

Indonesia

Project Type Sector Loan for Water Resources Development

Report Date: February 2003

Field Survey: December 2002

1. Project Profile and Japan's ODA Loan



Project area location map
(Entire Indonesia except West Kalimantan Province and South East Sulawesi Province)



Scene of rice-planting
(Sangiran Dam irrigation area in East Java Province)

1.1 Background

Although, in Indonesia, self-sufficiency in rice was achieved in 1984, a structural rice shortage was becoming apparent because of increasing rice consumption due to an increase in the population and income, a decline in agricultural land in the Java Island, and so forth. Indonesia's ability to feed itself is one of its policy pillars, and in the president's budgetary address in January 1996, he emphasized the necessity for restoring irrigation facilities, including those at the village level, by allocating funds to irrigation on a priority basis. Moreover, in the field of water resources development, while the development of river basins had been promoted especially with respect to large rivers in the islands of Java and Sumatra, it had been increasingly realized by the time of the project appraisal that it was necessary to make efforts to solve water shortages and adopt measures against floods by promoting small-scale water resources development in areas other than the two islands as well.

1.2 Objectives

To improve agricultural productivity and farmers' living standards, resolve water shortages through small-scale water resources development, and reduce damage from flooding, in line with the 6th Five-Year National Development Plan.¹⁾

¹⁾ Under the 6th Five-Year National Development Plan (Repelita VI) covering 1994 through 1998, two irrigation-related programs, that is, an irrigation development management program and a swamp development program, were presented. The purpose of the irrigation development management program was to aim at the maintenance of rice self-sufficiency at the same time as aiming at self-sufficiency in other products, and to promote farmers' participation in the management of irrigation facilities. As a way of accomplishing this, it was intended to (1) undertake the maintenance of irrigation channels and drainage of swamps, (2) encourage the participation of local governments in the maintenance of irrigation channels, (3) encourage the participation of farmers in maintenance, (4) restore irrigation facilities, (5) undertake new development, (6) undertake new irrigation projects, and so forth. On the other hand, the purpose of the swamp development program was to increase farmers' incomes by improving productivity in marshlands. As a way of achieving this, it was planned to undertake the development and maintenance of swamp drainage channels, as well as the development and maintenance of fish farm channels.

1.3 Project Scope

Under this project, it is intended to undertake restoration/completion programs concerning irrigation, ponds, flood control and village irrigation, as well as consulting service with respect to these.

(1) Irrigation Facilities Restoration/Completion Program

The irrigation facilities completion/restoration project with respect to 51,438 ha covering 28 schemes in North Sumatra Province and 8 other provinces (Medium- and Small-Scale Irrigation Facilities Restoration/Completion Program), and the irrigation restoration project with respect to 10,850 ha of swamp in 8 sites in South Kalimantan Province and 4 other provinces (Swamp Drainage Facilities Improvement Program).

(2) Pond Construction/Restoration Program

New construction of ponds with respect to 4,920 ha in 31 sites in East Nusa Tenggara Province and 8 other provinces.

(3) Flood Control Program

A flood protection project covering 11 sites in a total of 4 provinces including Jakarta Special Administrative District.

(4) Village Irrigation Restoration Program

A restoration project for small-scale irrigation facilities covering 100,000 ha in a total of 17 provinces including Lampung Province.

(5) Consulting services with respect to the above-mentioned programs

The service includes monitoring/evaluation, technical support and project formation for the future.

1.4 Borrower/Executing Agency

The Republic of Indonesia/Directorate General of Water Resources, Ministry of Settlement and Regional Infrastructure (the former Ministry of Public Works, Directorate General of Water Resources Development)

1.5. Outline of Loan Agreement

Loan Amount	11,797 million yen
Loan Disbursed Amount	9,934 million yen
Exchange of Notes	December 1996
Loan Agreement	December 1996
Terms and Conditions	
-Interest Rate	2.7%
-Repayment Period (Grace Period)	30 years (10 years)
-Procurement	General untied
Final Disbursement Date	December 2000

2. Results and Evaluation

2.1 Relevance

As has been mentioned in the Background summary, undertaking restoration/completion work on facilities for the water resources sector as a whole to solve various problems, such as ensuring stable self-sufficiency in food, solution of water shortage in local areas and flood measures, was an important government policy at the time of the project appraisal, thus the project was considered relevant.

