

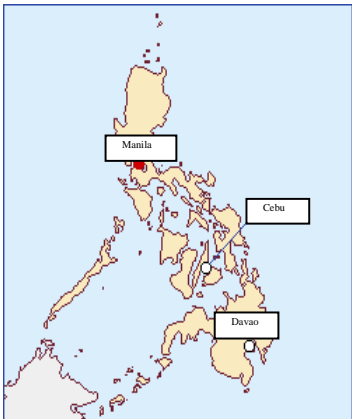
Ex-post Evaluation of Japanese ODA Loan Agrarian Reform Infrastructure Support Project Phase II

External Evaluator: Kinuko Mitani, IC Net Limited

0. Summary

The project objective is to increase agricultural productivity and household income of agrarian reform beneficiaries in 150 Agrarian Reform Communities (ARC) by providing small-scale irrigation and drainage facilities, post-harvest facilities, farm-to-market roads, potable water supply systems, organization and capacity development of farmers groups, and capacity development of local government units in the project areas, thereby contributing to improvement of living conditions of farmers in the project areas. The project has been highly relevant to the Philippines’s development plan and development needs. Similarly, the project is in line with Japan’s Official Development Assistance (ODA) policy for the Philippines; therefore, its relevance is high. Some changes were made to the project scope based on the needs of the local communities in the project areas. The revised scope facilitated the achievement of the project purpose. Although the project cost was within the plan, the project period was exceeded; therefore, the project efficiency is fair. The project’s effectiveness is high, since it has largely achieved its objectives. For example, the irrigable areas increased owing to development of small-scale irrigation and drainage facilities in the project areas. In addition, most of the basic and essential infrastructure was developed in the project areas as planned. The construction of these facilities improved access to transportation and potable water in the project areas; thereby livelihoods of farmers in the project areas are improving. Thus, the impact of the project is high. Some uncertain factors were observed in terms of technical and financial aspects of the operation and maintenance of the project; therefore, sustainability of the project effect is fair. In light of the above, the project is evaluated to be satisfactory.

1. Project Description



Project locations – 150 ARCs in the Philippines



Intake weir constructed in the project



Line canal developed in the project

1.1 Background

The Government of the Philippines (GoP) put the Comprehensive Agrarian Reform Program (CARP¹), which aimed at increasing income for landless farmers, into operation in 1988, and instituted 8.06 million hectares for distribution. Accordingly, 1.70 million hectares were distributed under the Aquino administration, and 2.90 million hectares under the Ramos and Estrada administrations. Under the new law, RA 9700, which came into effect in 2009, otherwise known as Comprehensive Agrarian Reform Program Extension with Reforms (CARPER), land distribution is expected to be completed by 2014. However, CARP had limited assistance to infrastructure or institutionalization or financing, or technical services to farmers who obtained land. Hence, not only increases in agricultural productivity but also improvement of livelihoods were still major problems. In response to these problems, the GoP developed a plan of infrastructure and institutional development to farmers with distributed land, and appointed the Department of Agrarian Reform (DAR) as the executive agency.

DAR identified over 900 Agrarian Reform Communities (ARC²) throughout the Philippines, and set an ARC as basic unit of development. DAR has provided comprehensive assistance to these ARCs, including the development of essential infrastructure that is necessary to improve agricultural productivity, formation of farmers groups, financing, and other support services. The Japan International Cooperation Agency (JICA) has supported agrarian reform by implementing Agrarian Reform Infrastructure Support Project (ARISP³) and Rural Farmers Agrarian Reform Support Credit Program as part of the 23rd ODA loan for the Philippines. Phase II was formulated upon the completion of Phase I (78 ARCs were targeted for development of essential infrastructure and organizations). Lessons learned from Phase I were incorporated into this project, which aimed to construct basic and critical infrastructure, increase/build capacity of concerned local government units (LGUs) and farmers' groups, and contribute to the improvement of living conditions in the project areas. Phase II includes ARCs with indigenous people in the covered area(s).

1.2 Project Outline

The project aims to increase agricultural productivity by developing essential infrastructure facilities, organizing/strengthening farmers groups, and developing the capacity of LGUs in 150 ARCs nationwide to which farm lands were distributed to farmers as per CARP, thereby contributing to improvement of livelihoods of farmers in the project areas.

¹ The CARP is a 10-year program, and came into effect in 1988. Under the Ramos Administration, the implementation period was extended by another 10 years, which made 2008 as the completion year. On the other hand, the Philippines Medium-Term Development Plan (1999-2004) stated that the CARP would be completed in 2004. Despite the changes in the completion year of the CARP, the GoP has given high importance to the CARP.

² ARC is a barangay or a cluster of barangays (local term for a smallest administrative unit in the Philippines) in which a critical mass of the population consists of agrarian reform beneficiaries (each ARC member holds 2 hectares of land on average), and is not an administrative unit.

³ In this report, ARISP is referred as Phase I, this project as Phase II, and the project currently being implemented as Phase III.

Loan Approved Amount/ Disbursed Amount	16,990 Million yen/ 12,333 Million yen
Exchange of Notes Date/ Loan Agreement Signing Date	December 1999/ December 1999
Terms and Conditions	Interest Rate: Civil Works 1-1.8%, Civil Works 2-1.3%, Consultancy services-0.75% Repayment Period: 30 years (Consultancy services 40 years)(Grace period: 10 years) Multiple conditions
Final Disbursement Date	March 2007
Borrower/ Executing Agency	The Government of the Republic of the Philippines/ Department of Agrarian Reform
Main Contractor	None
Main Consultant	Nippon Koei, Co., Ltd. (Japan)/ PKII Engineers (Philippines)/ Hydroterre Consultants, Inc. (Philippines)
Feasibility Study, etc.	None
Related Projects	<Yen loan projects> Agrarian Reform Infrastructure Support Project (I), (III)

2. Outline of the Evaluation Study

2.1 External Evaluator

Kinuko Mitani, IC Net Limited

2.2 Duration of Evaluation Study

Duration of the study: January - December 2011

Duration of the field study: March 24 - April 20, June 13 - July 12, September 25 - October 4, 2011

2.3 Constraints during the Evaluation Study (if any)

The project provided assistance in basic infrastructure development and institutional development to 150 ARCs throughout the Philippines. Due to the limited study period and budget, only two locations each from 3 island groups namely Luzon Island, Visayas, and Mindanao Island⁴ were

⁴ When selecting survey sites at the time of post-evaluation, geographic balance was taken into consideration. According to the selected 3 areas namely Luzon Island located in north, Visayas located in center, and Mindanao Island located in south was taken into consideration, 2 locations per area were selected. Additional selection criteria were set such as location, LGU and ARC were thought. The criteria was 1) ethnic balance, 2) accessibility from Manila, 3) component covered (i.e., infrastructure development, institutional development, etc), and 4) security conditions. The areas selected for the ex-post evaluation of ARISP as well as JICA impact evaluation (La Union, Iloilo, and Compostela Valley) were excluded from for the ex-post evaluation.

selected for site visits and beneficiary surveys. No site visit was conducted for the remaining 144 ARCs except for simplified beneficiary surveys utilizing the network of the executing agency on the ground. During the ex-post evaluation, the availability of key data for the project was severely limited.

