Republic of the Philippines

Ex-Post Evaluation of Japanese ODA Loan Project

"Malitubog-Maridagao Irrigation Project"

External Evaluator: Kyoko Okamura, Sanshu Engineering Consultant

0. Summary

The Malitubog-Maridagao Irrigation Project was implemented through a yen-loan assistance scheme, signed between the Governments of Japan and the Philippines in 1990, with an objective to increase and stabilize agricultural production in the central region of Mindanao Island via the construction of irrigation facilities, thereby contributing to the alleviation of poverty by improving the incomes of local farmers.

The project has been highly relevant to the development plans and needs of the Philippines, as well as Japan's ODA policies. However, all the project activities had to be suspended for about six years from 1993 to 2000 due to extraordinary deterioration of the peace and order situation in the project area. Considering the fact that a possibility of worsening security situation was already stated as a concern in the appraisal document, there should have been concrete measures included in the loan agreement as much as possible to mitigate negative impacts of such circumstances. For example, the selection of project sites and the decision on the project scale/coverage could have been based on a more careful assessment of the security situation and prospects. The project could have also included some components to be locally managed by the executing agency in the case where the security situation would not allow JICA and external consultants to engage in project activities on site. Upon the resumption of the project in 2000, the project plan was revised to be completed in 2003. Following the revised plan, the yen-loan components were completed in 2003 as scheduled while the activities funded by the Philippines Government continued until 2014. Insufficient funding and delayed budget allocations/releases to the field level were identified as major reasons for such a significant delay. If there had been more careful project plans and approaches to address such administrative constraints arising during the project period, the significant delay by additional 11 years could have been avoided or at least shortened. Therefore its relevance is fair. In terms of the project implementation aspects, the total project cost was greater than planned even though the outputs remained the same as planned. The project period was also significantly longer than the planned. Therefore, efficiency of the project is low. With regard to the effectiveness, most of the operation and effect indicators, as far as available data is assessed, showed continuous improvements. Several qualitative effects were also reported by the executing agency, including spill-over effects on mobility and transportation of goods/commodities, access to basic social services, employment opportunities, and peace and order situations. The beneficiary survey conducted as part of the ex-post evaluation also showed local

residents' overall satisfaction with the project as well as their positive perceptions regarding benefits brought by the project. Positive impacts on 'women in development (WID)' aspects were also found in the survey. There have been no major reports regarding negative impacts on natural environment. On the other hand, project impacts on poverty reduction in the target area, which is the most important impact indicator, could not be analyzed due to non-availability of relevant quantitative data. Therefore, effectiveness and impact of the project are fair. No major problems have been observed in the institutional and technical aspects of the operation and maintenance of facilities and equipment constructed/procured under the project. There are also no major issues in the current status of the operation and maintenance. While the financial status of the Maridagao River Irrigation System office, which is responsible for day-to-day operation and maintenance activities of the constructed facilities, has been in deficit, there is a prospect of improvements in the near future owing to successful attempts to increase the irrigation service fee collection through pilot activities. Therefore, sustainability of the project effects is fair.

In light of the above, this project is evaluated to be unsatisfactory.

1. Project Description

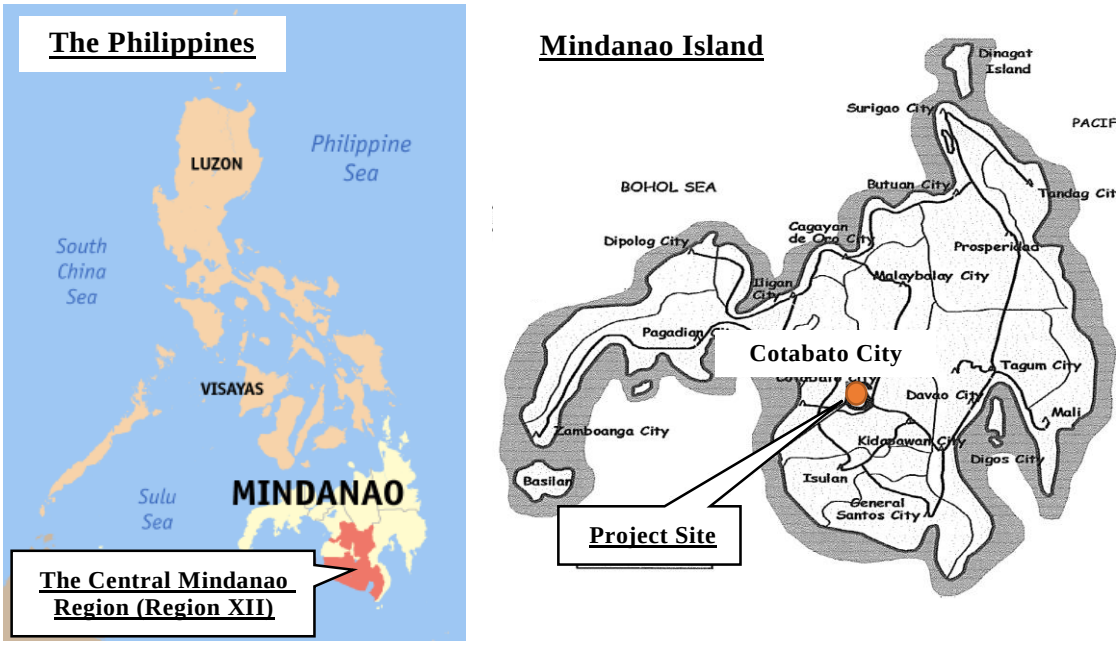
1.1 Background

Mindanao Island located in the southern part of the Philippines is said to have a tremendous potential in agricultural development due to its richness in natural and water resources, large arable land, and suitable climate for agriculture. The Islands is however still under development mainly due to prolonged internal conflicts and unstable peace and order situations, as well as inadequate use of land. The Central Mindanao Region (so-called Region XII) had been among the regions with particularly high poverty levels. From the time of the loan appraisal, sustainable improvements in agricultural productivity and reduced regional disparities in farmers' income and employment have been placed a special priority in the Philippine Government's development agenda. In particular, the government identified the development of irrigation systems to contribute towards regional economic development and poverty reduction as one of the most urgent agendas in the Central Mindanao Region where infrastructures were largely under development.

1.2 Project Outline

The objective of the project is to increase and stabilize agricultural production in the central region of Mindanao Island via the construction of irrigation facilities, thereby contributing to the alleviation of poverty by improving the incomes of local farmers. The

project is a yen-loan assistance designed to construct irrigation systems in the Malitubog and Maridagao areas along the Pulangi River, located mostly in the Central Mindanao Region, while the part of it also extends to the Autonomous Region in Muslim Mindanao (ARMM). The location of the project site is shown in Figure 1.



Source: JICA documents.

Figure 1: Location of the Project Site

Loan Approved Amount/ Disbursed Amount	4,867 million yen / 4,561 million yen
Exchange of Notes Date/ Loan Agreement Signing Date	October 1989 / February 1990
Terms and Conditions	Interest Rate 2.7% Repayment Period: 30 years (Grace Period: 10 years) Conditions for Procurement: General Untied
Borrower / Executing Agency	The Government of the Republic of the Philippines/ National Irrigation Administration (NIA)
Final Disbursement Date	May 1998 (original) May 2001 (after the first revision) May 2003 (after the second revision)
Main Contractor (Over 1 billion yen)	Shinsung Corp. (Republic of Korea), China Electric Power Technology Import and Export Corp. (China)
Main Consultant (Over 100 million yen)	Sanyu Consultants Inc. (Japan)
Feasibility Studies, etc.	• Feasibility Study (Asian Development Bank, June 1986) • Special Assistance for Project Sustainability (SAPS) for Malitubog Maridagao Irrigation Project (MMIP) (JICA/NIA, June 2011)
Related Projects	Agricultural Extension Support in Malitubog-Maridagao Irrigation Project I (MMIP-I) (Technical Cooperation Project for ODA Loan)[1]

2. Outline of the Evaluation Study

2.1 External Evaluator

Kyoko Okamura, Sanshu Engineering Consultant[2]

2.2 Duration of Evaluation Study

Duration of the Study: November 2014 – December 2015

Duration of the Field Study: January 4 – 10, 2015; March 29 – April 4, 2015

3. Results of the Evaluation (Overall Rating: D[3])

3.1 Relevance (Rating: ②[4])

[1] The Agricultural Extension Support in Malitubog-Maridagao Irrigation Project I (MMIP-I) is a Technical Cooperation Project for ODA Loan implemented by the Department of Agriculture-Agricultural Training Institute (DoA-ATI) in the period between December 2013 and December 2016. It aims to improve rice productivity by adopting appropriate agricultural systems in the target area located within the Malitubog-Maridagao Irrigation Project I (MMIP-I).

[2] The evaluator participated in the Sanshu Engineering Consultant's evaluation team from the Global Link Management, Inc.

[3] A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

[4] ③: High, ② Fair, ① Low

3.1.1 Relevance to the Development Plan of the Philippines

The Medium-Term Philippine Development Plan (1987-1992) developed in 1986 stipulates that the national development objectives consist of the following: 1) the alleviation of poverty, 2) the generation of more productive employment, 3) the promotion of equity and social justice, and 4) the attainment of sustainable economic growth. Increased income and employment opportunities in rural areas was emphasized in order to expand domestic market demands, savings, and investments, with an aim to build a mechanism for sustainable economic development. Also from the perspectives of balanced development and effective use of the national land, rural development was one of the national agendas. In rural areas with high poverty levels, including Mindanao Island, development of infrastructures such as irrigation systems and farm roads was placed a high priority in order to activate farming villages, to expand employment opportunities and to improve life standards. In the agricultural sector, the national objectives included 1) achieving self-sufficiency in rice to pace with population increase, 2) solving regional disparities in supply-demand balance of rice, and 3) expanding irrigations for production of cereals other than rice. In addition to increasing farmers' income and contributing towards regional development, the aim of the agricultural sector was to promote sustainable and independent management of irrigation services by forming farmers' associations.

At the time of the ex-post evaluation, the major strategy of the country's development is "the inclusive growth of the economy by extending employment generation into the poor, drawing the majority into the economic and social mainstream, and continuously reducing mass poverty", as stated in the Medium-Term Philippine Development Plan 2011-2016. In order to realize the inclusive growth, the Plan promotes strengthening of governance, investment promotion, infrastructure development through public-private partnerships (PPP) including rural irrigation systems, social welfare reform, enhancement of taxation, and peace-building and security. Its agricultural sector Plan also states that development of irrigation systems is an important measure to increase agricultural productivity and income, which has a high priority. According to the National Irrigation Administration (NIA), the major issues in the Central Mindanao Region were a low rate of irrigation development and poor maintenance of irrigation facilities. To address these issues, NIA's six-year plan between 2012 and 2017 identified the following priority areas: to fast track the construction and rehabilitation of irrigation facilities; and to continue implementing the Irrigation Management Transfer (IMT) scheme of the National Irrigation System (NIS) to qualified and capable Irrigators' Associations (IAs).

As shown above, at both appraisal and the ex-post evaluation, the implementation of the project conforms to the development policies of the Philippine Government.