In this connection, self-sufficiency in food is still regarded as one of the important policies under the present national development plan (PROPENAS), and it is considered necessary for this purpose to promote improvements in agricultural productivity and irrigation efficiency. In addition, since flood control measures, such as river improvement with respect to river basins that may cause flood damage to irrigated areas, are also required, the purpose of this project, “improvement of agricultural productivity and farmers’ living standards, solution of water shortage through small-scale water resources development, and reduction of damage from flooding,” continues to be valid.

2.2 Efficiency

2.2.1 Project Scope

Although the original projects under the plan were selected in advance in accordance with certain criteria,²⁾ the scope was changed three times in all at the project implementation stage (Table 1). The first change concerned the reconsideration/replacement of projects which, based on the review of prospective projects through consulting services, were considered to be premature for execution due to the immaturity of plans/designs or difficulty in land acquisition; on the second occasion, the scope was changed, with emphasis shifting to the purpose of restoring irrigation facilities; on the third occasion, the scope was expanded, with repairing flood damage that had occurred nationwide in April and May 1998 as the main purpose. Consequently, the project scope was extended dramatically.

²⁾ Criteria were established for selecting target projects for each program, and screening was conducted in accordance with these criteria. In this regard, the point is made in the Project Completion Report (PCR) that the projects executed included some that were not necessarily in accordance with the primary criteria for accomplishing the purposes of this project, and that this situation should be rectified.

Table 1: Original and actual scope

Item	Original plan ³⁾	1st change (1997)	2nd change (end of 1997)	Final change (actual) (1998)
1) Irrigation Facilities Restoration/Completion Program 1 Medium & Small Scale Irrigation Schemes	8 provinces, 28 schemes 51,438 ha	Increased to 29 schemes	Increased to 44 schemes	20 provinces, 56 schemes 280,360 ha
2) Irrigation Facilities Restoration/Completion Program 2 Swamp Program	4 provinces, 8 schemes 10,850 ha	Decreased to 4 schemes	Increased to 8 schemes	6 provinces, 8 schemes 19,982ha
3) Pond Construction/Restoration Program Embung [Pond] Program	7 provinces, 31 schemes Irrigated areas: 4,920 ha Water supply: 8,428 households	Decreased to 18 schemes	Increased to 24 schemes	8 provinces, 34 schemes (Farm ponds: 70 in total) Irrigated areas: 6,940 ha Water supply: 208,420 households
4) Flood Control Program Flood Control and River Works	4 provinces, 11 schemes Urban areas: 14,520 ha Irrigated areas: 4,500 ha Settled households: 3,900	No change	No change	21 provinces, 52 schemes Urban areas: 24,200 ha Irrigated areas: 90,440 ha
5) Village Irrigation Restoration Program Village Irrigation Schemes	17 provinces, 100,000 ha	Increased to 20 provinces	No change	20 provinces, 100,500 ha (1,013 villages, 1,388 schemes)
6) Consulting services	Total 465 M/M Pro A: 93M/M Pro B: 372M/M	No information	No information	Total 632M/M Pro A: 136M/M Pro B: 496M/M

Source: Project Completion Report (PCR)

The characteristics of the scope of this project are: (1) that projects are dispersed all over the country, and (2) that the main purpose is support for the restoration/completion of existing projects. For this reason, many of the target projects (schemes) are executed in conjunction with other financial resources such as Indonesia's government budget; this project supports part of the entire project (for example, construction of a dam, restoration/completion of some sections of a channel, etc.).

The consulting services in this project concerned the monitoring of work progress and budget utilization, as well as (at the request of the government) the provision of advice and technical guidance, and did not include full-scale engineering services concerning survey/design.⁴⁾ However, with respect to the Sangiran Dam in East Java Province scheduled under the Pond

³⁾ The original budget (construction cost) by program was distributed based on the percentages shown in the table below.

Irrigation Facilities Restoration/Completion 1 (Medium- and Small-Scale Irrigation Completion/Restoration)	Irrigation Facilities Restoration/Completion 2 (Swamp Drainage Facilities Improvement)	Ponds	Flood Control	Village Irrigation
48%	8%	4%	17%	23%

⁴⁾ At the execution and completion stages, problems were reported with respect to five cases of medium- and small-scale irrigation, two cases of ponds and two cases of flood control. The fact that almost all target projects were implemented based on the plan/design by the Indonesian government and local consultants, the fact that quality control on the execution of works was inadequate, and so forth, have been mentioned as causes in the PCR.