Hence, the qualitative data collected through the interviews with beneficiaries, the executing agency, and the cooperating agencies were highly valued.

3. Results of the Evaluation (Overall Rating: B⁵)

3.1 Relevance (Rating: ③⁶)

3.1.1 Relevance with the Development Plan of the Philippines

The 1987 Constitution of the Philippines propelled land distribution to Agrarian Reform Beneficiaries (ARBs), which are landless farmers in rural areas. The land distribution was realized via CARP, and the objective of such distribution was to increase income of these farmers. During the project appraisal, the Medium-Term Philippine Development Plan (1993-1998) put high priority on CARP. Thus, the DAR's development plan (1994-2004), 6,881 million peso was budgeted to implement ARISP Phase II. When Arroyo administration was established in 2004, creating employment and providing social justice and basic needs were highlighted as pressing issues. Accordingly, agriculture and agribusiness development was planned and implemented through CARP including the promotion of agricultural industrialization and employment creation in ARCs.

During the ex-post evaluation, Medium-Term Philippine Development Plan (2011-2016) explained that assistance to agriculture and rural development was one of the priority agenda. The priorities were given to securing 150 billion yen to complete CARP by 2014, establishing competitive, sustainable and technology-based agriculture and fisheries sector, and transforming farmers who obtained farm land into viable entrepreneurs. The GoP is currently implementing ARISP Phase III with JICA's assistance.

Development policy in the Medium-Term Philippine Development Plan addressed a pressing need to assist in basic and essential infrastructure development. Change of central administration did not influence, and the present administration continues to implement agrarian reform, to develop basic and essential infrastructure for farmers, and to assist in capacity development of farmers groups.

3.1.2 Relevance with the Development Needs of the Philippines

When the project was formulated, DAR aimed to complete CARP in 2008. The main activities are implementation of Land Tenure Improvement (LTI) component and support services delivery including development projects targeting ARCs. For example, Phase I provided assistance for the development of basic and essential infrastructure and the organization of farmers.

A request for assistance was made by LGUs and farmers who were not covered in Phase I to extend the similar assistance to other sites. In particular, the need for basic and essential infrastructure development was highly expressed. Likewise, the need to include areas with high concentration of

⁵ A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

⁶ ③: High, ②: Fair, ①: Low

indigenous groups also came about. Based on lessons learned and recommendations from Phase I, the GoP proposed to undertake Phase II and provide assistance to farmers who were the new recipients of land in rural areas.

According to Japan's Ministry of Foreign Affairs, at the time of project appraisal (1997), the poverty rate in the Philippines was approximately 40%. In the Medium-Term Philippine Development Plan (1993-1998), it was stated that the poverty rate would be reduced to 30%. However, the poverty rate was 34% in 2000. The expected poverty rate was not achieved as it fell by 4%. According to the National Statistics Office Report (Philippines, 2011), the poverty rate was 26.5% in 2009. This indicates that there was poverty reduction of 13.5% when compared with poverty rate from the time of appraisal. The GoP aims to further reduce the poverty rate.

According to data from the National Statistics Office (2007), one out of five households has no access to potable water supply systems. Situations like this affirm that the development of basic and essential infrastructure and the reduction of poverty rate are important goals for the GoP. The GoP suggested that assistance to infrastructure development in rural areas was an issue in the Medium-Term Philippine Development Plan (2011-2016). Hence, the development needs for this project during the ex-post evaluation remain severe.

3.1.3 Relevance with Japan's ODA Policy

The Country Assistance Program for the Philippines (2000) stated the following: 1) securing sustained economic growth, 2) alleviating poverty, 3) protecting environment, 4) developing human resources, and 5) strengthening governance as the priority areas. Similarly, the Program highlighted the importance of agricultural and rural development, which contributes to poverty alleviation. In 1999, Japan Bank of International Cooperation stated in the Medium-Term Strategy for Overseas Economic Cooperation Operations that priorities were given to strengthening economy and overcoming constraints toward sustained economic growth, poverty alleviation and regional disparity reduction, aid contributing to environment protection, aid in development of human resources and systems. As a way to poverty reduction, the development of economic and social infrastructure and capacity are also given high importance. Hence, the project is aligned with the development plan and strategy highlighted above.

For the above reasons, the project has been highly relevant to the Philippines's development plan and development needs that focus on basic and essential infrastructure and institutional development, as well as Japan's ODA policy. Therefore, its relevance is high.

3.2 Efficiency (Rating: ②)

3.2.1 Project Outputs

The project was composed of: 1) civil works, 2) institutional development, 3) procurement of equipment, and 4) consulting services. To implement the project, DAR was the executing agency. The National Irrigation Administration (NIA) and the Department of Public Works and Highways (DPWH) were the cooperating agencies and were responsible for civil works. NIA constructed small-scale

irrigation and drainage facilities and post-harvest facilities⁷, while DPWH developed farm-to-market roads and bridges. The LGUs (municipality level) in the project sites installed potable water supply systems. DAR planned and implemented, in partnership with local NGOs, training courses whose objectives were institutional development and strengthening of farmers groups such as irrigators' associations (IAs⁸), cooperatives⁹ and water user's associations (WUAs¹⁰). At the time of the project implementation, DAR imparted various strategies to assure effective coordination and collaboration among all concerned agencies.

Civil works, procurement of equipment, institutional development and strengthening, and consulting services were covered by the Japanese ODA. The following are the actual outputs per component.

(1) Civil Works

Each ARC prepared a development plan before the project started. Activities such as civil works and institutional development were to be implemented according to the approved development plan. However, the plan was revised in 2004 (the reason for the revision is discussed in the following). Hence, when the actual accomplishment was compared with the revised plan, the achievement level of irrigation and drainage facilities was 99%, farm-to-market roads was 100%, and post-harvest facilities was 103%. The actual achievement of the potable water supply system was 102% of the revised plan (see Table 1).