3.1.2 Relevance to the Development Needs of the Philippines

At the time of appraisal, an irrigation development rate of the Central Mindanao was reported to be only 31.6% (959,000 ha of irrigable land vs. 303,000 ha of actually irrigated land), much lower than the national average of 46.5% at the time, despite its advantages in climate and water resources as well as its vast land suitable for agriculture. The major reasons listed in the appraisal included ineffective use of land and undeveloped irrigation infrastructures due to unstable peace and order situations. The appraisal also identified low quality of agricultural commodities produced in the Malitubog-Maridagao area because of low investments in agriculture and under-development of irrigation/drainage systems. Therefore, increase in agricultural productivity by developing irrigation systems was a top priority to advance poverty reduction in the area[5].

At the time of the ex-post evaluation, the irrigation rate of the Central Mindanao Region remained 41.7%, still lower than the national average of 55.6%[6]. Mindanao Island has recently been hit by repeated abnormal weather conditions due to climate change. While the agricultural sector in general has an issue of low productivity/profitability, especially of small-scale farmers, the Central Mindanao Region, having more than 50% of its working population engaging in agriculture and contributing to the majority of the food production in Mindanao, tends to be hard-hit by El Nino and drought. For example, the drought of 1992 – 1993, in relation to El Nino, caused damages on approximately 38,000 ha of land producing rice in the Central Mindanao, which resulted in economic loss of about 1.2 billion pesos[7]. Furthermore, the region is behind the national socio-economic development due to prolonged conflicts. The Central Mindanao Region's population rate below the poverty threshold was 38% in 2012, much greater than the national average of 22%. It is also the second highest after ARMM among the fourteen regions[8] existing in the country.

To summarize, the Central Mindanao Region still has a high rate of poverty and is behind in terms of socio-economic development. While there is a great potential in the agricultural sector, the agricultural productivity was still low at the ex-post evaluation. Developing irrigation infrastructures and thus improving agricultural productivity remains to be an important agenda for the region. Therefore the project conforms to the development needs of the Philippine Government.

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5 Based on documents provided by JICA.

6 From NIA's report in 2013 (http://www.nia.gov.ph/updates/statusofirrigationdevelopment.pdf).

7 Jose, AM. et al., 1999. "A Study on the Impact of Climate Variability/Change on Water Resources in the Philippines", *Journal of Philippine Development,* 47(16).

8 The Philippines can be geographically divided into Luzon, Visayas and Mindanao. Each area consists of three to seven administrative Regions, totaling fourteen Regions in the country. The Central Mindanao Region (also called Region XII) is a part of Mindanao Island, occupying 7.5% of the national land with 4.5% of the national population.

3.1.3 Relevance to Japan's ODA Policy

In 1989, Japan supported a meeting of the Consultative Group for the Philippines held in Tokyo. In this milestone meeting, the Multilateral Assistance Initiative for the Philippines was successfully launched. In addition to its contribution as a host country of the meeting, Japan also announced a large ODA contribution as an active donor in the amount of approximately 115 billion yen, which was the 16th yen loan assistance to the Philippines. Japan's major ODA policy at the time was called the Fourth Medium-Term Target of ODA (1988-1992), whose central focus was to enlarge the total amount of the ODA. After Japan became the world's largest ODA donor in 1989, however, it had turned its focus on improving the quality of ODA. In this context the ODA Charter[9] was formulated in 1992 based on the Japan's basic aid philosophy formulated for the first time. The Charter committed to promoting sound economic development of recipient countries through meeting the basic human needs (BHN) and developing socio-economic infrastructures and emergency humanitarian aid[10]. It also pointed out the importance of redressing the gap between the rich and the poor and the gap among various regions in developing countries[11]. The Charter identified Asia as the priority region of its assistance. Therefore, the project had an adequate degree of conformity to Japan's ODA policy.

3.1.4 Appropriateness of Project Planning and Approach

The project, which had the Exchange of Notes signed in 1989, had to be suspended in 1993 due to the deteriorating security situation. Although resumption of the project activities was attempted several times from 1994 through 1995, the security situation did not improve, resulting in the removal of the contractors from the project sites and eventually mutual termination of the contract for the major civil work components. The Overseas Economic Cooperation Fund (OECF), the then funding agency on Japan side that is now renamed/merged into JICA, requested peace and order assurance in the project area as a condition for the project resumption. In response, the Philippines Government took several measures, such as deployment of military forces and dialogues between the government/military officials and representatives from anti-government groups. As a result the condition was finally met and the project activities were resumed in 2000, after six years from the suspension.

In 1998, NIA and the National Economic and Development Authority (NEDA) conducted a situation assessment to provide a basis for the revised project plans, which was

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9 The ODA Charter of 1992 is generally called the "Original ODA Charter", as opposed to the "New ODA Charter" which is a revised version launched in 2003.

10 Ministry of Foreign Affairs of Japan website (http://www.mofa.go.jp/policy/oda/summary/1999/ref1.html), last accessed in October 2015.

11 Ibid.

approved by the Investment Coordination Committee (ICC) of NEDA. After the resumption, the disbursement of the yen loan was completed in May 2003 while it took additional 11 years for the Philippines Government to finish the activities funded by their own budgets in 2014. At the project resumption in 2000, suspended activities were repackaged, and the government conducted new bidding processes combining international and local procurement processes. Nonetheless, the project completion was significantly delayed mainly due to shortage of budgets and frequent delays in fund allocations/releases, which hampered construction work as per the schedules, particularly affecting small-scale contractors[12].

At the time of the project appraisal, there were obvious factors that supported concerns about future security situations in the region. When the Moro National Liberation Front (MNLF) agreed with the government to establish ARMM as an autonomous region within the country in 1987, the Moro Islamic Liberation Front (MILF), which was separated from MNLF in 1984, took a decision to continue its armed struggle to establish an independent nation. The project was nonetheless started as a symbolic measure to bring benefits of development for the poor and conflict affected people of Mindanao and to contribute to peace building in the area. It is however noteworthy that the appraisal document only contained one proposed measure to address potentially negative effects of the security situation, which was to set the project period slightly longer than ordinary cases. Considering that the armed conflict mainly led by MILF was still continuing on the ground, both governments should have built a consensus on necessary approaches and concrete measures to be taken in the case of security deterioration. In the first place, the selection of project sites and scale could have been based on a more careful assessment of the security and political situations of Mindanao. Furthermore there should have been consideration of strategic approaches to mitigate negative impacts on the project if the security situation was worsened. For example, considerations of components that could be managed by the executing agency even when JICA staff/external consultants were not allowed to assist on site; and incorporation of activities that could bring tangible peace dividends to local fighters from early stages of the project.

On the other hand, it is also important to examine factors that affected the further delay in the implementation of activities funded by the Philippines Government after the resumption of the project in 2000. In addition to some sporadic security-related problems, a shortage of funds and frequent delays in budget allocations/releases have been identified as the major reasons for the delay[13]. In accordance with the situation assessment conducted by NIA and NEDA in 1998, NIA revised detailed schedules and reformulated project

[12] Based on documents provided by the executing agency.

[13] Based on documents provided by and interviews conducted with the executing agency.

approaches to complete all the activities within four years, i.e. in 2003, which was approved by ICC of NEDA and OECF. In the revised plan, the activities not completed were repackaged, and contractors were reselected through a combination of international and local bidding. In order to complete the project activities within the given timeframe and budgets, it incorporated several measures, such as[14]:

1) to select locally-based Muslim contractors or their joint ventures with other contractors,
2) to implement specific measures to impose stringent requirements for specific time-bound completion of the contracts by engaging an adequate number of project consultants to monitor and supervise progress of the work,
3) to use Local Minor Contracts for small contract packages in order to promote participation of qualified local inhabitants in areas where right-of-way acquisition problems exist[15],
4) to consider effecting payments for small local contractors directly at the field level through the Special Account Procedures in order to expedite the project completion, and
5) to ensure independence of consultants' supervisory work by making them report directly to the NIA Central Office, instead of the Project Management Office in the field.

Despite these measures, the completion of the activities covered under the Government of the Philippines, which was planned to be in 2003, was realized only in the end of 2014. In terms of the yen loan components, on the other hand, the scope of work was reduced in the revised plan. The disbursements were also expedited and completed in 2003 as per the plan. According to the executing agency, such a significant delay seen in the activities covered by the Philippine Government's fund was caused mainly by shortage of funds and/or frequent delays in fund allocations/releases, which prohibited contractors from following the work schedules, especially affecting small contractors without sufficient working capital who could not maintain their activities because of the delayed payments[16]. There was also an opinion that the fiscal austerity policy under the Arroyo Administration[17] might also have

[14] Based on documents provided by JICA.

[15] Direct involvement of local residents was thought to be one way to solve the right-of-way acquisition problems. Therefore the use of Local Minor Contracts for small packages was introduced in order to provide opportunities for qualified local contractors to participate in bidding processes.

[16] Based on documents provided by the executing agency.

[17] Because of the increasing fiscal deficits and current account deficits since the 1980s, the Government of the Philippines had to rely on IMF's support and debt rescheduling under the Paris Club agreement. Therefore the second Arroyo Administration started in 2004 committed to achieving a balanced budget at the central government level by 2010. A series of measures taken along this commitment, including expenditure cuts and tax reform policies, is generally called "financial austerity policy" or "fiscal consolidation policy" (Tanimura, 2012. "Fiscal Consolidation Policy under the Arroyo Administration: Its Impact and Challenges

contributed to the delay. The data on the project expenditures by year show that the yearly expenditures from 2000 to 2005 was between 7% and 21% of the total project expenditures (on average 10% a year), while it stood at 2%, none, and 1.6% in 2006, 2007 and 2008, respectively. Although further analysis is needed to derive a conclusion from this data, there is an indication of some effects as far as the period between 2006 and 2008 is concerned. Nonetheless, 11 years of delay cannot be explained by the fiscal austerity alone, and the project expenditure levels were too low even before 2006. In order to fulfill the agreed schedules, or at least to minimize the delay to one or two years, instead of 11 additional years, the revised plan should have been based on more realistic views on the situations, including the capacities of the small domestic contractors. Also considering the importance of completing the entire project and making the irrigation facilities fully available to the population, there should have been more stringent measures to overcome such administrative issues as delayed fund allocations/releases.

In summary, the project has been relevant with the Philippine development plan and needs, as well as Japan's ODA policies. However, there were some shortfalls in the project plan which did not incorporate concrete measures to be taken in the case of worsening security situations, which was already expressed as a concern at the time of appraisal. Furthermore, when the project plan was revised at the resumption of the project activities after the six years of suspension, it should have been more carefully formulated and strictly followed afterwards in order to prevent further delays. Therefore its relevance is fair.

3.2 Efficiency (Rating: ①)

3.2.1 Project Outputs

Table 1 below shows the Project Outputs comparing the planned vs. actual volumes/designs.

Ahead" in *Asian Studies*, 58(3)). Because of no yen loan requests made by the Philippine Government under the fiscal austerity policy, no new yen loan projects were agreed from the fiscal year 2003 to 2005. It is also reported that some of the ongoing yen loan projects were also faced with delays (The Government of Japan, 2008. *Country Assistance Program for the Republic of the Philippines* [the original Japanese-language version was released in 2007]). However since there was no evidence showing a strong association between the fiscal austerity and the reduced expenditures of the Malitubog-Maridagao Irrigation Project from 2006 to 2008, the passage above only points out a possibility of a certain level of contribution.