Construction/Restoration Program, the contents of the original design (prepared in 1996 by a consulting firm in Indonesia) were judged to be inadequate in view of the geological conditions (a water leak was feared to occur in the reservoir because of the prevailing calcic soil conditions), and an all-out reworking of the survey/design was performed by the consultants of this project. As a result, the amount of consulting input increased.

At the time of appraisal, it was assumed that there was no likelihood of negative impacts on the environment because the projects were all small-scale ones; however, since addition/replacement of target projects took place due to subsequent changes in the project scope, etc., it became necessary to conduct environmental impact assessments (ANDAL or UKL/UPL) in accordance with Indonesian regulations with respect to 84 relatively large cases. However, the assessments were conducted only in 8 cases. The executing agency explained this as being due to an “insufficient budget.”

2.2.2 Implementation Schedule

As mentioned above, mainly due to the redesigning and expansion of the scope of the project with respect to pond irrigation facilities, the work was completed in September 2000, 10 months behind schedule (although the work for swamp drainage and village irrigation was completed as scheduled).

2.2.3 Project Cost

The project cost amounted to only 13,394 million yen, or 85% of the original estimate of 15,729 million yen, and the actual disbursement of the ODA loan amounted to no more than 10,523 million yen, or somewhat less than the 90% of the scheduled amount of 11,797 million yen. Although the project scope expanded as mentioned above, the total project cost was managed within the plan due to the exchange rate conditions of a strong yen and a weak rupiah prevailing at the end of 1997.

2.2.4. Execution Structure

This project was actually executed by project offices under the water resources authorities of the respective provincial governments, with supervision by the Project Management Unit (PMU) established within the Directorate General of Water Resources Development, Ministry of Public Works (the present Directorate General of Water Resources, Ministry of Settlement and Regional Infrastructure). The Directorate General was positioned as the executing agency. The consulting team extended cooperation with respect to monitoring/coordination performed by the PMU, such as progress management and liaison/coordination with the ministries and agencies concerned, with the result that this project as a whole made smooth headway.

2.3 Effectiveness

[Expansion of benefiting areas and beneficiaries]

This project is aimed at improving farmers' living standard through improving agricultural productivity, putting an end to water shortages through small-scale water resources development and reducing damage from flooding. In this connection, the PCR prepared in 1999/2000 shows quantitative results which are presented in Table 2.

Table 2: Results of the entire project (estimates)

Program	Irrigated area (ha)	Water supply for households (households)
Irrigation Facilities Restoration/Completion Program 1 M & S Scale Irrigation Schemes	225,350 (51,438)	--
Irrigation Facilities Restoration/Completion Program 2 Swamp Program	19,980 (10,850)	--
Pond Construction/Restoration Program Embung [Pond] Program	6,940 (4,920)	208,420 (8,428)
Flood Control Program Flood Control and River Works	25,230 (14,520)	--
Village Irrigation Restoration Program Village Irrigation Schemes	100,050 (100,000)	--
Total (Figures in parentheses represent values planned at appraisal.)	377,550 (167,208)	208,420 (8,428)

Source: Based on PCR (data represent values for 1999/2000)

Irrigated area

Although the irrigated area expanded by 280,360 ha owing to the Irrigation Facilities Restoration/Completion Program 1 (M & S Scale Irrigation Schemes), of which, it is estimated, only 225,350 ha, or about 80%, is actually functioning (in the case of rehabilitation work, such as dam restoration, the average ratio is about 90%; in the case of new establishments or additions, and the average ratio is about 50% due to the fact that the facilities covered by other projects are incomplete). If the area increase from other programs is added to this, it can be estimated that a total irrigated area of 377,550 ha was generated under this project.

Flood control area

In Table 2, the irrigated area of 25,230 ha under the Flood Control Program represents the total area of the urban areas and irrigated areas for which flood damage was reduced through the program.

Water supply for households

It is estimated that more than 200,000 households were enabled to receive water supplies thanks to the Pond Construction/Restoration Program.

[Trial calculation with respect to increased rice production]

It is supposed that the irrigated area that increased due to the completion of this project contributed to increased agricultural production, but it was not possible to obtain quantitative data showing this. Table 3 shows the results of a trial calculation of an increase in rice production. While not only the expansion of the irrigated area but also factors such as improvement in the unit yield and planting efficiency through improvement in cultivation techniques affect the increase or

decrease in rice production,⁵⁾ it can be inferred that all these elements have combined to bring about an increase by about 30% in the total amount of production.