Table 1: Civil Works – Plan and Actual

Item	Irrigation and drainage facility (ha.)	Farm-to-market road (km)	Post-harvest facility (unit)	Potable water supply system (unit)
Original plan	43,433	766	122	66
Revised plan (2004)	31,707	646	66	80
Actual (2007)	31,595	646	68	82
Ratio against the revised plan (%)	99	100	103	102

Source: Executing agency

Each of the 150 ARCs has a development plan, which was prepared at field level jointly among the executive agency, cooperating agencies and community members before civil works started. Changes in the original development plans have to be made to suit to the local needs of the ARBs from the time of appraisal to the time the project started. As a result, the time for review and approval of such plans took longer than expected. This became the main factor for reduction of scope of civil works, although

⁷ Farmers in the Philippines typically dry paddy using road side. When paddy is dried on a road, there are impurities in paddy. As a result, selling price for the paddy is reduced. Hence, the needs for solar dryer and storage are very high.

⁸ IAs are formed by local farmers. Their main task is to operate and maintain the irrigation facilities developed in the project.

⁹ Cooperatives are formed by local farmers. The main responsibilities include dissemination of operation and maintenance of the post-harvest facilities, assistance in the farming technology to its members including credit lending, buying and selling of paddy and farm inputs.

¹⁰ WUAs are formed by local community members who reside nearby the potable water supply systems developed in the project. Their main task is to maintain the systems and collect user's fee.

scope of potable water supply system was increased. These changes of scope reflecting the local needs were relevant from view point of the project objective. Reasons for the revision were as follows.

- Target ARC: there was no change in the number of target ARCs. 51 ARCs from the original 150 ARCs were replaced when the project started.
- Irrigation and drainage facility: As a result of preparation of detailed plan jointly with local community members, areas which required new facilities were reduced¹¹.
- Farm-to-market road: some roads were already developed by LGUs in the project areas. Thus, the number of the target road development was reduced.
- Post-harvest facility: Cooperatives are responsible for O&M of post-harvest facilities. As a result of the assessment of Cooperatives' organizational maturity level and capacity to manage the facility in a sustainable manner, less number of Cooperatives could meet the minimum required level of capacity and lot where the structure would be put up.
- Potable water supply system: community needs in the project areas were re-assessed in participatory manner involving local communities/direct beneficiaries themselves. As a result, needs for new potable water supply system installation was higher than the plan. Hence, the scope was revised in order to cover additional requirements based on the local needs.

(2) Institutional Development

In the institutional development component, training on capacity development and enhancement was planned and implemented focusing on organization of beneficiary groups as well as three farmers groups (IAs, cooperatives, and WUAs) organized in the project. The number of farmers who attended the training was 46,796 by the project completion. There were training courses completed in one day, and other courses were scheduled for more than one day according to the nature of training courses.

DAR signed a contract with the Development Academy of the Philippines (DAP), which is government owned and controlled organization for implementation of the institutional development component. DAP mobilized local NGOs, which were equipped with local knowledge and experience in capacity development and enhancement of the capacities of farmers groups, planned and conducted training courses based on the needs of farmers. According to the interview with DAR and beneficiaries of the project, the NGOs, which were responsible for capacity development and enhancement training, were highly appreciated.

The capacity development of LGUs in the project areas focused mainly on technical advisory related to techniques and knowledge on civil works. NIA and DPWH were responsible for the capacity development from a technical viewpoint. Technical guidance on development of plan formulation and project management (i.e., construction supervision, financial management) were provided by experts assigned to the project. DAR conducted training related to agriculture technology. According to

¹¹ When each ARC conducted needs assessment jointly with DAR, NIA and local community members in the project areas, problems to secure adequate water resource arose in some areas. Hence, it was determined that construction of new irrigation system was not relevant in those areas. Similarly, land development was necessary before construction of new irrigation system. The required land development was very costly: Hence it was concluded that the project could not cover such high cost.

interviews with LGU officials who participated in the training, the training was very satisfactory because participants were able to acquire knowledge pertaining to new technologies and confirms the appropriateness of technologies already applied on the ground.

The actual accomplishments based on the plans are shown in Table 2. The number of ARCs selected for the project did not change except for the replacement of certain ARCs from the original number as planned. Based on ARC replacement, the number of target LGUs increased in 2004. The accomplishment level for institution development by the LGUs was slightly higher than planned.

Table 2: Institutional Development – Plan and Actual

Target	ARC	LGUs
Original plan	150	66
Revised plan (2004)	150	80
Actual (2007)	150	82
Accomplishment level (%)	100	102

Source: Executing agency

(3) Procurement of Equipment

Based on the needs of DAR at central and local levels, the procurement of 80 four-wheel vehicles and 80 computers¹² was planned. By the end of the project implementation, not only the number of equipment procured was increased, but also the items to be procured were added. The items added were two-wheel vehicles, computers, scanners, cameras, and LCD projectors. The reason for the procurement of additional equipment was to establish adequate project implementation and management system as the executing agency. Since the project was implemented at nationwide, procurement of the additional equipment was relevant. The equipment procured was in good condition. Most of the equipment are still being used by the executing agency (at the central and local levels especially in the on-going Phase III of the project).

(4) Consulting Services

The consulting services consist of: 1) assistance for overall project management, 2) assistance for institutional development components, 3) assistance for infrastructure development components, and 4) training of the Philippines’ government officials were implemented as per the plan. However, the project period was extended due to the extension of the civil works during the project implementation. As a result, M/M of international consultants was increased to 112%, and local consultants to 114% when compared to the plan. The major reasons for the extension were issues related to land acquisition, bad weather conditions, and natural disasters. The executing agency was highly satisfied with the performance of the consultants.

Training of government officials was organized in Japan, Singapore, and Thailand. The training courses covered a variety of subjects, including project planning and management and risk

¹² Life of the procured computer is approximately 5-year according to DAR. Thus, there are some computers already disposed by DAR at the time of the ex-post evaluation.

management, as well as mechanism of farmers' associations in Japan. According to the interviews conducted with the staff members of DAR who participated in the training (mainly at the central level), the training was generally effective.

3.2.2 Project Inputs

3.2.2.1 Project Cost (Sub-rating: ③)

The project cost was estimated as 20,222 million yen (yen loan portion was 16,990 million yen) initially. However, the scope of the civil works was reduced to 73% of the plan in 2004, which was after the project started. Accordingly, comparisons between the revised plan that reflected the reduced scope and project cost and the actual plan were made¹³. The revised planned project cost was 84% of the planned cost, which was 17,027 million yen. When the revised project cost was compared to the actual project cost of 15,074 million yen (yen loan portion was 12,333 million), only 89% of the revised cost was spent in yen currency, which was within the plan. The main reasons were the release of the funds covered by local currency portion was less than originally planned and appreciation of yen during the project period.

