraisal (March 1990): ¥1 = Rp. 12.38
Actual: ¥1 = Rp.20.65 (weighted average based on the exchange rate for the loan amount each calendar year)