Table 3: Trial calculation of rice production increase effect (ton/year)

Program	Pre-project	Post-project	Increase	Increase ratio
Irrigation Facilities Restoration/Completion Program 1 M & S Scale Irrigation Schemes	780,557	1,011,816	231,260	29.6%
Irrigation Facilities Restoration/Completion Program 2 Swamp Program	30,720	35,481	4,761	15.5%
Pond Construction/Restoration Program Embung [Pond] Program	23,322	47,194	23,872	102.4%
Flood Control Program Flood Control and River Works	27,642	61,426	33,784	122.2%
Village Irrigation Restoration Program Village Irrigation Schemes	254,248	293,656	39,408	15.5%
Total	1,116,489	1,449,573	333,085	29.8%

Source: PCR

Notes: The increased effect was estimated based on the following assumptions:

- 1) With respect to a case where a facility has been completed, the bi-annual rice harvest and unit yield are equal to the average values for the respective provinces;
- 2) With respect to a case where a facility has been restored the planting ratio improves by 5% and the unit yield by 10%;
- 3) With respect to a flood control case, irrigated areas where damage of 7 - 10 days and of a depth of 0.5 - 1.0 m has been eliminated have been targeted.

[Trial calculation of economic internal rate of return (EIRR)]

It is not possible to compare the planned and actual EIRR at the time of evaluation since EIRR had not been calculated at appraisal; however, the EIRR value for each program is shown in Table 4 based on the results of the trial calculations made on completion of the project.

Table 4: Trial calculation of EIRR

Program	Recalculated value
Irrigation Facilities Restoration/Completion Program 1 M & S Scale Irrigation Schemes	14.0%
Irrigation Facilities Restoration/Completion Program 2 Swamp Program	5.5%
Pond Construction/Restoration Program Embung [Pond] Program	16.7%
Flood Control Program Flood Control and River Works	15.1%
Village Irrigation Restoration Program Village Irrigation Schemes	19.0%

Source: PCR

⁵⁾ The situation of the unit yield and cropping ratio is shown in the table below for medium- and small-scale irrigation sites in North Sumatra Province and Central Java Province.

		Unit yield (ton/ha)		Cropping ratio (%)	
		Pre-project	Post-project	Pre-project	Post-project
Village irrigation in North Sumatra Province	Upstream basins	3.9	5.0	162	220
	Downstream basins	3.3	4.5	174	225
Central Java Province	Upstream basins	4.0	4.0	200	205
	Downstream basins	4.0	4.1	202	210

Source: Irrigation Office of the North Sumatra provincial government, Irrigation Office of the Central Java province government

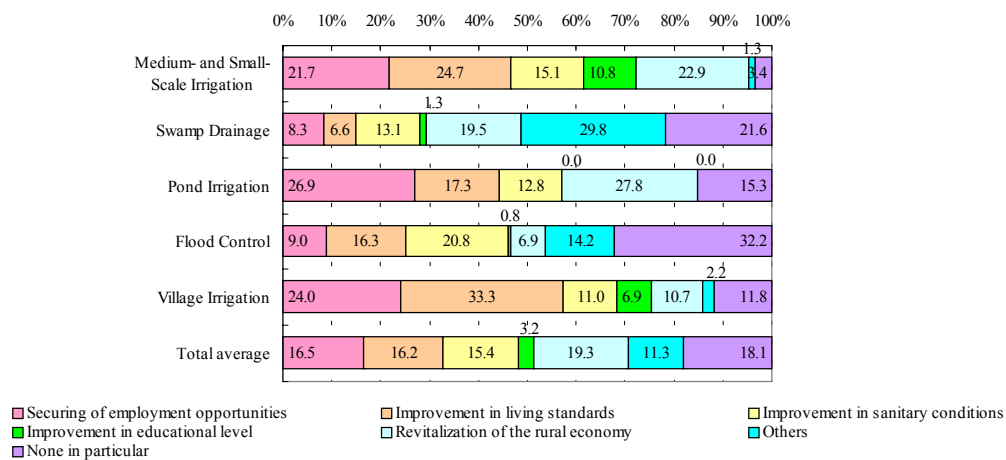
The EIRR is at a reasonable level for the programs other than Swamp Drainage under Irrigation Facilities Restoration/Completion Program 2. The assumption is that the EIRR is low for Swamp Drainage because land development/utilization has not been effected as planned due to circumstances such as poor drainage,⁶⁾ and the benefits have not materialized as planned.