3.2.2.2 Project Period (Sub-rating: ②)

When the project was planned, the project period was December 1999 to December 2004 (61 months). The actual project period was December 1999 to June 2007 (91 months). Therefore the project period exceeded the plan, and the ratio of the actual to the plan rose to 149%.

The project conducted baseline data survey at the 150 ARCs. Based on the conditions, some ARCs were replaced by other ARCs. After newly selected ARCs were added to the project, the same survey was conducted to collect baseline data. The baseline data collection period took longer than originally estimated. This was the main reason for delay in the implementation of civil works and institutional development components. Despite the extension and delay in the project period, the changes made to the selected ARCs were relevant to the needs of the project areas.

The main reason for delays in the project period after finalizing the 150 ARCs for the project included suspension of funds disbursement by the GoP¹⁴, and the repair of facilities damaged by typhoons and floods in 2006. According to the executing agency, unsynchronized cropping seasons of agricultural production made it difficult to carry out the project activities as planned. As highlighted in Table 3, an additional 29 M/M was incurred to complete institutional development, which caused the delay of consulting services. The yen portion of the project funds were disbursed as planned. However, the GoP portion was not disbursed as planned. Thus, the starting time of the institutional development component had to slide back. Delays due to natural disasters such as typhoons and floods were

¹³ Average exchange rate from January 2000 to December 2006 was 1 peso=2.22 yen. This rate was applied when calculating the revised planned project cost.

¹⁴ According to the executive agency, the project funds were not disbursed at the initial stage of project implementation: therefore, the project activities were temporary reduced and delayed. In 2004 and 2006, negative influence affected the progress of the project, which was because of financial deficit of the GoP as a whole. To response to the problem, the project scope and funds allocation covered by the yen portion was revised.

external factors that DAR could not avoid.

Table 3: Project Period – Plan and Actual

Scope	Plan (M/M)	Actual (M/M)	Reason for delay/extension	Gap
Institutional development	January 2001-December 2004 (46)	January 2001-June 2007 (75)	<ul style="list-style-type: none"> • Delay in civil works • Delay in disbursement of the GoP's funding 	29
Consulting services	September 2000-December 2004 (58)	April 2001-June 2007 (87)	<ul style="list-style-type: none"> • Right-of-way • Rehabilitation of facilities damaged by natural disaster such as typhoon and flood 	29
Civil works	September 2000-December 2004 (50)	April 2001-June 2007 (72)	<ul style="list-style-type: none"> • Change in scope • Additional construction 	22

Source: DAR (July 2011)

For the above reasons, although the project cost was within the plan, the project period was exceeded, therefore efficiency of the project is fair.

3.3 Effectiveness (Rating: ③)

3.3.1 Quantitative Effects

3.3.1.1 Results from Operation and Effect Indicators

Indicators typically applied to assess the effectiveness of projects related to agriculture and irrigation include ARC population, irrigated land area, paddy production volume, cropping intensity, and net income from farming per household in the project areas. However, only limited data pertaining to the indicators listed above were collected during the ex-post evaluation. According to paddy production data, the actual was 102% compared to the plan. Training courses such as irrigation water management, farm inputs (i.e., fertilizers and seeds), and farming technology, which were critical for effective paddy production were conducted in the project. These training courses contributed to improvement of farm management technology through technology transfer, thereby increase in paddy cropping cycle, improvement of paddy production technology, and introduction of improved variety were realized.

In addition, responses to the questionnaire from the executive agency as well as data from the Assessment of the Level of Development of Agrarian Reform Communities (ALDA) indicators¹⁵ were used as substitute for unavailable data. Assessment of development level fluctuation for the 150 ARCs selected in the project was conducted. Qualitative effectiveness of the project based on the ALDA ratings is shown in Table 4. There was no change concerning the number of the target ARCs

¹⁵ DAR conducts ALDA every year. ALDA consists of 6 indicators namely 1) land tenure improvement (LTI), 2) organizational maturity, 3) economic and physical infrastructure support services, 4) farm productivity and income, 5) basic social services, and 6) gender and development is a monitoring tool used to assess development progress of each ARC. ALDA is conducted in the areas where JICA, Asian Development Bank and other developing partners provide assistance in addition to the areas where the GoP independently implement projects. In the project, LTI level of 76 to 100% was one of the criteria in target ARC selection. The objectives of LTI were 1) transfer of land ownership (including transfer of land without land ownership to small-scale farmers), and 2) legal assistance for pending lawsuits.

being 150, however, some ARCs were replaced. Instead of the ARCs originally selected, ALDA ratings of the actual ARCs selected for the project was compared from the time of the revision in 2004, the time of project completion in 2007, and after the project completion in 2010. DAR annually conducts assessment of development progress per ARC, and determines overall development levels accordingly. As shown in Table 4, the ratings are divided into 5 levels specifically 5: very high, 4: high, 3: moderate, 2: low, and 1: very low. There were 73% of ARCs rated as high and above (level 5 and 4) in 2004. The percentage was increased to 87% at the same areas in 2010. After the project completion, there was no longer any ARC rated as level 1, which indicated very low at development level. Hence, it can be said that development is in progress in the project areas, thereby living conditions of farmers are improving.

Table 4: Development Level According to ALDA

Development level	ARC (unit)	
	2004	2010
5	60	92
4	50	35
3	28	15
2	9	4
1	3	0
Total	150	146*

*ALDA data of 146 out of 150 ARCs were collected.

Source: DAR (July 2011)

In addition, data related to effectiveness of the irrigation and drainage facilities developed in the project were collected from NIA, the cooperative agency, for some of the project areas visited during the site. The results of comparisons between 2007: at the project completion and 2010: three years after the project completion are shown in Table 5.

Data collected from three provinces namely Ilocos Norte, Oriental Mindoro and Davao Oriental showed the project effectiveness in regard to irrigable area¹⁶, net income of farmers, and effectiveness of IAs to some extent. According to items listed on the far left column in the table below, 3. Irrigation water distribution area¹⁷ had no change since the construction of the irrigation facilities was completed at the time of project completion. In regard to 4. Irrigable area, there was a good increase in Ilocos Norte. In Oriental Mindoro, there was also a slight increase in part of the irrigated area during wet season. Owing to the increase in the irrigable area, volume of irrigation water flown to paddy field was adjusted in a more adequate manner in these two provinces. Hence, the project is deemed to be instrumental for the increase in agricultural productivity in these provinces when reviewed along with the figure fluctuation of 5. *Net income*¹⁸. 5. *Net Income* increased expect dry season of Oriental Mindoro. There was no 2007 data for Davao Oriental, so that it could not be compared to 2010 data.