Table 1: Comparison of Project Outputs (Planned and Actual)

	Planned Outputs at Appraisal	Actual Outputs at Completion
Civil Work	1. Diversion Works 1.1 Dam: 1 unit 1.2 Gated Spillway: 8 units ➢ A baffled block apron type of spillway to be used (for energy dissipation) 1.3 Sluiceway: 2 units ➢ Sill elevation: 25m 1.4 Intake Gates: 3 units 1.5 Reservoir: 1,460km^2 2. Bridge/Flume Structure: length 100m; width 6m 3. Irrigation Canals/Laterals: total length 144.4km 4. Drainage Canals/Laterals: total length 9.6km 5. Project Facilities ➢ Irrigation System Office (1 unit) ➢ Water Management Center (2 units) ➢ Water Management Station (19 units) ➢ Gatekeeper Quarter (7 units) 6. Pilot Demonstration Farm ➢ Training Center: 2 units ➢ Storage Area: 2 units ➢ Pump Building: 4 units ➢ Access Road: 14km	1. Diversion Works 1.1 Dam: 1 unit 1.2 Gated Spillway: as planned ➢ Introduced a conventional stilling basin at the end of the gated spillway. 1.3 Sluiceway: 2 units ➢ Lowered to elevation 22m (from technical point of view) ➢ Added concrete phasing (to avoid scouring) ➢ Changed from sluice slide gates to double lift wheel gates 1.4 Intake Gates: 3 units 1.5 Reservoir: as planned 2. Bridge/Flume Structure: as planned 3. Irrigation Canals/Laterals: total length 169.6km ➢ Side slopes modified ➢ Introduced lateral spillway/wasteway ➢ Expanded the width of the roadway from 4m to 6m 4. Drainage Canals/Laterals: as planned 5. Project Facilities ➢ Irrigation System Office/Farmers Center (1 unit) ➢ Farmers Center (1 unit) ➢ Pilot Demo Farm Office (1 unit) ➢ Watermasters' Quarters (8 units) 6. Pilot Demonstration Farm ➢ Training Center: as planned ➢ Storage Area: as planned ➢ Pump Building: as planned ➢ Access Road: as planned 7. Additional Output: 10 units of centrifugal pumps with 980 m lined canal (added and funded by the Philippines Government as an

		emergency measure to restore security) **Service Area:** Maridagao Area: 5,562 ha Upper Malitubog Area: 1,611 ha
	Service Area: Maridagao Area: 6,625 ha Upper Malitubog Area: 4,215 ha	
Procurement of Equipment and goods	➢ Construction equipment ➢ Pilot farms and office equipment ➢ Operation and management equipment	As planned.
Consulting Services	➢ Detailed design works for the phase 2 target areas (Lower Malitubog and Pagalungan areas) ➢ Support for bidding processes ➢ Supervision of construction work in the Phase I target areas (Upper Malitubog and Maridagao areas) ➢ Support for the management of pilot farm activities ➢ Overseas training Foreign experts: 331M/M Local experts: 280M/M	As planned in terms of the foreign experts. Foreign experts: 331M/M Local experts: no information available

Source: Based on documents from JICA/the executing agency/interviews with the executing agency staff.

Photo 1: Maridagao Diversion Dam
[at the ex-post evaluation]

Photo 2: Diversion Canal leading to the Diversion Dam
[at the ex-post evaluation]

Photo 3: Sluice Gate (double lift)
[at the ex-post evaluation]

Photo 4: Outlet of the Sluice Gate
[at the ex-post evaluation]

At the time of evaluation, it was pointed out that the total service area of the project, especially of the Upper Malitubog Area, was slightly reduced. This was mainly due to deduction of non-irrigatable lands, such as swamp areas, land too high in elevation, or some plots of land to be used for canals/roads. These are all technical adjustments that could not be determined in detail at the time of appraisal. There are also minor changes in work specifications due to technical reasons identified during the detailed designing process. Therefore these changes appear to be relevant. Changes in the project facilities reflect the perspective of promoting irrigated agriculture more effectively in the target area, which was discussed and determined in the course of the project implementation[18]. The procurement of equipment and goods was done through international bidding processes as planned. Consulting services by foreign experts were provided as per the TOR. It was however not possible to obtain reliable information about the actual inputs made by local experts[19].

3.2.2 Project Inputs

3.2.2.1 Project Cost

The estimated project cost at appraisal was 6,489 million yen, of which the Japanese ODA loan was 4,867 million yen. The actual project cost was 7,984 million yen, of which the Japanese ODA loan was 4,561 million yen. The actual project cost was greater than the planned, and is equivalent to 123% of the planned cost. The major reason for the excess was the increased administrative costs associated with the activities covered by the Philippine Government due to the prolonged project period, as described below[20].

3.2.2.2 Project Period

[18] Based on interviews with the executing agency staff.

[19] Neither JICA documents nor the response to the questionnaire addressed to NIA could provide relevant information. The interviews with the executing agency staff could not clarify this point either.

[20] Based on interviews with the executing agency.

The originally planned project period was from February 1990 (signing of the Loan Agreement) to May 1996 (civil work completion) with a total period of 76 months. The actual duration of the project was from February 1990 (signing of the Loan Agreement) to December 2014 (civil work completion), which totaled 299 months. The actual project period was significantly longer than the planned, and is equivalent to 393% of the planned period.

Table 2: Comparison of Project Period (Planned and Actual)[21]

Item	Plan (at the L/A signing)	Actual
Selection of Consultants	4th Term 1989 – 3rd Term 1990	1st Term 1990－April 1991
Consulting Services	July 1990 – March 1996	April 1991－April 2003
Land Acquisition	4th Term 1989－3rd Term 1992	1st Term 1990－4th Term 2003
Procurement of Equipment/ Goods	4th Term 1989－3rd Term 1995	4th Quarter 1990－4th Term 2004
Civil Work	2nd Term 1991－2nd Term 1996	2nd Quarter 1991－4th Term 2014

Source: JICA documents and interviews with the executing agency.

The most apparent factor that affected the project duration was the armed conflict between the government force and MILF between 1993 and 1995[22], during which the project activities were suspended for the period of six years and a month. Even after deducting the suspension period, however, the project still took 128 months more than the planned, i.e. 249% longer than the planned period.

One of the major reasons for the delay was the right of way problems that the project was faced with since the beginning of the project, such as multiple claimants to a single plot of land, non-titled land, and unknown address of landowners. In order to address this issue, a committee was formed to assess problems, to help identify rightful owners of land, and to assist document processing for payments and claims related to compensation. Another reason that significantly contributed to the prolonged project period was a shortage of funds and delays in allocation/release of funds. For example, there were times when the weather was cooperative (i.e. during the dry season, much earthwork and construction activities were supposed to be done) but funds were not available; or funds became

[21] The information provided by the executing agency was expressed in 'term/year', instead of 'month/year'. Therefore most of the items in the table are written in the same manner, except for Consulting Services and the ending of the Selection of Consultants that had more detailed information in their report.

[22] After the project was suspended in December 1993, the contract with the Shinsung Corporation for the major civil work was mutually terminated in 1995 because the security situation did not improve. The remaining activities were repackaged, granted to new contractors and resumed in January 2000.

available after the wet season had already started. There were mismatches between NIA headquarters' action and available resources at the field level, i.e. Sub Allotment Advice was often issued by the NIA Central Office when there was no cash available at the field level, and vice versa. This caused problems, throughout the project period, on local contractors without sufficient capital as well as labor contractors who could not sustain their work without timely payments[23]. More carefully planned and timely allotment and release of funds would have enabled contractors to pursue their work more efficiently.

3.2.3 Results of Calculations of Internal Rates of Return (Reference only)

The Economic Internal Rate of Return (EIRR) of the project calculated at the appraisal stage was 18.4% (calculated as part of the feasibility study conducted by ADB), while that calculated at the ex-post evaluation was 17.9% (calculated by the executing agency). However, the EIRR estimated by ADB in their feasibility study of 1986 included the Lower Malitubog Area which was not covered under the Japan-funded Malitubog-Maridagao Irrigation Project and thus not included in the EIRR calculation basis at the ex-post evaluation[24]. Since the data used for ADB's calculation in 1986 is not available, it is not feasible to deduct the Lower Malitubog Area and re-calculate the EIRR of the appraisal stage. On the other hand, adding the Lower Malitubog Area to the EIRR at the ex-post evaluation is not possible either, because the government's own project in the Lower Malitubog Area has not been completed yet. Therefore, comparing the two EIRR values that are based on the two different target areas do not provide meaningful information for analysis.

Overall, both the project cost and project period significantly exceeded the plan. Therefore, efficiency of the project is low.

3.3Effectiveness[25] (Rating: ②)

3.3.1 Quantitative Effects (Operation and Effect Indicators)

At the time of appraisal, neither operation nor effect indicators were set for this project. Therefore this section examines the effectiveness of the project based on a set of indicators proposed at the mid-term review in 2004. The proposed indicators are as follows:

- Operation Indicators:
  - Firm-Up Service Area (ha)

[23] Based on documents provided by and interviews with the executing agency.

[24] The present project, aiming to construct irrigation facilities along the Pulangi River of the Central Mindanao Region, originally consisted of two phases: Phase 1 covering the Upper Malitubog and Maridagao Areas; and Phase 2 covering the Lower Malitubog and Pagalungan Areas. The detailed designing was included in the Phase 1 while the actual construction work in those areas was part of the Phase 2 plan.

[25] Sub-rating for Effectiveness is to be combined with consideration of Impact.

- Irrigated Area (ha)
- Benefited/Planted Area (ha)
- Cropping Intensity (%)
- Irrigation Service Fee Collection Efficiency (%)

➢ Effect Indicators:

- Volume of Production per Commodity [rice] (ton)
- Volume of Production Classified with Commodity [rice] per ha (ton/ha)
- Gross Income from Agriculture per Beneficiary (peso)

(1) Firm-Up Service Area, Irrigated Area, Benefited/Planted Area, Cropping Intensity[26]

Table 3: Firm-Up Service Area (ha), Irrigated Area (ha), Benefited/Planted Area (ha), Cropping Intensity (%) in the Target Area of the Malitubog-Maridagao Irrigation Project (2005 – 2014)

		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Firm-Up Service Area (ha)											
Planned		7,173	7,173	7,173	7,173	7,173	7,173	7,173	7,173	7,173	7,173
Actual		5,562	5,562	5,562	5,562	5,562	5,562	5,562	4,027	4,027	7,173
Irrigated Area (ha)											
Wet Season	Planned	3,006	3,000	3,000	3,085	4,004	3,869	3,560	3,482	3,650	4,304
	Actual	1,817	2,247	2,249	2,508	3,548	3,415	2,771	1,400	3,831	4,369
Dry Season	Planned	2,641	2,700	2,700	4,190	3,829	3,869	3,560	3,482	3,650	4,304
	Actual	1,520	2,109	2,050	3,400	3,829	3,069	3,383	2,896	3,274	3,688
Benefited/Planted Area (ha)											
Wet Season	Planned	3,006	3,000	3,000	3,085	4,004	3,869	3,560	3,482	3,650	4,304
	Actual	1,299	1,980	1,941	1,875	2,285	3,088	2,311	1,213	2,612	4,192
Dry Season	Planned	2,641	2,700	2,700	4,190	3,829	3,869	3,560	3,482	3,650	4,304
	Actual	893	1,324	1,744	1,815	2,997	2,646	2,608	2,454	2,529	3,514
Cropping Intensity (%)*											
Total (actual)		60	78	77	106	133	117	153	107	176	144
Wet Season (actual)		-	-	-	-	-	61	69	35	95	78
Dry Season (actual)		-	-	-	-	-	55	84	72	82	65

Source: Response to the questionnaire addressed to the executing agency (February 2015); Information provided by the executing agency.