2.4 Impacts

[Socioeconomic impacts]

When questions were asked about the impact which this project had on local social/economic aspects in an interview survey of beneficiaries⁷⁾ conducted immediately after the completion of the project in 1999, the replies indicated that there was a desirable impact in such areas as “Securing of employment opportunities,” “Improvement in living standard,” “Improvement in sanitary conditions” and “Improvement in educational level.” Many replies received for “Others” indicated “Improvement in traffic access (due to construction work roads accompanying this project)” and “Improvement in access to water (for households and livestock).”

Figure 1: Positive effects of the project



Note: Based on the results of the above-mentioned interview survey.

According to the results of the interview survey of beneficiaries, it may be said that the project has had a qualitatively desirable impact on the local society and economy.

In this connection, replies were also received indicating negative impacts (undesirable impacts) in the above-mentioned interview survey. With respect to the Majunto/Selagen River Improvement Project in Bengkulu Province (primarily, construction of a drainage canal), about half of the

⁶⁾ The Air Senda/Limau district intended for the production of palm oil (CPO: Crude Palm Oil) through the cultivation of oil palms, which is mentioned as a case where conditions are particularly poor, is suffering from socioeconomic damage caused by unforeseen environmental changes such as partial stoppage of land utilization within the district due to a failure/shutdown of CPO production factories.

⁷⁾ The total number of samples is 1,386 (Middle- and Small-Scale Irrigation: 422; Swamp Drainage: 81; Pond Irrigation: 207; Flood Control: 273; Village Irrigation: 403).

respondents indicated negative impacts, such as “Stagnation of water flow” and “Deterioration of water quality.” However, no investigation has been conducted as to the causes or the present situation; and it will be necessary to implement improvement measures as appropriate after implementing such an investigation.

[Environmental impacts]

Due to the lack of information regarding the environmental impact assessment, it is impossible to assess negative impact on the environment based on the results of environment monitoring; according to the executing agency, however, no particular negative impact on the environment has been observed. While acquisition of land was involved in several projects, transfer of residents was not required and no serious social problem has occurred.

2.5 Sustainability

[Organizational system]

After decentralization in 2000, the authority and responsibility for the operation and maintenance of irrigation and river facilities were transferred from the central government to local governments and further, in the case of irrigation facilities, to beneficiaries such as farmers, etc., (Table 5). Although more than two years have passed since then, such transference of authority/responsibility is still not complete due to (1) the circumstances of responsible entities, such as a shortage of local government funds and insufficient development of human resources/organization at the level of the farmers, and (2) the fact that, under the concept of “one management system for one irrigated area” or “one management system for one basin,” harmonization of interests is difficult if benefiting areas or beneficiaries extend to more than one local governments (districts or provinces). Moreover, the degree of progress varies according to the individual circumstances of each region or case. Also, with respect to cases which were formulated and executed before 2000, there are cases where central government agencies continue to be responsible for maintenance because local governments are reluctant to accept responsibility.⁸⁾

⁸⁾ Sangiran Dam in Ngawi District in East Java Province (ponds were built under this project), etc.

Table 5: Maintenance bodies and the situation after decentralization

By facilities Contents	Irrigation facilities		River facilities
	Essential facilities (dams, trunk channels)	Terminal facilities (tertiary channels)	
Maintenance body	Local governments	Water users' associations	Local governments
Overview after decentralization	After decentralization in 2000, it was decided that the responsibility for maintenance was to basically rest with districts (Kabupaten); however, where a facility extends over more than one district, the tendency is for the provincial government to undertake a coordination function with respect to the maintenance aspect.	Under PP77 established in 2001 (Government regulations No. 77 "the authority and responsibility for operation and maintenance of irrigation facilities"), it was provided that the authority and responsibility for maintenance should rest with water users' associations (WUAs); however, the situation is now still in transition and the new framework of "100% under WUAs" is rather ineffective.	After decentralization in 2000, it was decided that the responsibility for maintenance was to basically rest with districts (Kabupaten); however, a maintenance scheme is being considered under which a third-party agency, such as a water management public corporation, would undertake maintenance where the case extends over more than one district or province.

In this evaluation survey, a project was selected and visited for each program,⁹⁾ and the present situation of the facilities after completion, as well as their maintenance situation, was investigated (see the following section). From the results of this investigation, it has been confirmed that, at the time of evaluation, maintenance of cases in the field of water resources development is being transferred from the central government-led structure to local governments and, further, to farmers' organizations (WUAs) (although specific circumstances differ depending on cases).