¹⁶ Irrigable area indicates actual area of paddy field using irrigation water.

¹⁷ Irrigation water distribution area indicates area of paddy field, which receives irrigation water from the irrigation facilities developed in the project.

¹⁸ Net farm income basically comes from paddy sales.

Based on the interviews during the beneficiary survey, there was an increase in net income. 6. *IA organizational maturity level* is an assessment of organizational maturity of IAs at nationwide by NIA every year. This maturity level is calculated from indicators such as number of IA members, agricultural production volume and production cost, net income, loan repayment rate to NIA as a whole. 112 point (full points) is set as “Fully matured” for rating of the maturity level. Based on the rating, 1) Ilocos Norte was improved from 85 to 93, 2) Oriental Mindoro was dropped from 81 to 71 on average, and 3) there was no change in Davao Oriental. However, agricultural productivity in Oriental Mindoro decreased from 2010 to 2007; therefore, IA maturity level in the province dropped. Flooding due to typhoon hit the province in 2009 had negative influence, and caused the rating to drop. This could not have been prevented by farmers in the area, therefore, it is considered as external factor. In other words, this lowering of the rating could be thought as temporary conditions for Oriental Mindoro.

According to the result illustrated above, the facilities developed in the project are assumed to be contributing to improvement of agricultural productivity in the project areas.

Table 5: Effectiveness of the small-scale infrastructure constructed in the project
– project completion and ex-post evaluation

Item	Project completed (Year 2007)			Year 2010		
	Ilocos Norte	Oriental Mindoro	Davao Oriental	Ilocos Norte	Oriental Mindoro	Davao Oriental
1. Target province	Ilocos Norte	Oriental Mindoro	Davao Oriental	Ilocos Norte	Oriental Mindoro	Davao Oriental
2. Target irrigation and drainage facility	Estancia	Banus ①Upstream ②Downstream	Tibanban	Estancia	Banus ①Upstream ②Downstream	Tibanban
3. Irrigation water distribution area (ha)	113	①70 ②103	287	113	①70 ②103	287
4. Irrigable area (ha)						
Dry	95	①70 ②40	206	113	①70 ②40	206
Wet	—	①70 ②40	206	113	①70 ②50	206
5. Net income (PHP/ha)						
Dry	23,500	①15,300 ②13,500	—	48,700	①13,500 ②19,250	30,250
Wet	—	①15,300 ②13,500		34,920	①20,000 ②18,000	28,000
6. IA organizational maturity level	85	81	86	93	①76 ②65	86

Source: NIA (July 2011)

3.3.1.2 Results of Calculations of Internal Rates of Return (IRR)

The Economic Internal Rate of Return (EIRR) at the time of the appraisal was 25.4% for the project. When the EIRR was recalculated during the ex-post evaluation, it was 14.2%. A decrease in

the EIRR from the time of the appraisal was due to a reduction in project benefits and an increase in project costs. The main factor behind the project benefit reduction was a decrease in agricultural production caused by unstable weather conditions. Factors behind the increase in project costs included a rise in project costs caused by the extension of the project period, additional costs accrued to repair facilities damaged during the project period, and an escalation in agricultural input prices such as fertilizers that led to an increase in production costs.

3.3.2 Qualitative Effects

During the ex-post evaluation, a simplified beneficiary survey¹⁹ was administered to a focus group of 144 ARCs not selected for site visits. The survey was structured to compare the conditions of these ARCs before and after the project. The results of the survey showed increases in irrigable land, access to irrigation water, improvement of farming techniques and agricultural productivity, and paddy production volume. The results of the simplified beneficiary survey on irrigable land, irrigation water, paddy production volume, cropping pattern, and farming technique are as follows:

- Irrigable area: *Increased considerably* (response rate of 45%), *Increased slightly* (response rate of 37%), *No change* (response rate of 18%)
- Irrigation water supply: More than half of the respondents felt irrigation water supply was increased when compared between the pre-project and the post-project (see Figure 1 for detail)
- Cropping frequency: *Single to double* (response rate of 48%), *Double to more than 3 times* (response rate of 31%), and *No change* (response rate of 21%)
- Paddy production (wet season): *Increased* (response rate of 71%), *Not increased* (response rate of 29%)
- Paddy production (dry season): *Increased* (response rate of 68%), *Not increased* (response rate of 32%)
- Farming technology: *Improved* (response rate of 94%), *No change* (response rate of 6%)

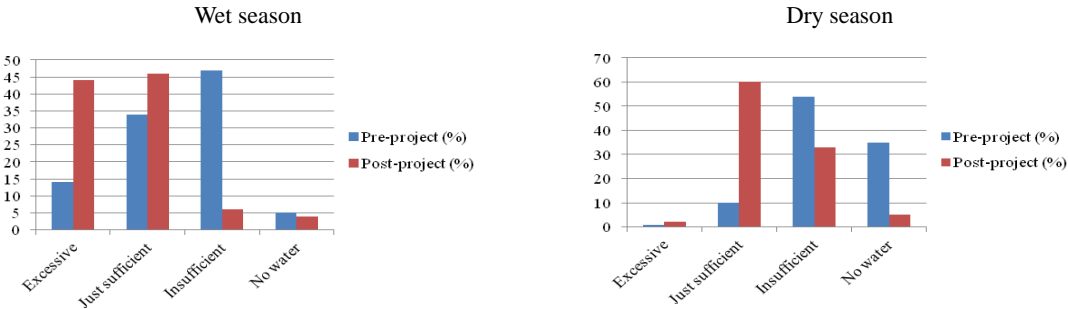


Figure 1: Access to Irrigation Water – Wet and Dry (simplified beneficiary survey)
 Source: Beneficiary survey at ex-post evaluation

¹⁹ Simplified beneficiary survey was targeted to 144 out of 150 ARCs, which were selected for the project (responses from 139 ARCs were collected). The survey was a summary of the beneficiary survey questionnaire that was conducted during the ex-post evaluation. The response style was mainly to select one response the best answer out of the choices of 2 to 5.

To assess the project’s effectiveness and impact, a beneficiary survey²⁰ was administered to 100 ARC members each residing in one of the six selected areas (see 3.4. for impact). The 100 persons were selected randomly. Response to the survey was chosen normally from two to five answer options per question. The survey results revealed that the increases in farm-to-market roads, farmland, and access to irrigation water contributed to increases in the variety and volume of agricultural production capacity. As a result, production volume has been improved.