Note 1: The cropping intensity is estimated separately for wet and dry seasons and expressed as a percentage for each season (with a maximum of 100% for each). As the 'Total' cropping intensity is a sum of the two seasons' percentages, it can exceed 100% (up to 200%).

Note 2: " - " in the table means no available data.

[26] The indicator names reflect what is used by the executing agency as much as possible, and thus may slightly differ from those of the proposed indicators in the mid-term review. The following are the indicator definitions provided by the executing agency with slight modifications made by the evaluator:

- Firm-Up Service Area (FUSA): The net service area of an irrigation system where converted areas and permanently non-restorable areas were deducted from the service area.
- Irrigated Area: The area within the operational area of the FUSA of an irrigation system served during the respective cropping seasons (e.g. wet and dry seasons).
- Benefited/Planted Area: The actual portion of the irrigated area of an irrigation system that is planted with crops during the respective cropping seasons (e.g. wet and dry seasons).
- Cropping Intensity: The ratio of the Benefited/Planted Area to the FUSA of an irrigation system.

The planned amount of the Firm-Up Service Area (FUSA) was 7,173 ha, revised at the time of the project resumption in 2000. As shown in Table 3, FUSA reached 5,562 ha in 2005, equivalent to 78% of the planned amount. Although it was reduced in 2012 and 2013, the reduction was attributed to major rehabilitation needed for some of the already constructed and utilized parts of the irrigation system. In 2014, the rehabilitation was completed and the FUSA reached 100% of the planned.

In terms of Irrigated Area and Cropping Intensity, achievements were assessed against government plans for each fiscal year[27] since the project did not set target values at appraisal.

With regard to the Irrigated Area in wet seasons, the plans have been continuously met since 2013. In dry seasons, on the other hand, they are only slightly in short of the planned values; for example it achieved 90% in 2013 and 86% in 2014.

Benefited/Planted Area in 2013 stood at 72% and 69% of the government plans in wet and dry seasons, respectively. They have however reached 97% and 82% in wet and dry seasons of 2014. There were two major reasons for the relatively large gaps between plans and actual achievements up to 2013: 1) crop damages due to weather conditions; and 2) calculation of the Irrigated Area indicator excluding farmers who were exempted from the irrigation service fee Collection because of low harvesting in a particular season[28, 29]. These factors are now being addressed in various efforts to improve agricultural productivity in the area, such as the Japan-funded Yen Loan attached Technical Cooperation project.

Cropping Intensity had neither project targets at appraisal nor government plans. In terms of the actual achievements, there is a notable increase from 60% in 2005 to 176% and 144% in 2013 and 2014, respectively (these figures refer to the total Cropping Intensity of wet and dry seasons, and thus can exceed 100%). By looking at the time trend, however, there are fluctuations by year, which is due to such reasons as flooding, pest insects, and the fact that the most suitable varieties were not selected by farmers. In order to further improve the cropping intensity, stabilization of drainage functions throughout the irrigated area and promotion of high-yielding varieties are being considered[30].

(2) Irrigation Service Fee Collection

For irrigation service fee collection, a target value was not determined at appraisal. As shown in Table 4, the collection fee in 2014 was 42% and 30% in wet and dry seasons

[27] Based on documents provided by NIA's local branch for the Region XII.

[28] When farmers are considered "low harvesting" because their output goes below 40 Cavans (Cavans is a unit of volume used in the Philippines. 40 Cavans is about 50kg of rough rice), there is a system in place to exempt them from paying the irrigation service fee. In such cases, the areas planted by those "low-harvesting" farmers are also deducted from the total Benefited/Planted Area.

[29] From interviews with the executing agency.

[30] From interviews with the executing agency and the Department of Agriculture – Agricultural Training Institute (DoA-ATI).

respectively. These rates correspond to 60% and 43% of the government planned 70% level[31]. Major factors affecting the low achievements include: 1) the presence of farmers who were exempted from the irrigation service fee collection system (refer to the section 3.3.1 (1)); 2) inefficiency of the collection system in which a limited number of personnel visit farmers house to house; and 3) insufficient understanding among farmers that the Irrigation Service Fee was necessary to maintain the irrigation facilities they benefit from. In order to effectively address these issues, JICA has been supporting the Technical Cooperation Project for ODA Loan, titled "Agricultural Extension Support in Malitubog-Maridagao Irrigation Project I (MMIP-I)". The project includes the following components:

- Training and technical support for farmers to improve agricultural productivity through the Pilot Demonstration Farm (PDF);
- Farm Production Input Assistance (FPIA) to improve agricultural management through a zero-interest lending scheme for farm production inputs from Irrigators' Associations to their members; and
- Development of a manual to extend PDF and FPIA schemes to other IAs.

Furthermore, NIA has reached an agreement to transfer the authority of irrigation service fee collection to 14 IAs that are already under IMT contracts with the government, out of the 16 IAs existing in the project area. There is a system in which if the Irrigation Fee Collection Efficiency of any IAs exceeds 51%, it can utilize the surplus as their incentives. Therefore by transferring the authority to the Associations, in addition to the provision of technical support described above, the government hopes to significantly improve the irrigation service fee collection efficiency of the target area[32].

Table 4: Irrigation Service Fee Collection Efficiency in the Target Area of the Malitubog-Maridagao Irrigation Project (2011 – 2014)

(%)

		2011	2012	2013	2014
Plan (both wet and dry seasons)		70.0	70.0	70.0	70.0
Actual	Wet Season	37.3	19.9	32.1	42.0
	Dry Season	29.3	25.8	6.0	30.3

Sources: Documents provided by JICA/executing agency, and interviews with the executing agency

[31] Documents provided by the DoA-ATI.
[32] Information provided by JICA.

(3) Volume of Production per Commodity [rice], Volume of Production Classified with Commodity [rice] per hectare, Gross Income from Agriculture per Beneficiary[33]

In terms of the three effect indicators proposed at the time of the project mid-term review, namely "Volume of Production per Commodity [rice]", "Volume of Production Classified with Commodity [rice] per hectare", and "Gross Income from Agriculture per Beneficiary", there are neither target values set at appraisal nor government plans as available information.

For the Volume of Production per Commodity [rice] indicator, data on the project target area was not available[34]. Although the government data is available at the provincial level, the project area only accounts for a very small part of the two provinces they belong to (namely North Cotabato and Maguindanao Provinces). Nonetheless, the provincial-level data was used to capture some time trends only for reference purposes. The data on the two provinces show that the rice production has increased from 287,541 tons in 1990, to 656,925 tons in 2000, and then to 916,563 tons in 2014. As in Table 5, the yearly data from 2011 to 2014 also indicate a largely incremental trend although there are some fluctuations.

Table 5: Volume of Production per Commodity [rice] in the North Cotabato and Maguindanao Provinces (covering the entire project areas of the Malitubog-Maridagao Irrigation Project I) (1990 – 2014)

(ton)

	1990	2000	2011	2012	2013	2014
North Cotabato Province (actual)	174,104	415,366	481,006	494,052	525,675	530,029
Maguindanao Province (actual)	113,437	241,559	398,097	348,123	414,060	386,534
Total of the Two Provinces	287,541	656,925	879,103	842,175	939,735	916,563

Source: Based on the Philippine Statistics Authority's database.

As shown in Table 6 below, the Volume of Production Classified with Commodity [rice] per hectare in the project area increased from 3.2 tons/ha in 2005 to 4 tons/ha in 2010. According to the Department of Agriculture, Agricultural Training Institute (DoA-ATI), their data from 2013 to 2014 shows as much as 80% increase from 3.1 tons/ha in 2013 to 5.6 tons/ha in 2014. The same table also shows that the Gross Income from Agriculture per Beneficiary increased from 52,476 pesos in 2013 to 93,683 pesos in 2014 (data before 2013

[33] Only the data on rice production was used because at the time of the evaluation the agricultural sector in the project area focused only on rice production. According to DoA-ATI, other crops would be introduced in the future.

[34] Appropriate data was not available from any of the following information sources, including JICA documents, responses to the questionnaire addressed to the executing agency, interviews with the executing agency, and follow-up communications.

was not available from the same information source). From the increments seen in these indicators, it can be said that the productivity in terms of rice production in the area has improved in the past few years.

Table 6: Volume of Production Classified with Commodity [rice] per hectare (2005 – 2014) and Gross Income from Agriculture per Beneficiary (2013-2014) in the Target Area of the Malitubog-Maridagao Irrigation Project I

	2005	2006	2007	2008	2009	2010	2013	2014
Volume of Production Classified with Commodity [rice] per hectare (ton/ha) - Actual	3.2	3.5	3.5	3.7	3.0	4.0	3.1	5.6
Gross Income from Agriculture per Beneficiary (peso) - Actual	-	-	-	-	-	-	52,476	93,683

Source: Data from 2005 to 2010 were extracted from JICA's "Special Assistance for Project Sustainability (SAPS) for Malitubog Maridagao Irrigation Project (MMIP): Agriculture Sector" prepared by the Sanyu Consultants, Inc. (2011); data from 2013 to 2014 were provided by DoA-ATI.
Note: " – " indicates no available data.

Combining the three effect indicators above, the Volume of Production Classified with Commodity [rice] per hectare and the Gross Income from Agriculture per Beneficiary indicate relatively large improvements in the past few years while the Volume of Production [rice] has only increased at a slower pace from 2011 to 2014. It is important to note that while the data on the former two were from the project's target area (7,173 hectares), the latter was assessed at the provincial level by using the data from the two concerned provinces, namely North Cotabato and Maguindanao Provinces, totaling 1.15 million hectares (the project's target area only accounts for 0.6% of the two provinces). Therefore they do not provide convincing evidence to show an association between these two sets of indicators.

Another constraint was that neither target values set by the project nor government plans for achievements were available for any of the indicators analyzed above. Therefore degrees of achievements against target values were not assessed. In terms of the Volume of Production Classified with Commodity [rice] per hectare, the past agricultural pilot testing has achieved 4.1 ton/ha. Base on this, it was said that the project could aim at reaching 5.0 ton/ha in the target area[35]. Compared to this level, 5.6 ton/ha reported by DoA-ATI in 2014 indicates an even greater achievement.

[35] JICA, 2011. *Special Assistance for Project Sustainability (SAPS) for Malitubog Maridagao Irrigation Project (MMIP): Agriculture Sector*, prepared by the Sanyu Consultants, Inc.

3.3.2 Qualitative Effects

In this sub-section, qualitative effects of the project were assessed by extracting available information from the documents provided by the executing agency and from the beneficiary survey conducted by the evaluation team as part of the present ex-post evaluation[36].