[Operation and maintenance situation seen in case studies]

(1) Irrigation Facilities Restoration/Completion Program 1: Medium & Small Scale Irrigation Schemes

East-West Colo Irrigation Project in Central Java Province

The responsibility for maintenance of the project is being transferred through the Solo River Basin Management Unit (Balai PSDA Bengawan Solo) of the provincial government to the WUA (transition period). Therefore, the regular maintenance budget and structures for the irrigation facilities are in a transitional vacuum. That is, they are not being attended to by the local government, nor is the operational structure of the WUAs well-enough developed to handle them. While urgent repairs of the facilities (measures against collapse of the channel slopes), etc., are being undertaken as temporary measures using the budget of the provincial government, mowing of the areas around

⁹⁾ They were selected in consultation with the executing agency and the consultants of this project and taking into comprehensive consideration the size of facilities, their location, the visit schedule, etc.

channels, cleaning of channels/drains, etc., are not sufficiently performed except in some cases (cleaning of the primary channel siphon is carefully performed by the provincial government).

Figure 2: Primary channel sector where lining has been restored under the project



**(2) Irrigation Facilities Restoration/Completion Program 2: Swamp Program
Air Senda/Limau District in South Sumatra Province**

After decentralization, the maintenance responsibility for the completed facilities was transferred to the district (Banyu Asin District). According to farmers, however, although they were aware that PDR (Proyek Daerah Rawa: Swamp Development Project) had performed rehabilitation (digging, dredging, etc.), they did not remember the district performing maintenance activities. Asking the district about this through PDR, we found out that although the district conducts maintenance activities with respect to swamp development projects aimed at rice cultivation, it has not engaged in maintenance activities with respect to this swamp project aimed at estate crop cultivation. Thus, although the facilities under this project have already been transferred to the local government (district) as a matter of form, the subsequent maintenance activities are not sufficient.

Figure 3: Sailing route dredged under the project

(left: a section coming into disuse with the failure of the CPO factory in the district)

(right: a section still in use)

(see the footnote on p.8)



**(3) Pond Construction/Restoration Program: Pond Program
Sangiran Dam irrigation area in East Java Province**

Although the Sangiran Dam was completed under this project, the entire project (funded by the government) is incomplete because the rehabilitation of the irrigation facilities in the downstream basin is not finished yet. Owing to such circumstances, the total effect has not yet been realized.

In Ngawi District, East Java Province, there are nine “Waduk”, that is, dams, for irrigation; eight of them (the remaining one being the Sangiran Dam) are maintained by the province or the district. The Sangiran Dam is maintained by the Solo River Basin Development Unit. Although it was

provided that each district should be responsible for maintaining their respective dams after the decentralization, some of them are still maintained by provincial governments during the transition period. The Sangiran Dam is situated in Ngawi District and its irrigated areas are all contained within the district, but it has not been decided whether or not it is to be transferred to Ngawi District, since the dam construction project was planned and executed before decentralization. In this connection, the WUA (P3A), WUA community (Gabungan P3A) and WUA headquarters (P3A Induk) had already been organized and registered with the district government.

Figure 4: Sangiran Dam built under the project



**(4) Flood Control Program: Flood Control and River Works
Ciujung/Ciliman Flood Control in Banten Province (part of former West Java Province)**

The Flood Control Facilities Improvement Project has not yet realized its full effect, since the bank, etc., is not yet finished at all the relevant river sections.

Maintenance has not been transferred to the provincial government either since the project is still unfinished. It is under the jurisdiction of the project office (Proyek Induk) of Kimpraswil (Ministry of Settlement and Regional Infrastructure), and the provincial government is not directly involved in the management of the project. The facilities, as well as the responsibility for maintaining them, are to be transferred to the provincial government after completion; the time for this has not been fixed yet.

Figure 5: Section for which the riverbed was dug under the project



**(5) Village Irrigation Restoration Program: Village Irrigation Schemes
A case in North Sumatra Province**

Because the Village Irrigation Schemes are small both in the targeted area and the size of facilities, the responsibility for maintaining them is placed on the WUA. Given the maintenance situation of the gates (oiling, etc.), it can hardly be said that maintenance activities are carried out sufficiently.