The detailed survey results are as follows:

- Agricultural productivity was improved owing to availability of adequate irrigation water as the result of the development of the irrigation systems (response rate of 66%). Similarly, it was felt cropping frequency was increased from single to double in some of the project areas (response rate of 71%).
- Irrigation water supply was increased when compared to pre-project. 56% of farmers felt access to irrigation water supply was just sufficient before the project implementation. 71% felt the supply was just sufficient after the project implementation (see Figure 2).
- Owing to improvement of access to irrigation water, bell peppers, chili peppers, peanuts were produced instead of paddy, which had low sales value. Variation of income source was widened as the result of utilization of organic fertilizer, new farming technology, etc. (response rate of 84%).
- Access to market and nearby areas in the project areas was improved. As a result, distribution routes were secured (response rate of 99%).
- After the project completion, 13% of farmers felt their paddy field was expanded. 34% felt their paddy field was expanded to some extent. On the other hand, 49% felt no change. 4% felt their paddy field was reduced.
- Adequate space to store paddy was secured as the result of the construction of post-harvest facilities.

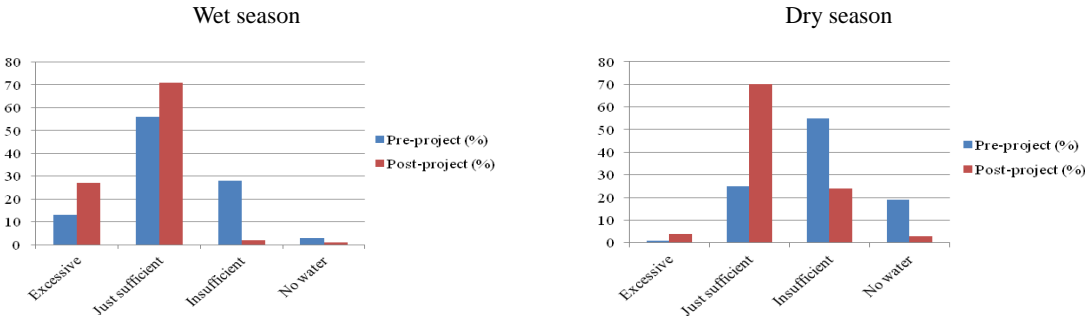


Figure 2: Access to Irrigation Water – Wet and Dry (beneficiary survey)
 Source: Beneficiary survey at ex-post evaluation

²⁰ Beneficiary survey was conducted in 6 out of 150 ARCs in the project areas. Farmers groups and LGUs at each ARC were the main respondents of interviews during the survey. The questionnaire used during the ex-post evaluation was developed by the external evaluator of the ex-post evaluation, and the response style was a combination of multiple choice and narrative form.

The results of the beneficiary survey highlighted in 3.2.1 confirmed not only the expected outputs but also that the expected outcomes of the project were realized as planned to some extent.

The project has largely achieved its objectives; therefore, its effectiveness is high.

3.4 Impact

3.4.1 Intended Impacts

The expected impacts of the project were 1) improvement of living environment by agrarian reform (increase in net farm income, improvement of health and sanitation, increase in water supply percentage), and 2) growth of local economy. In regard to 1), household income as shown below is increasing, thereby living environment is improving. In related to 2), condition of local economy is improving based on the results of the interviews to farmers and LGUs in the project areas as shown below. As the result of the development of essential infrastructure, living environment in the project areas is improving, thereby the expected impact of the project was realized.



Figure 3: Farmers at paddy field using the irrigation facility developed in the project

(1) Livelihood improvement through agrarian reform

81% (response rate) of farmers in the project felt *income at household level was increased*²¹. These farmers expressed that cost of fertilizers and agricultural inputs increased when compared to pre-project, which was relative to increase in farm income. Thus, 80% of respondents felt *production cost was increased*. Majority of these farmers felt access to potable water supply system as well as health and sanitation conditions were improved owing to the project implementation. The results of the beneficiary survey were as follows.

Almost all of the respondents felt their feeling of commitment to local communities and living environments were improved owing to the development of essential infrastructure.

- 28% (response rate) felt their household income (net income) was *increased considerably*, 53% felt *increased slightly*, 14% felt *no change*, and 5% felt *decreased*. The major factor of increase in income was the multiplication of cropping frequency. Natural calamity, insect infestation, and high production cost were thought as the factors of decrease in income.
- 22% felt *annual average production cost was increased considerably*, 59% felt *increased slightly*, 16% felt *no change*, and 3% felt *decreased*. The reason for increase in production cost was increase in planted area, and was not because of increase in cost per unit area.
- In regard to health and sanitation aspect such as waterborne diseases, 56% felt *considerably*

²¹ Income per household in the project areas consists of farm and non-farm income. After the project completion, development of the irrigation and drainage facilities and training of farmers contributed to 1) increase of cropping frequency from single to double, 2) improvement of paddy production technology, and 3) introduction of improved variety. It is noted that non-farm income may also be increased among families who opened own business as the result of farm-to-market road development,

improved after the project completion, 17% felt slightly increased, and 27% felt no change. Installation of potable water supply system was the factor for improvement of health and sanitation conditions in the project area when compared before the project implementation. Similarly, time spent for fetching water by women and children was reduced owing to the potable water supply system. Those women and children gained time for other activities such as child care for women and study for children. Identified quantifiable impacts are shown in Table 6.

Table 6: Benefits to the Residents in the Project Areas

Indicator	Project started (Year 2001)	Project completed (Year 2007)
Travel time (minutes/one-way)	27	24
Travel time for fetching water (minutes)	120~180	30
Distance for fetching water (meter/one-way)	32.3	29.1

Source: DAR (May 2011)

(2) Growth of local economy

At the time of the ex-post evaluation, results of the interviews to LGUs and the beneficiary survey were referred to assess growth level of local economy. According to LGUs, land value was slightly increased owing to development of irrigation facilities and farm-to-market roads. Houses and commercial buildings were constructed along the farm-to-market roads developed after the project completion. According to residents in the project areas, development of farm-to-market roads played critical role such as 1) small general stores were opened along the roads developed in the project, 2) taxi service using two-wheel and three-wheel vehicles were provided, and 3) local distribution functions became brisk. Some farmers in the project areas felt their living environments were improved and became convenient, while their daily expenses were slightly increased. The reasons were use of taxi service as mentioned above and availability of daily goods when compared to pre-project.