Benefits from Socio-Economic Perspectives[37]:

(1) Improved mobility and transportation of goods/commodities
- Faster and easier travel due to the construction of irrigation roads
- Increased volume of transportation in the area

(2) Increased access to basic social services
- A larger number of children going to school due to the farm roads constructed along lateral canals[38]
- Increased access to and provision of health services
- Increased supply of portable water
- Increased access to local Department of Social Welfare and Development offices, which enabled local residents to receive their services more easily

(3) Increased employment opportunities
- Greater employment opportunities for local residents in the construction of the dam and other irrigation facilities

(4) Contributing effects to peace and order
- Security measures in place through the installation of military camps in the area
- Reduced motivations and time for local residents to be involved in clan/tribal conflicts and banditry due to increased opportunities for agricultural work as well as increased access to income sources and livelihood services

Based on the beneficiary survey, all respondents demonstrated positive attitudes in terms of benefits of the project (also see Figures 2 – 5 below):

- In response to the question, "Do you think that the project increased your farm land covered by the irrigation?", 100% answered "Yes" ('increased substantially' or 'fairly')", of which 57% answered 'increased substantially' (Figure 2).

[36] The evaluation team conducted a beneficiary survey with an aim to obtain information about major effects of the project in the target area through structured interviews with local residents, including farmers, using a questionnaire. Respondents were selected by a random sampling of local residents in the project area. As a result, 111 respondents, including 82 males and 29 females, provided information.

[37] From the response to the questionnaire addressed to the executing agency.

[38] It is reported that the construction of farm roads along lateral canals contributed to the improved access to social infrastructures such as schools and health clinics.

- In response to the question, "Are you satisfied with the constructed irrigation system and related facilities in your community?", 100% answered "Yes" ('highly satisfied' or 'satisfied'), of which 31% answered 'highly satisfied' (Figure 3).
- In terms of the quantity of water available for farming, all respondents answered "It is better" than the situation before the construction of the irrigation system and the related facilities (Figure 4).
- In terms of the stability of water supply for farming, all respondents answered "It is better" than the situation before the construction of the irrigation system and the related facilities (Figure 5).

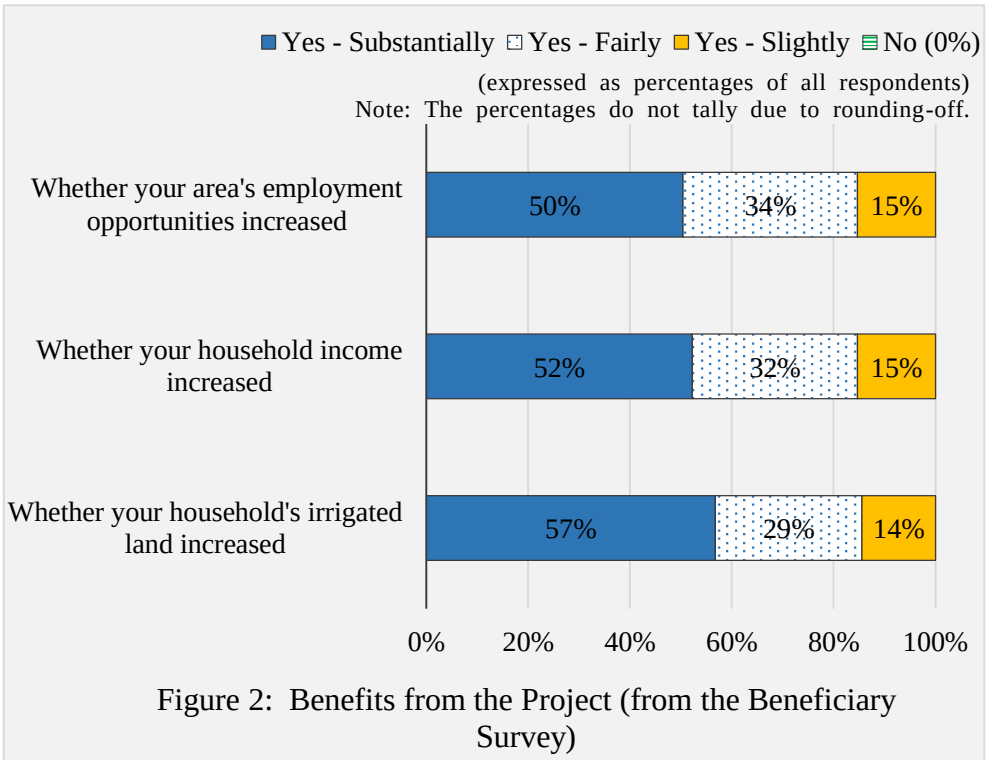

Figure 2: Benefits from the Project (from the Beneficiary Survey)

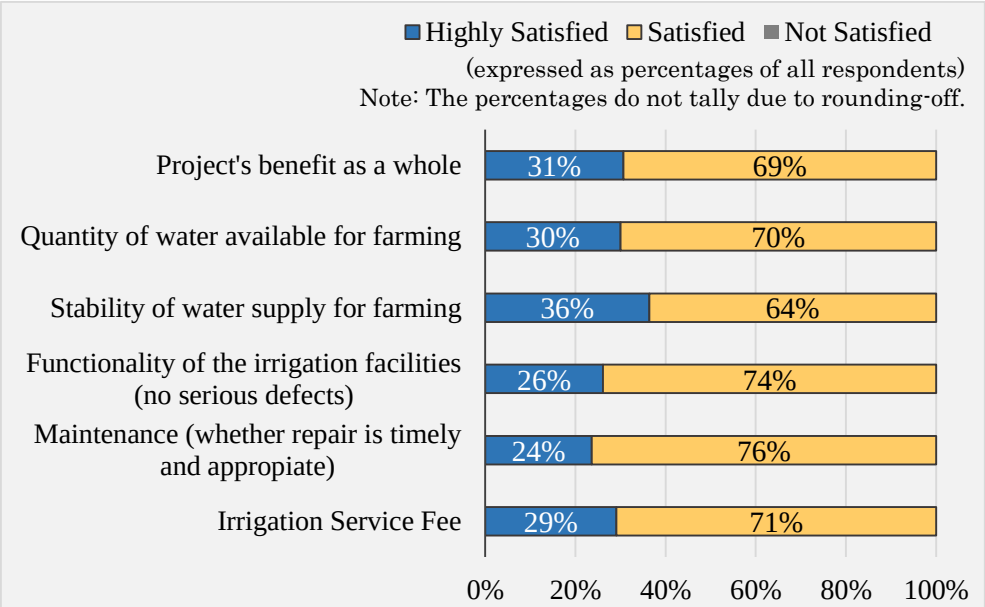

Figure 3: Satisfaction with the Irrigation Facilities Constructed by the Project, from the Beneficiary Survey

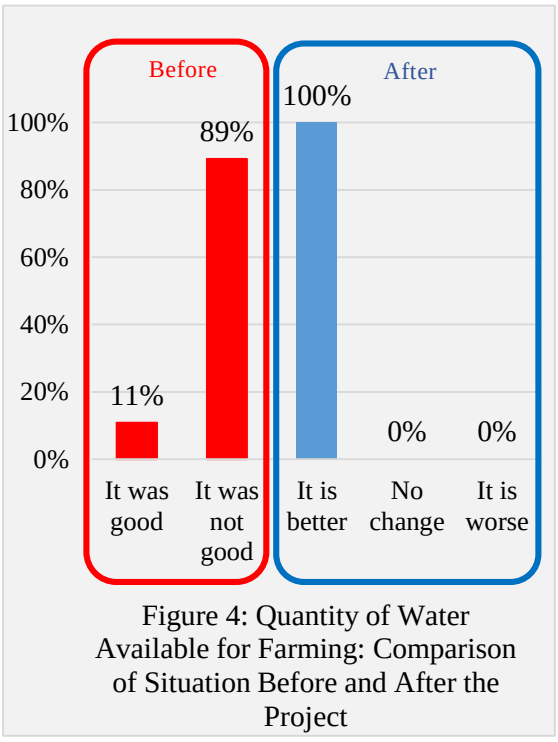

Figure 4: Quantity of Water Available for Farming: Comparison of Situation Before and After the Project

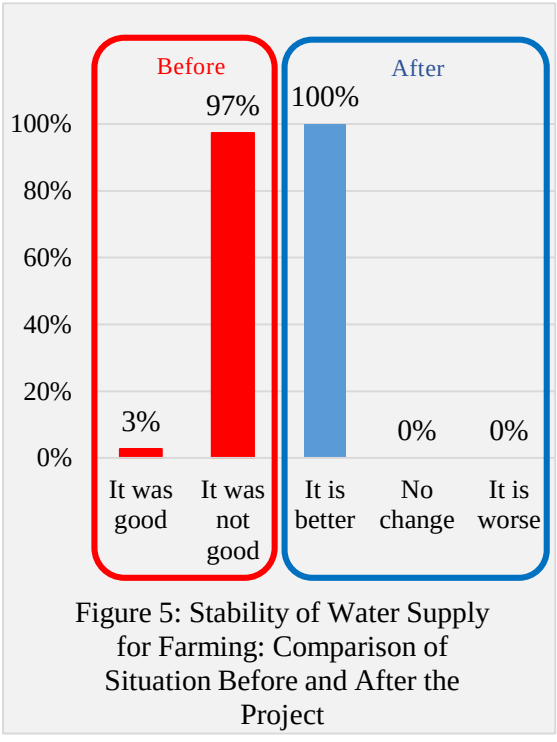

Figure 5: Stability of Water Supply for Farming: Comparison of Situation Before and After the Project

Overall, the results of the beneficiary survey imply that the local residents' level of satisfaction with the project is high, and they perceive benefits brought by the project in

various socio-economic dimensions, such as agriculture, household income, employment opportunities, and so on.

3.4 Impacts

3.4.1 Intended Impacts

The main intended impact of the project was the reduction in poverty and contribution to the development of the local economy. In order to assess the impact, the ex-post evaluation attempted to analyze the proportion of households under the Poverty Threshold, the employment rate and the average annual household income of the locality. However appropriate data to quantitatively analyze the impact and derive causality/associations with the project was not available. In other words, the only available data on the above-mentioned indicators were at the level of the Central Mindanao Region, which is too broad to derive meaningful conclusions on the project impact. Therefore, the analyses shown below are only for reference purposes.

Table 7: Level of Poverty in the Central Mindanao Region (Region XII): Data from 1991, 2006, 2009 and 2012

	Region XII			
	1991	2006	2009	2012
Poverty Threshold (peso)	6,272	13,319	16,405	18,737
Proportion of the Population below the Poverty Threshold (%)*	47.4	31.2	30.8	37.1
Average Annual Household Income (peso)	-	-	154,000	165,000
Employment Rate (%)	-	96.4	-	96.0

Source: Philippine Statistics Authority
Note 1: The regional level data on the Proportion of the Population below the Poverty Threshold is estimated every three years in the Philippines.
Note2: " – " means no available data.

The proportion of the population in the Central Mindanao Region that are below the poverty threshold was 47.4% at the start of the project in 1991. This was reduced to 37.1% in 2012 when the project was almost completed. This change is equivalent to the average annual reduction of 0.5 percentage points that is in fact the same as that of the national level (at the national level, it was reduced from 29.7% in 1991 to 19.1% in 2012, which is equivalent to 0.5 percentage points reduction annually). Therefore, this data cannot lead to a conclusion that the project contributed to the reduced proportion of the population below the poverty threshold in the region.