Figure 6: An example from Village Irrigation Schemes restored under the project



[Financial status]

Quantitative information/data enabling objective evaluation of the financial status for operations and maintenance could not be obtained. Given the hearing situation at the time of our visit mentioned above, the local government budget allocated to the maintenance of facilities, generally speaking, is barely enough to cover the personnel and general administration expenses of the section responsible for maintenance, and it is not easy even to make routine small repairs.

The funding of WUAs is far from sufficient. The water use cost is usually set and collected at the level of 10,000~20,000 Rp/ha for the rainy season and 20,000~30,000 Rp/ha for the dry season. If a farm of 0.75 ha produces rice at the level of 4.5 t/ha in the dry season, its income will amount to 3.4 million Rp (on the assumption of 1,000 Rp/kg), and it will be quite possible to bear a water use cost of 20,000 Rp or so. It is said, however, that farmers tend to be reluctant to pay water use costs because the money paid to the local government in cash is not accounted for (distrust of the government). It is worth noting that the farmers appear to wish to carry out management/maintenance functions by themselves (without relying on the government) and to manage funds collected as water use payments.¹⁰⁾

[Toward sustainable development]

What should be paid attention to first and foremost when conducting similar Project Type Sector Loans (PTSL) in future is ensuring objectivity and transparency in selecting cases. It is indispensable to have a process that enhances the technical maturity of the plan contents and safeguards the quality of design and the execution of works by strengthening the checking of consultants from the selection stage. Based on these reflections and lessons, in a succeeding project, PTSL-II, which is currently under way, efforts are being made towards “an objective case selecting process through 3-step screening,” “strengthening of quality control of execution of works by consultants,” “submission of documents in accordance with the JBIC environmental impact assessment guidelines” and “support for the development of WUAs,” aiming at total improvement in the quality of PTSL projects where numerous cases have to be managed at a time.

¹⁰⁾ Based on PCR. Although this is a simple survey of intentions, the replies can be regarded as significant since there are cases, such as the WUA of the Small-Scale Irrigation Management Project II (Salomekko Dam, for example), where most of facility operations and maintenance are performed based on the activities and funding ability of the WUA without relying on the government.

3. Feedback

[Recommendations]

(To the executing agency)

In order to ensure the sustainable development of this project, it is necessary to establish clearly where the authority/responsibility for maintenance lies (which is at present ambiguous), and to establish it both institutionally and substantively, with the necessary resources (funds, human resources, etc.) in place. In particular, human resources development and organizational strengthening among farmers via WUAs is important. On the part of the executing agency, it is desirable that a practical methodology for organization formation according to the size and background of individual projects be examined and established.

With respect to measures such as an environmental impact survey, etc., originally, small-scale projects, from which no particular negative impacts on the environment were expected, were targeted; subsequently, based on a review of the project scope, etc., relatively large developments came to be included. Although 84 subprojects, for which an environmental impact survey, an environmental management plan and a monitoring plan are required under Indonesian law, were included, such surveys and plans were actually formulated with respect to only eight cases. It is necessary for the executing agency to build a structure for appropriately implementing procedures/activities required for environmental concerns, as well as a structure for accurately grasping numerous subprojects.