According to the conditions stated above, in addition to response of farmers (previous page) feeling that their income is increased, it is predicted that local economic level in the project areas is in growth process. Although the project impact is difficult to quantify, it can be said that the project is contributing to economic growth of the project areas to some extent.

3.4.2 Other Impacts

The followings were the others impacts of the project.

(1) Impacts on the Natural Environment

Coco nets were utilized as alternative technology to protect the farm-to-market roads against soil erosion. These coco nets were made from coconut shells. This approach brought benefits such as effective use of locally wasted resource and prevention of land slide. According to interviews with LGUs and residents in the project areas, there were no specific problems in regard to outflow of earth materials during the construction stage, conservation of forest areas, and water pollution of the

drainage including gray water, and air and noise. These were initially identified as potential problems at the time of appraisal. Hence, no negative impact from environmental view point was found.

(2) Land Acquisition and Resettlement

No resettlement was required in the project. Land was provided to DAR from concerned owners at no cost. Therefore, no negative impact was observed.

Therefore, the project has improved paddy production in the project areas, and is contributing to improvement of livelihoods in the project areas to some extent.

3.5 Sustainability (Rating: ②)

3.5.1 Structural Aspects of Operation and Maintenance

The O&M structure of the facilities developed in the project were agreed and conducted as shown in Table 7; 1) irrigation and drainage facilities by IAs, 2) farm-to-market roads by LGUs, 3) post-harvest facilities by cooperatives or IAs, and 4) potable water supply systems by WUAs. According to the questionnaire administered to 150 ARCs in the project areas, the O&M structure has been followed as planned. The majority of the institutions and the groups responsible for O&M assign enough workers, and understand their roles and responsibilities given to them. Therefore, no major problems have been observed. The O&M structure shown in Table 7 is practiced in the other 144 ARCs in the project areas.

The executing agency and the cooperative agencies are not part of the post-project O&M structure. The reasons are promotion of decentralization and promotion and implementation of participatory and community-based projects in the Philippines.

Table 7: O&M Status – Organizational Aspect

Facilities	Organization/institution responsible for O&M	Role
Irrigation and drainage facility	IAs	Patrolling around irrigation facilities developed in the project, cleaning, collection of irrigation water user fee, rehabilitation, etc.
Farm-to-market road	LGUs in the project areas	Checking, cleaning, and rehabilitation, etc. of the road developed in the project.
Post-harvest facility	Cooperatives and/or IAs	Cleaning and rehabilitation, etc. (User fees are collected in some roads)
Potable water supply system	WUAs	Checking of water supply pump station, exchange of spare parts, rehabilitation, etc.
Equipment	DAR	Periodical check, exchange of spare parts, rehabilitation, etc.

Source: Beneficiary survey at ex-post evaluation (July 2011)

3.5.2 Technical Aspects of Operation and Maintenance

According to the interviews with the executing agency and the cooperative agencies, LGUs and farmers groups (IA, cooperatives, and WUAs), which are responsible for operation and maintenance (O&M) of the facilities developed in the project, have basic technical capacities for day-to-day O&M of the facilities. The questionnaire addressed to the farmers groups confirmed the similar results. The

current O&M status from a technical viewpoint is shown in Table 8.

Table 8: O&M Status – Technical Aspect

Facility	Actual
Irrigation and drainage facility	Problems were found in some of the project area. The problems are unplanned cropping conversion and irregular cropping cycles which disturbed effective use of irrigation water as well as low coordination capacity of flow of irrigation water.
Farm-to-market road	Engineers who are working for LGUs are responsible. No major problems were observed.
Post-harvest facility	No major problem was identified owing to technical assistance provided by the Department of Agriculture.
Potable water supply system	WUAs conducted repair works when/as needed. Thus, the systems were in use.
Equipment	No major problem was found. During the site visit at the time of ex-post evaluation, the external evaluator visited DAR regional offices. The equipment stationed in the offices was in good condition and use.

Source: Beneficiary survey at ex-post evaluation (July 2011)

The technical capacity of some IAs must be strengthened (particularly as concerns irrigation water management). There are no major problems from the technical viewpoint.

3.5.3 Financial Aspects of Operation and Maintenance

According to the hearings from the executing agency, the cooperative agencies, and LGUs and farmers groups that are responsible for O&M, the current financial aspects of the O&M are as shown in Table 9. The financial matters of irrigation and drainage facilities by IAs, farm-to-market roads by LGUs, post-harvest facilities by cooperatives, and potable water supply systems by WUAs, was managed as per the agreed by-laws and regulations developed by each group and LGU. DAR as the executing agency is financially responsible for O&M of the equipments procured in the project. Typically in the Philippines, NIA is responsible for construction and O&M of medium to large-scale irrigation systems. LGUs are responsible for construction of small-scale irrigation systems, and such systems are operated and maintained by IAs.

The sustainability of the project from a financial viewpoint was assessed during the ex-post evaluation. No major problems were found with the farm-to-road-market roads, the post-harvest facilities, the potable water supply systems, or the equipment. However, the irrigation and drainage facilities could be improved. Financial aspect of the O&M structure, as agreed by DAR, NIA, and concerned IAs, required that irrigation water usage fees are collected from IA members in the project areas. Part of the collected fees is to be allocated for O&M. However, most of the IAs had not been able to achieve the goal of 100% collection of user fees. IAs with low collection percentages had not been able to secure adequate funds for O&M.

Table 9: O&M Status– Financial Aspect

Facility	Plan	Actual (during the ex-post evaluation)
Irrigation and drainage facility	100% of irrigation water user fees are collected from the IA members.	Collection rate is below 100% considerably. Collection rates vary among IAs. There are IAs which do not collect such fees at all. On the other hand, there are IAs which collect close to 100%. The factors for not being able to collect 100% are 1) maturity and leadership levels of IAs are low, and 2) some IAs do not have ability to pay irrigation water user fees.
Farm-to-market road	O&M is covered in annual budget allocated to LGUs (every year, some funds are allocated towards O&M at LGU level). Natural Calamity Funds are used in case of emergency.	Proceeded as planned. No major problems were observed since no major repair work had been required till now.
Post-harvest facility	Service type ²² : 100% user fees are collected from Cooperative members. Commercial type ²³ : covered by proceeds of the sales by Cooperative(s).	Proceeded as planned. Generally speaking, maturity level of Cooperatives is higher than the IAs, and strong leadership and management abilities are shown. Thus, no major problems were observed.
Potable water supply system	O&M fees are collected from the WUA members.	Proceeded as planned. Each WUA agreed on amount and payment method for collection. If cash payment cannot be made, manpower is given by concerned WUA member(s). The collection fees are set at minimum level. This arrangement was working well.
Equipment	Covered by annual budget allocated to DAR.	Proceeded as planned. Computers expire after 5 years. Thus, some computers had been disposed after 5 years. Other equipment is still in use by DAR (central and local levels).