The average annual household income increased from 154,000 pesos in 2009 to 165,000 pesos in 2012 while the proportion of the population below the Poverty Threshold during the same period also increased. This seemingly contradicting phenomenon can be

explained by the following factors: 1) since the project was only completed in the end of 2014, the Benefited/Planted area between 2009 and 2012 remained around 50% of the Firm-Up Service Area, and the total cropping intensity (of wet and dry seasons) also stood between 107% and 153%; and 2) the Poverty Threshold in the region was raised from 13,319 pesos per year in 2003 to 18,737 pesos per year in 2012 due mainly to the sharp increase in the consumer price index (especially food items). In terms of the employment rates, there have been no major changes.

The beneficiary survey was also conducted as part of the evaluation to supplement results of quantitative analyses and provide qualitative information about beneficiaries' perceptions. The results of the beneficiary survey revealed the following impacts perceived by the respondents[39]:

- All respondents answered "Yes" ('increased substantially' or 'fairly') to the question, "Do you think the project increased your household's income or not?", of which 52% answered 'increased substantially' (see Figure 2 in 3.3.2)
- All respondents answered "Yes" ('increased substantially' or 'fairly') to the question, "Do you think the project increased employment opportunities in your area or not?", of which 51% answered 'increased substantially' (see Figure 2 in 3.3.2)

It is important to note that these results of the beneficiary survey do not directly reflect the reduction in poverty in the locality, which is the definition of the intended impact of the project. It can however imply that at least project beneficiaries perceive the benefits of the project on household income and employment opportunities in their area.

Among government officials involved in the Technical Cooperation Project for ODA Loan, titled "Agricultural Extension Support in Malitubog-Maridagao Irrigation Project I (MMIP-I)" which is implemented within the target area of the Malitubog-Maridagao Irrigation Project, there is a common perception that a synergistic effect of the two projects have contributed to improving the agricultural productivity and the stability of the local area. According to them, a combination of irrigation water supply and technical support for agricultural management improved agricultural productivity, which in turn made local residents recognize benefits of engaging themselves in livelihood activities instead of armed

[39] In terms of the indicators on household income and employment opportunities, the data was disaggregated by status of land ownership. A greater proportion of respondents who do not own land (N=9) answered "significantly increased", compared to those who own land (N=102). No respondents without own land answered "slightly increased". It seems that the project made greater impacts on household income and employment opportunities among the landless, compared to the land owners, but the denominators are too small to derive any meaningful analysis.

resistance and banditries. Furthermore, the two projects appear to have contributed to improving local perceptions towards the government[40].

3.4.2 Other Impacts

(1) Impacts on the Natural Environment

At the time of appraisal, the Environmental Impact Assessment (EIA) was conducted in accordance with the Philippine Environmental Policy. EIA concluded that the project was not expected to produce significantly negative impacts on the natural environment. Therefore there have been neither additional environmental assessments nor periodic environmental monitoring by external observers. EIA at appraisal indicated the possibilities of slight alteration of the existing natural land farm and soil due to earthmoving and construction of irrigation ditches as well as slight reduction of the surface water quantity in the area due to diversion of water into irrigation ditches (while it was expected to increase groundwater resources). At the time of the ex-post evaluation, no serious impacts have been reported. Additionally, the appraisal document pointed out the presence of schistosomiasis, a water-borne disease, in the area, but there have been no reports to highlight negative impacts of the project on the disease prevalence[41].

(2) Land Acquisition and Resettlement

The project was, by nature, expected to cause submergence of some residential/farm areas due to the diversion work and to necessitate land acquisition for the construction of irrigation/drainage facilities. At appraisal, potential submersion area was estimated as 70.7ha while acquisition of 802ha of land was also expected. The actual land areas for submersion and acquisition was 483ha and 130ha, respectively.

In terms of the land acquisition, the project encountered several issues related to the right of way, such as multiple land claimants, untitled land plots, no information about landowners' address, and settlement on compensation amounts. The Philippine government solved these issues by providing assistance in the identification of rightful landowners and processing of compensations[42].

(3) Other Positive and Negative Impacts

[40] From an interview with an ATI official.
[41] Based on documents provided by the executing agency and interviews with them.
[42] Ibid.

At appraisal, some indirect impacts from the perspective of Women in Development (WID)[43] were expected, which was assessed in the Beneficiary Survey. The survey included 29 female respondents (26%) out of 111.

In terms of women's workload (including both amount and quality of work), all respondents, including both male and female, answered that there had been positive impacts brought by the project, such as:

- the water supply made it more convenient to wash clothes, cook and bathe;
- the project reduced women's time spent on agricultural work, which can be used for household work, child-raring and/or business activities; and
- the project reduced amount of women's workload, which enabled them to spare some time for resting (women were suffering from heavy workloads by assisting farming in addition to their full responsibilities in household work and child-raring).

The Survey results indicate that local residents are aware of the positive impacts brought by the project on women's needs.

In summary, most of the operation and effect indicators, as far as available data is assessed, showed continuous improvements. Several qualitative effects were also reported by the executing agency, including spill-over effects on mobility and transportation of goods/commodities, access to basic social services, employment opportunities, and peace and order. Some impact-level effects were also observed; for example a beneficiary survey showed local residents' overall satisfaction with the project as well as their positive perceptions regarding benefits brought by the project; and positive impacts from 'WID' perspectives were also found. There have been no major reports regarding negative impacts on natural environment. On the other hand, an analysis on project impacts on poverty reduction in the target area, which is the most important impact indicator, could not be performed due to non-availability of appropriate quantitative data.

Therefore, the effectiveness and impact of the project are considered fair.

3.5 Sustainability (Rating: ②)

3.5.1 Institutional Aspects of Operation and Maintenance

[43] Women in Development (WID) is defined as an approach that calls for greater attention to women in development policy and practice, and promotes participation of women as not only a beneficiary but also an actor in the development process in order to promote socio-economic development more effectively. Therefore this approach emphasizes the need to integrate women in development by meeting women's practical needs.

Operation and Maintenance (O&M) of government irrigation facilities is normally managed by the Irrigation Superintendent appointed under the Regional Irrigation Manager of NIA. The Superintendent is responsible for the management of such activities as planning, programming, monitoring and evaluation, and care and maintenance of NIA properties in the region. The Engineering Division is responsible for planning, programming, scheduling and implementation of the maintenance activities, in coordination with the Administrative and Equipment Management Divisions, under the supervision of the Superintendent.

O&M of the irrigation facilities constructed by the project is performed by the Cotabato Irrigation Management Office (CIMO) and its Maridagao River Irrigation System (MRIS) office under the supervision of the NIA Region XII. Table 8 shows the current staffing structure and appointment status of the MRIS office.

Table 8: Staffing Structure and Appointment Status of the Maridagao River Irrigation System (MRIS) Office (as of January 2015)

(person)

Title	Major Responsibilities	Plan	Appointed
Principal Engineer	Direct supervision of the implementation and O&M	1	1
Senior Engineer	Assistance in supervisory activities	1	1
Senior Irrigators Development Officer	Training/capacity building, strengthening of Irrigators' Associations	1	1
Senior Water Resources Facilities Technician	Maintenance of machinery and other mechanical equipment	4	4
Collection Representative	Collection of irrigation service fees, developing plans and strategies to improve collection rates	1	1
Plant Electrician	O&M of plant electrical system	1	1
Heavy Equipment Operator	Operation of heavy equipment	1	1
Accounting Processor	Accounting	1	1
Industrial Security Guard	Safeguarding of properties, facilities and compounds	4	4
Driver Mechanic	Mechanic maintenance and driving service	1	1
Water Resources Facilities Operator	Operation of gates to regulate amount of water to store/needed	3	3
Utility Worker	Office maintenance	1	1
Data Encoder	Organization of documents	1	1
TOTAL		21	21

Source: Response to the questionnaire addressed to the executing agency.

In terms of the appointment status at the time of evaluation, all the 21 positions were filled as planned. The executing agency did not report any significant O&M constraints due to shortages in staff.

It is reported that routine (day-to-day) and monthly inspections based on a pre-set maintenance items are conducted in order to identify probable problems as early as possible. Once probable problems are identified, they are immediately reported and addressed in order to prevent further deterioration and to ensure optimum sustainable performance of the irrigation system[44].

Therefore there are no issues regarding the institutional aspects of the operation and maintenance.

3.5.2 Technical Aspects of Operation and Maintenance

According to the executing agency, hiring and retrenchment of personnel is done based on the Qualification Standard Manual set forth by the Philippine Government's Civil Service Commission, which guides recruitment of personnel with a particular job designation. NIA's personnel evaluation procedures, incentive measures, and disciplines and rules are also respected.

Employees are provided with various opportunities to improve their technical capacities and promote professional development through seminars, workshops and on-the-job training. Staff training provided during the past few years are listed in Table 9 below.

[44] Base on the document provided by the executing agency.

Table 9: Staff Training

Trainer	Subject	Year/Period	No. of Trainees
NIA	Duties, functions and responsibilities of O&M	2009/3 days	35
	IMT Implementation Guidelines	2010/3 days	45
	Establishment of organizational vision mission and objective	2013/ 3 days	40
NIA MRIS	Leadership, duties and responsibilities of IA leader	2010/3 days	65
		2011/3 days	55
	Preparation of O&M plans	2010/3 days	60
		2012/3 days	45
	IMT Implementation Guidelines (IMT model contracts, performance evaluation)	2010/2 days	65
		2013/2 days	278
		2014/2 days	260
	Financial planning and control	2011/2 days	60
		2013/2 days	48
	Irrigation service fee collection plan	2014/1 day	18
ATI	Islamic values	2014/4 days	40
	Preparation of training proposals, simple accounting and book-keeping	2014/2 days	40
	Trouble shooting of small engines	2014/2 days	20
	Palaycheck methodology[45]	2014/season long	540
	Palay cultural management practices	2014/season long	33
Department of Agriculture, Region XII	Palaycheck methodology	2014/7 days	350

Source: Response to the questionnaire addressed to the executing agency.
Note: Some training included farmers.

MRIS has its own O&M Manual that consists of the following three volumes: Volume I – Main System; Volume II – Diversion Dam Operation and Maintenance; and Volume III – Annexes. The Manual provides sound and appropriate guidance for operating and maintaining the irrigation system. There have been no reported issues related to usefulness and actual usage of the manual.

As shown above, the Government of the Philippines has provided a wide range of training courses in order to ensure technical standards for O&M activities, including not only O&M related subjects but also financial planning/management, organization of IAs,

[45] It is a methodology developed in Australia and adopted in the Philippines, which aims at increasing farmers' capacity to recognize and implement desirable management practices throughout processes of rice crop management from land preparation to harvest. It provides recommended technology and action, the reason why the recommendations should be followed, and the expected output of correct application of the recommendations.

collection of irrigation service fees and agricultural techniques. Some training courses, such as 'Preparation of O&M plans' and 'Financial planning and control', were repeated year after year, indicating that strengthening of the management capacities is considered important. Therefore, there are no problems observed in technical aspects of the operation and management.

3.5.3 Financial Aspects of Operation and Maintenance

Of the O&M costs for the facilities constructed by the project, day-to-day operation and maintenance activities are covered under the CIMO and MRIS budgets while the NIA Central Office has a budget framework to finance major maintenance and rehabilitation as needed[46].

The financial status of CIMO and MRIS are shown in Tables 10 and 11 respectively.