Comparison of Original and Actual Scope

Item	Plan	Actual
1. Project Scope		
1) Irrigation Facilities Restoration/Completion Program 1 (Medium & Small Scale Irrigation Schemes)	8 provinces, 28 schemes 51,438 ha	20 provinces, 56 schemes 280,360 ha
2) Irrigation Facilities Restoration/Completion Program 2 (Swamp Program)	4 provinces, 8 schemes 10,850 ha	6 provinces, 8 schemes 19,982 ha
3) Pond Construction/Restoration Program (Embung [Pond] Program)	7 provinces, 31 schemes Irrigated areas: 4,920 ha Water supply: 8,428 households	8 provinces, 34 schemes Irrigated areas: 6,940 ha Water supply: 208,420 households
4) Flood Control Program (Flood Control and River Works)	4 provinces, 11 schemes Urban areas: 14,520 ha Irrigated areas: 4,500 ha Settled households: 3,900	21 provinces, 52 schemes Urban areas: 24,200 ha Irrigated areas: 90,440 ha
5) Village Irrigation Restoration Program (Village Irrigation Schemes)	17 provinces, 100,000 ha	20 provinces, 100,500 ha (1,013 villages, 1,388 schemes)
6) Consulting services	Total: 465 M/M Pro A: 93M/M Pro B: 372M/M	Total: 632M/M Pro A: 136M/M Pro B: 496M/M
2. Implementation Schedule		
1) L/A	Nov. 1996	Dec. 1996
2) Consultant selection	Jul. 1996 - Apr. 1997	Nov. 1996 - Jun. 1997
3) Consulting services	Mar. 1997 - Nov. 1999	Jun. 1997 - Sep. 2000
4) Civil engineering works	Apr. 1997 - Dec. 1999	Jun. 1997 - Sep. 2000
- Irrigation Facilities Restoration/Completion Program 1	Jun. 1997 - Dec. 1999	Jun. 1997 - Mar. 2000
- Irrigation Facilities Restoration/Completion Program 2	Jun. 1997 - Nov. 1999	As left
- Pond Construction/Restoration Program	Jun. 1997 - Nov. 1999	Jun. 1997 - Sep. 2000
- Flood Control Program	Jun. 1997 - Nov. 1999	Jun. 1997 - Mar. 2000
- Village Irrigation Restoration Program	Apr. 1997 - Mar. 1998	As left
5) Additional C/S relating to pond irrigation (Sangiran Dam)	--	Apr. 1998 - Nov. 1999
6) Preparations for operation and maintenance	--	Dec. 1998 - Nov. 1999
7) Future project formation survey	--	Apr. 1998 - Oct. 1999
3. Project Cost		
Foreign currency	7,944 million yen	7,184 million yen
Local currency	7,785 million yen	6,210 million yen
Total	15,729 million yen	13,394 million yen
ODA loan portion	11,797 million yen	10,523 million yen
Exchange rate	1 Rp. = 0.046 yen (as of Apr. 1996)	29.06Rp. = 1 yen (97/98) 71.43Rp. = 1 yen (98/99) 70.00Rp. = 1 yen (99/00)

Third Party Evaluator's Opinion on Water Resources Development

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Relevance

As the project was to provide loan for completing or restoring the water resource infrastructures all over the country, -- infrastructures that were necessary for agriculture activities, household's water needs as well as flood control -- Evaluator agrees that the project's objective met the National Development Plan of the PELITA VI. Although the benefits delivered by the project were not uniform for each beneficiary, due to its various scopes for various areas, in general, the project brought benefits to increasing agriculture productivity, improving farmer standard of living and easing people to access to sufficient water supply. These objectives were among the top priorities in regional development plan since the PELITA I. Moreover, the majority scope of the project that aimed at improving agriculture productivity was in line with the government program on rice self-sufficiency since 1984, and specifically supported by the government's irrigation-restoring program in 1996. Evaluator agrees that the PTSL for water resources development program was necessary for bringing back the existing projects to their maximum benefit to people at once, and that the PTSL justified its relevance not only to the government development plan but also to the people's hope.

Evaluator agrees that, in general, the project was effective in achieving its intended goals, taking into account the survey result that showed a good satisfactory level as well as economic valuation performance. The other indicator was farmer's enthusiasm and active participation in the routine operational activities. Although some external factors such as unpredictable economy and other project's delay were deteriorating overall performance, the effectiveness of the project remained fairly visible. Speaking of project efficiency, there were minor changes that affected project scope during construction period, though Evaluator believed that the changes were necessary to provide more benefits than the scope of original plan.

Impact

The most benefit that the project delivered was that it allowed the existing project to be completed without any longer delay and provide the service to people immediately. As for the restoration program, the project allowed the existing system to operate at maximum capabilities and provide optimum benefits to the beneficiaries. For both conditions, the Evaluator concludes that, in general, the overall goal of the project has been achieved to the extent that it allowed the existing program to gain multiple agriculture productivity as well as allowed the restored program to gain significant increasing in similar output. Evaluator agrees with the report that, in turn, the project also brought positive impact on farmer's standard of living, job opportunities, education, poverty alleviation and other positive sosio-economic improvement. The project also gives positive benefit to society in general, as it strengthened national agriculture capacity against rice shortage problem.

On the other hand, Evaluator believes that some measures were necessary to address threats to project sustainability and environmental externalities. Only with the appropriate operation and maintenance system through farmers' participation and local government initiatives as well as transfer of technical skills would the project's economic valuation remain at a reasonable level and could the project be classified as effective. Environmental externalities, such as potential threat of polluted water, erosion, and inappropriate harvesting cycle were not addressed sufficiently by the project. However, Evaluator agrees that such insufficiency was inevitable considering the widely dispersed scope of this project, geographically and technically.