Source: Beneficiary survey during the ex-post evaluation (July 2011)

3.5.4 Current Status of Operation and Maintenance

According to the beneficiary survey and the simplified questionnaire conducted during the ex-post evaluation, the facilities developed in the project are well operated and managed, and are in effectively use by the communities in the project areas. However, there are some problems. In some small areas, paddy is not produced, since a line canal was partly damaged by typhoons and floods, and is not yet repaired (see Box 1). Some IAs could not synchronize agricultural cultivation period in their areas. Hence, irrigation water was flowing throughout the year, and O&M of line canals could not be conducted. In addition, it was found that some IAs were not able to control flow of irrigation water. When irrigation water is discharged in an uncontrolled manner, paddy fields are flooded and paddy roots are spoiled.

²² Service type means that post-harvest facilities are lent to store mainly paddy by Cooperative members.

²³ Commercial type means that post-harvest facilities are used to store paddy for trading by Cooperatives.

Box 1: Current Condition of Irrigation and Drainage Facility in Gloria ARC, Oriental Mindoro

<Partly damaged line canal>

Oriental Mindoro is located in the northern part of the Philippines. As shown in the photo (see right), downstream portion of the line canal developed in the project was partly damaged due to typhoon occurred in 2009 at Gloria ARC, Oriental Mindoro. The responsible IA of the canal stopped its operation right after the establishment of the association. Hence, no O&M was made to the facilities. The canal was left as partly damaged for two years. At the time of ex-post evaluation, the IA received advice from DAR in order to strengthen the IA's capacity. The IA is not at any condition to repair the canal by itself. DAR (regional office) is in coordination with LGU and NIA (regional office) in the area to find ways to assist the IA.



Figure 4: Partly damaged line canal

The pictures below were taken during the site visit. As shown, the facilities developed in the project are currently in use. A visual inspection of the post-harvest storages and potable water supply systems revealed no major problems. Partial deterioration to the surfaces of the farm-to-market roads was found. There is a room for improvement in road maintenance; therefore, concerned LGUs were called for necessary actions.



Figure 5: Potable water supply provided



Figure 6: Storage and solar dryer provided



Figure 7: Bridge constructed



Figure 8: Farm-to-market road constructed

Some minor problems have been observed concerning the technical and financial aspects of the O&M of this project; therefore, the sustainability of the project effect is fair.

4. Conclusion, Lessons Learned, and Recommendations

4.1 Conclusion

The project has been highly relevant to the Philippines's development plan and development needs, as well as Japan's ODA policy for the Philippines; therefore, its relevance is high. Some changes were made to the project scope because of actual needs of the local communities in the project areas. The revised scope facilitated the achievement of the project purpose. Although the project cost was within the plan, the project period was exceeded; therefore, the project efficiency is fair. The project's

effectiveness is high, since it has largely achieved its objectives. For example, the irrigable area increased owing to development of small-scale irrigation and drainage facilities in the project areas. In addition, most of the other basic and essential infrastructure was developed in the project areas as planned. The construction of these facilities improved transport access and potable water supplies in the project areas, thereby livelihood of farmers in the project areas are improving. Thus, the impact of the project is high. Some uncertain problems were observed in terms of technical and financial aspects of the O&M of the project; therefore, sustainability of the project effect is fair. In light of the above, the project is evaluated to be satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

The recommendation to DAR, the executive agency of the project, is to conduct monitoring of the O&M status of all irrigation and drainage facilities developed in the project once or twice a year. The monitoring purpose is to identify groups (IAs, cooperatives, and WUAs) of which organizational maturity level is low, and to provide appropriate advice. DAR shall release necessary funds for the above monitoring activities.

In addition, it is suggested that DAR works closely with NIA, which was responsible for construction of the irrigation and drainage facilities and technical advisory related to O&M of these facilities, to take countermeasures in order to enhance the O&M capacity of the IAs as follows:

- Appropriateness of irrigation water management technique in regard to the IAs whose capacities were developed in the project. The reason is due to insufficient irrigation water management carried out by some IAs. NIA is expected to immediately verify the actual situations, and provide technical assistance on irrigation water management as needed. As a result, it is expected that irrigation water is distributed to farmers in the project areas more effectively.
- Through NIA's regional offices, raising-awareness activities are conducted aiming to increase fee collection rate from the IAs in the project.
- Necessary funds are released to carry out these proposed activities listed above.

4.2.2 Recommendations to JICA

No particular recommendations.

4.3 Lessons Learned

The IAs conduct the O&M of the irrigation and drainage facilities developed in the project. Neither DAR nor NIA is monitoring activities of the IAs in the project areas from a technical viewpoint after the project completion. DAR and LGUs, with the technical cooperation of NIA, shall not only provide continuous technical assistance but also monitor the IAs of which organizational maturity is low when similar projects are implemented, since there are some cases where these facilities are not working effectively.

Comparison of the Original and Actual Scope of the Project

Item	Plan	Actual
1.Project Outputs <Civil Works>		
Irrigation and Drainage facilities (ha.)	43,433	31,595
Farm-to-Market Road (km)	766	646
Post-harvest facilities	122	68
Potable water supply system (unit)	66	82
<Institutional Development> (unit)	ARCs:150 LGUs:66	ARCs:150 LGUs:82
<Procurement of Equipment>		
4-wheel vehicle (unit)	80	84
Computer set (unit)	80	279
(Additional Equipment)		(Additional Equipment)
Copier (unit)		2
Scanner (unit)		20
Camera (unit)		84
2-wheel vehicle (unit)		150
LCD Projector		76
<Consulting Services> (M/M)	Foreign experts:260 Local experts:630	Foreign experts:292 Local experts:717
2.Project Period	December, 1999~December, 2004 (61 months)	December, 1999~March, 2007 (88 months)
3.Project Cost		
Foreign Currency	6,411 million yen	1,352 million yen
Local Currency	13,811 million yen (Local Currency 4,604 million peso)	13,722 million yen (Local currency 1,211 million peso)
Total	20,222 million yen	15,074 million yen
Japanese ODA Loan	16,990 million yen	12,333 million yen
Exchange Rate	1 Philippines Peso=3 yen (As of January 1999)	1 Philippines peso=2.22 yen (Average during January 2000~December 2006)