Table 10: Revenue and Expenditure of CIMO

(peso)

	Revenue	Expenditure	Balance
2009	68,184,392	39,430,150	28,754,243
2010	65,404,350	39,793,262	25,611,088
2011	76,278,455	49,045,548	27,232,906
2012	104,090,512	52,596,858	51,493,654
2013	104,546,278	56,255,794	48,290,484

Source: Response to the questionnaire addressed to the executing agency.

Table 11: Revenue and Expenditure of MRIS

(peso)

	Revenue	Expenditure	Balance
2009	1,711,627	4,990,133	-3,278,506
2010	3,995,787	5,562,301	-1,566,514
2011	3,586,248	6,393,372	-2,807,125
2012	2,152,568	7,217,806	-5,065,238
2013	1,814,764	7,152,963	-5,338,198

Source: Response to the questionnaire addressed to the executing agency.

As shown in Table 11, the revenue-expenditure balance of the MRIS office has been in deficit since 2009. It is indicated that the deficits are created because of the stagnation in the revenue collection while the expenditure has been continuously increased. This is presumably due to the fact that daily operation and maintenance costs are supposedly increasing as some parts of the irrigation facilities are completed and made available for use. On the other hand, Table 10 shows that the balance of the CIMO has been in surplus. At the time of evaluation, CIMO was supplementing MRIS' budgets for daily operation and

[46] From the interviews with NIA and CIMO staff.

maintenance activities while major rehabilitation was financed from NIA's maintenance and rehabilitation funds[47].

According to NIA, the irrigation service fee collection efficiencies in 2014 were 42% and 30% in wet and dry seasons respectively, which are significantly below the government target of 70%. According to CIMO's estimate, at least 60% needs to be achieved in order for MRIS to turn its financial deficit into surplus. Therefore it is considered critical to encourage farmers to pay the fees and to improve/maintain agricultural productivity. As already stated above, the JICA-funded Technical Cooperation Project for ODA Loan (Agricultural Extension Support in Malitubog-Maridagao Irrigation Project I from 2013 to 2016) provides such services as:

1) agricultural technology training through pilot demo farms (including techniques to address climate change effects),
2) guidance for farmers regarding how to sustain irrigation facilities through IAs, and
3) dialogues with farmers to strengthen ownership of irrigation facilities.

As a result, four out of seven IAs supported by the Technical Cooperation project achieved almost 100% of the irrigation service fee collection efficiency as of April 2015. This is reportedly due to heightened recognition that their own efforts to sustain the irrigation facilities is important. As the significant progress has been seen in these four IAs that have been supported since the beginning of the Technical Cooperation project, similar effects can be expected in the remaining three IAs that are currently undergoing the same set of activities. Furthermore, the Technical Cooperation project has only covered seven out of the sixteen IAs existing in the MMIP target area. The Department of Agriculture already made an official plan[48] and approved the allocation of their own funds to expand the same approach to the remaining nine IAs by 2018[49]. Therefore it is highly possible that the irrigation service fee collection will improve in the entire target area of the MMIP in the near future.

Combining the continuation of financial supplementation mechanisms from CIMO and the NIA Central Office and the prospect of improving the irrigation service fee collection in the near future, there are minor problems observed in financial aspects of the operation and management.

3.5.4 Current Status of Operation and Maintenance

There have been no major problems reported in terms of the actual O&M status of the irrigation facilities constructed by the project. According to the assessment by the executing

[47] From the interviews with the executing agency.
[48] From the interviews with the executing agency.
[49] Documents provided by JICA.

agency, CIMO/MRIS have been following the agreed O&M procedures, including implementation of monthly inspections and immediate follow-up actions as needed, since 2004 when the O&M responsibilities were transferred from the Project Management Office to them[50]. In the Beneficiary Survey, all respondents were satisfied with the maintenance of the irrigation facilities (see Figure 3 under 3.3.2). Field observation during the ex-post evaluation did not find any serious problems either.

The above-mentioned SAPS (2011) pointed out that some parts of the already constructed irrigation facilities needed rehabilitation, and that NIA had already secured 300 million pesos to undertake the rehabilitation work. At the time of evaluation, it was confirmed that the major rehabilitation work was done from 2012 to 2013, and that the rehabilitated facilities were again made available for use in 2014.

Therefore there is no problem seen in terms of the current status of O&M.

In summary, there are no problems identified in terms of the institutional and technical aspects as well as the current status of O&M. Although some minor problems have been observed in terms of the financial aspect, it is expected to be resolved in the near future. Therefore, sustainability of the project effects is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusions

The Malitubog-Maridagao Irrigation Project was implemented through a yen-loan assistance scheme, signed between the Governments of Japan and the Philippines in 1990, with an objective to increase and stabilize agricultural production in the central region of Mindanao Island via the construction of irrigation facilities, thereby contributing to the alleviation of poverty by improving the incomes of local farmers.

The project has been highly relevant to the development plans and needs of the Philippines, as well as Japan's ODA policies. However, all the project activities had to be suspended for about six years from 1993 to 2000 due to extraordinary deterioration of the peace and order situation in the project area. Considering the fact that a possibility of worsening security situation was already stated as a concern in the appraisal document, there should have been concrete measures included in the loan agreement as much as possible to mitigate negative impacts of such circumstances. For example, the selection of project sites and the decision on the project scale/coverage could have been based on a more careful assessment of the security situation and prospects. The project could have also included some components to be locally managed by the executing agency in the case where the

[50] Documents provided by the executing agency.

security situation would not allow JICA and external consultants to engage in project activities on site. Upon the resumption of the project in 2000, the project plan was revised to be completed in 2003. Following the revised plan, the yen-loan components were completed in 2003 as scheduled while the activities funded by the Philippines Government continued until 2014. Insufficient funding and delayed budget allocations/releases to the field level were identified as major reasons for such a significant delay. If there had been more careful project plans and approaches to address such administrative constraints arising during the project period, the significant delay by additional 11 years could have been avoided or at least shortened. Therefore its relevance is fair. In terms of the project implementation aspects, the total project cost was greater than planned even though the outputs remained the same as planned. The project period was also significantly longer than the planned. Therefore, efficiency of the project is low. With regard to the effectiveness, most of the operation and effect indicators, as far as available data is assessed, showed continuous improvements. Several qualitative effects were also reported by the executing agency, including spill-over effects on mobility and transportation of goods/commodities, access to basic social services, employment opportunities, and peace and order situations. The beneficiary survey conducted as part of the ex-post evaluation also showed local residents' overall satisfaction with the project as well as their positive perceptions regarding benefits brought by the project. Positive impacts on 'women in development (WID)' aspects were also found in the survey. There have been no major reports regarding negative impacts on natural environment. On the other hand, project impacts on poverty reduction in the target area, which is the most important impact indicator, could not be analyzed due to non-availability of relevant quantitative data. Therefore, effectiveness and impact of the project are fair. No major problems have been observed in the institutional and technical aspects of the operation and maintenance of facilities and equipment constructed/procured under the project. There are also no major issues in the current status of the operation and maintenance. While the financial status of the Maridagao River Irrigation System office, which is responsible for day-to-day operation and maintenance activities of the constructed facilities, has been in deficit, there is a prospect of improvements in the near future owing to successful attempts to increase the irrigation service fee collection through pilot activities. Therefore, sustainability of the project effects is fair.

In light of the above, this project is evaluated to be unsatisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

It appears that the Malitubog-Maridagao Irrigation Project has a high possibility of bringing benefits to the people of the Central Mindanao Region which still has a high poverty

level despite the great agricultural potentials. Yet how to sustain the project effects remains to be an issue. Overcoming the current financial deficits of MRIS is identified as a particularly urgent matter to be addressed. In order for farmers to continue benefiting from the project, appropriate and sustainable O&M of the irrigation facilities is inevitable. If farmers encounter a problem of not receiving the benefits from the facilities, their ownership of and active participation in the O&M activities will be hampered, which would in turn exacerbate the financial deficits. It is critical to continue strengthening IAs' organizational capacities and improving the irrigation service fee collection. It has become evident that the approaches taken in the Technical Cooperation Project for ODA Loan, titled Agricultural Extension Support in Malitubog-Maridagao Irrigation Project I, are successful in improving the irrigation service fee collection rate significantly. It is noted that the Department of Agriculture has already made an official plan and approved budgets up to 2018 to expand the same approaches to the uncovered IAs within the MMIP target area. In order to ensure the same level of effects without intensive external support, it is recommended to carefully extract experiences gained and lessons learned in the Technical Cooperation project. Such knowledge should then be fully integrated in every aspects of the expansion processes. Furthermore, it is important to pay a particular attention to sustainability after the expansion, especially in terms of maintaining a high level of irrigation service fee collection and motivation of IA members to actively participate in O&M. Continuous monitoring, not only ensuring coverage but focusing more on quality of activities (such as engagement with farmers and quality of training), is therefore highly recommended.

4.2.2 Recommendations to JICA

As already stated above, the Technical Cooperation Project for ODA Loan seems to be providing an answer to a question, "how to sustain positive effects produce by the Malitubog-Maridagao Irrigation Project". The key is to ensure the same level of intensity and quality of activities in the entire area covered by MMIP. When the JICA's project is completed and the activities are expanded to a wider area under the government's plans/budgets, JICA should make a recommendation to the government on the importance of rigorous monitoring with focus on the quality of activities, including continuous dialogues with IA members and quality of training/capacity building activities.

It is also worth considering additional JICA assistance to extract and compile effective approaches, intended achievements and lessons learned in the YLTA project into a guideline/implementation manual which should then be tested in other areas for wider applications.

Lastly the key issue seems to be sustainability. Sustainability, however, seems to have various dimensions, such as how to sustain increased agricultural productivity and income,

participation level of Irrigators' Associations, collection of irrigation service fees, and farmers' ownership on irrigation facilities. It is therefore recommended to conduct a sustainability assessment to propose concrete strategies to be taken up by the government when similar activities are expanded to other areas.

4.3 Lessons Learned

(1) Appropriate Planning and Approaches for Infrastructure Projects in Insecure Areas

Infrastructure projects, such as the Malitubog-Maridagao Irrigation Project, can significantly contribute to socio-economic development and mitigation of poverty/disparities that are often sources of instability in many conflict-prone areas of developing countries. However, such projects require extremely careful planning and approaches when they are implemented in areas where peace and order is not stabilized yet (e.g. when anti-government groups remain active in armed resistance). As such, target areas and scope/scale of the project need to be carefully determined based on not only a thorough assessment of the present situation but also analyses of potential developments/deterioration that might affect the project implementation. For example, large-scale infrastructure projects are highly visible and harder to protect if it is targeted in anti-government activities. It also takes a long time for large-scale infrastructures to be completed and thus perceived as a tangible benefit by the general population including those engaged in anti-government forces. Therefore it is generally recommended that a project start with a smaller-scale and quick-impact activities to bring peace dividends into local people's hands from early stages, which can then be expanded to a larger-scale infrastructure building[51].

If a large-scale infrastructure is considered necessary and justifiable even under unstable conditions, however, concrete measures to mitigate potentially negative effects on the project in the case of deteriorating security situations are necessary. For example, it is worth considering inclusion of components that can be implemented locally without direct involvement of JICA and external consultants on site, and/or that can bring tangible benefits to local residents, including armed groups, at early stages of the project[52]. These measures should be discussed thoroughly to reach a consensus with the recipient government at the time of appraisal in order to ensure prompt actions to be taken when the need arises. Furthermore, it is of a great importance to encourage the recipient government to establish a mechanism to continuously monitor, report and analyze security situations and to promptly take security measures when a sign of deterioration is observed (e.g. deployment/expansion of security force in the area). In other words, if project plans and approaches do not explicitly

[51] United States Institute of Peace, 2008. *Special Report: Conflict-Sensitive Approach to Infrastructure Development*.

[52] Ibid.

include such special measures and mechanisms, it would run a high risk of not achieving intended objectives of the project by facing a long period of suspension, the possibility of termination, and/or incurrence of extra costs to overcome such extraordinary situations.

(2) Utilization of Technical Cooperation to Complement Irrigation Development Projects through Strengthening Irrigation Service Users' Capacity/Ownership and Building of Social Foundation

Sustaining positive effects of irrigation infrastructures generally becomes possible not only when necessary agricultural water is supplied to the area. It also has to be supported by local residents who understand the benefits of the irrigation facilities and thus will be motivated to sustain them. Especially in areas where socio-economic development still lags behind, it is important to contribute to building a social foundation that would enable local residents to effectively utilize and maintain irrigation facilities for their livelihood. The Malitubog-Maridagao Irrigation Project has been supported by its Technical Cooperation Project for ODA Loan, titled "Agricultural Extension Support in Malitubog-Maridagao Irrigation Project I", which seems successful in improving agricultural productivity, strengthening Irrigators' Associations, and building farmers' ownership of the irrigation facilities. As demonstrated above, Technical Cooperation projects can yield a great value as a complementary measure to maximize development impacts of irrigation projects if they are strategically implemented to strengthen capacities of local residents and help them utilize and maintain public goods for their shared prosperity.

Comparison of the Original and Actual Scope of the Project

Item	Original	Actual
1. <u>Output</u> **1) Civil Work**	1. Diversion Dam: 1 unit 2. Gated Spillway: 8 units 3. Sluiceway: 2 units 4. Intake Gate: 3 units 5. Reservoir: 1,460km^2 6. Bridge/Flume Structure: length 100m; width 6m 7. Irrigation Canals/Laterals: total length 169.6km 8. Drainage Canals/Laterals: total length 9.6km 9. Project Facilities ➢ Irrigation System Office (1 unit) ➢ Water Management Center (2 units) ➢ Water Management Station (19 units) ➢ Gatekeeper Quarter (7 units) 10. Pilot Demonstration Farm ➢ Training Center: 2 units ➢ Storage Area: 2 units ➢ Pump Building: 4 units ➢ Access Road: 14km **Service Area:** Maridagao Area: 6,625 ha Upper Malitubog Area: 4,215 ha	1. Diversion Dam: 1 unit 2. Gated Spillway: 8 units 3. Sluiceway: 2 units 4. Intake Gate: 3 units 5. Reservoir: 1,460km^2 6. Bridge/Flume Structure: length 100m; width 6m 7. Irrigation Canals/Laterals: total length 169.6km 8. Drainage Canals/Laterals: total length 9.6km 9. Project Facilities ➢ Irrigation System Office/Farmers Center: 1 unit ➢ Farmers Center: 1 unit ➢ Pilot Demo Farm Office: 1 unit ➢ Watermasters' Quarter: 8 units 10. Pilot Demonstration Farm ➢ Training Center: 2 units ➢ Storage Area: 2 units ➢ Pump Building: 4 units ➢ Access Road: 14km 11. Additional Output: 10 units of centrifugal pumps with 980m lined canal (added and funded by the Philippines Government as an emergency measure to restore security) **Service Area:** Maridagao Area: 5,562 ha Upper Malitubog Area: 1,611 ha
2) Procurement of Equipment and goods	➢ Construction equipment ➢ Pilot farms and office equipment ➢ Operation and maintenance equipment	➢ As planned.
3) Consulting Services	➢ Detailed design works for the phase 2 target areas (Lower Malitubog and Pagalungan areas) ➢ Support for bidding processes ➢ Supervision of construction work in the Phase I target areas (Upper Malitubog and Maridagao areas) ➢ Support for the management of pilot farm activities ➢ Overseas training Foreign experts: 331M/M Local experts: 280M/M	As planned in terms of the foreign experts. Foreign experts: 331M/M Local experts: no information available
2. <u>Project Period</u>	February 1990 – May 1996 (76 months)	February 1990 – December 2014 (299 months)

3. <u>Project Cost</u>		
Amount paid in foreign currency	3,047 million yen	4,561 million yen
Amount paid in local currency	3,442 million yen	3,422 million yen
Total	6,489 million yen	7,984 million yen
Japanese ODA loan portion	4,867 million yen	4,561 million yen
Exchange rate	1 peso = 6.2 yen (as of June 1989)	1 peso = 2.78 yen (Average between 1990 and 2011)

Evaluation Department, Japan International Cooperation Agency (JICA)

Opinion of JICA Evaluation Department on Ex-post Evaluation of "Malitubog-Maridagao Irrigation Project"

[Evaluation of effectiveness/impact] (Related Section: 3.4 Impacts)

Based upon the fact that there was insufficient data to ascertain the poverty reduction effect, which is an indicator of the impact, the Evaluator concluded "Effectiveness/Impact" as "Fair."

In the process of ex-post evaluation, the evaluator determines the relative importance of each indicator of the project under evaluation in rating its "Effectiveness/Impact", according to their way of thinking and value judgments; we understand that the rating "Fair" was inferred through the specific approach described in the report (p. 27), along with the relevant reference materials set forth.

On the other hand, ODA Loan/Grand Aid Projects, due to their natures of modality, usually do not have such clear indicators/target values set for their intended impacts (intermediate or ultimate outcome) as those set for the overall goals in Technical Cooperation Projects, so judgments on "Effectiveness/Impact" basically focus on a comparison between the planned and actual objectives (immediate outcomes). Moreover, there are various impacts, from those close to the outcome to those a long way off; we understand that the impacts referred to in the report, including poverty rate, employment rate, and incomes, are quite far from the project outcome. As such, while the evaluator rated "Effectiveness/Impact" as fair, on the grounds that it was not possible to verify the manifestation of these impacts in this project, we believe that, if we focus on the effectiveness and level of satisfaction among local citizens for the reasons listed above, the "Effectiveness/Impact" of this project could be rated "High."

(End)

Southeast Asia and Pacific Department, Japan International Cooperation Agency (JICA)
JICA Philippines Office
Rural Development Department, JICA

Opinion of JICA Related Operations Department on Ex-post Evaluation of "Malitubog-Maridagao Irrigation Project"

The ex-post evaluation rates the relevance of the project as fair, because although the implementation of this project is fully in accordance with the development policy and development needs of the Philippines, as well as with Japan's ODA Policy, completion of the project has been delayed well beyond the original plan. In terms of measures to prevent delays, the ex-post evaluation report points out the need to put in place security measures in advance of the project implementation and measures to tighten up the financial aspects of project management by the implementing organization. However, the following security measures were already taken in advance of this project's resumption in 2000: (1) the government of the Philippines and the Moro Islamic Liberation Front (MILF) had concluded a Peace Zone Agreement in which they undertook not to permit armed conflict within the project area; and (2) the project resumed under the precondition that security would be assured on the basis of this agreement and measures to maintain a ceasefire supported by the Philippine army, and certain steps were taken to mitigate and avoid risk.

Moreover, the ex-post evaluator pointed out that financial problems were the main reason for the delay in the provision of the Philippine government's contribution after the resumption of the project. However, the main factor behind the delay was actually due to the fact that the National Irrigation Administration (NIA) placed an emphasis on the process of building trust with the local citizens (MILF), in order to avoid deterioration in security in the region concerned. Ever since the time of the project appraisal, NIA believed that it was essential to work in partnership with local citizens, who have limited experience of irrigated agriculture, to ensure the appropriate operation and management of the irrigation facilities. Furthermore, it believed that it would need to take steps to prevent the escalation of conflict with local citizens which would be caused by trying to complete the project as fast as possible once it resumed. Therefore, so as to make up for the lack of understanding of the project among local citizens, NIA spent large sums of its own budget, which is separated from the allocated budget to this project by the Philippine government, for providing local citizens with irrigation pumps

and water buffaloes. Consequently, as the project moved forward, local citizens began to show their trust and understanding of the project since their standard of living improved gradually. As a result of such grassroots initiatives by NIA, local citizens were highly satisfied with this project, as can be seen from the beneficiary survey. In addition, as of 2003, 195 combatants had been identified as wishing soldiers who determined to set up new farms in the project area and to be reintegrated into society as farmers, having laid down their weapons. Taking such progress and tangible results into consideration, President Arroyo highly praised this project especially from the perspective of peacebuilding, calling it as a "showcase for peace and development in central Mindanao," which had not only helped to improve the lives of around 4,500 local farmers, but also contributed to improving security in the region. Therefore, although the project was delayed, the impact achieved as a result of the aforementioned time-consuming initiatives is actually the true outcome of this project that contributed to promote peace by addressing root causes of the conflict. As such, in light of the situation at the time, we believe that this was actually the appropriate approach.

The objective of the project is to increase and stabilize agricultural production by installing irrigation facilities in the central Mindanao region of the Philippines, which has one of the country's highest poverty rates due to regional development having been delayed by conflicts and an unstable security situation. By doing so, this project aims to raise farmers' incomes, thereby reducing poverty in the region and helping to maintain peace and order there. Hence, we believe that multiple perspectives should be adopted in the ex-post evaluation by fully reflecting the hopes and high expectation of the Philippine government that this project would promote peace in the region as well as the views and voices of local citizens.

Last but not least, we are undertaking activities by utilizing the lessons from this project in order to facilitate further manifestation of the development effect of irrigation projects, as indicated below:

[Continual monitoring with a focus on the substance of activities] (Related Section: 4.2 Recommendations)

As part of the "Malitubog-Maridagao Irrigation Project (I) Follow-up Farming Support Project [Technical Cooperation Project for ODA Loan]," which we are undertaking to boost the development effect of this project, we are continuously holding project

monitoring meetings, involving the Department of Agriculture's Agricultural Training Institute (ATI), NIA, irrigation associations, and JICA, and are undertaking initiatives that reflect discussions during these meetings in our project activities, as recommended in this ex-post evaluation. For instance, at the monitoring meeting held in November 2015, after this ex-post evaluation was conducted, we ascertained that unit rice yield had increased as a result of technical training at an experimental farm, and that the scheme introduced as part of this project, under which irrigation associations provide members with interest-free loans for agricultural materials, has been effective in improving farm management, as has the book-keeping training program.

Moreover, the effects of this project were soon recognized by ATI, and ATI has already made budget allocation for the project's continuous activities after the period of this technical cooperation so as to enable the project to carry on persistently on its own. Going forward, as part of the project, we will develop a manual of approaches to improve farm management that go beyond providing technical agricultural guidance, and will support independent efforts of the government of the Philippines to promote the spread of this project to other regions.

[Strategic use of the technical cooperation scheme to maximize the development effect of irrigation projects] (Related Section: 4.3 Lessons learned (2))

As described in the lessons learned from this project in the ex-post evaluation report, we are aware that in order to maximize the development effect of irrigation projects, we need to go beyond the construction of facilities, focusing also on enhancing the organization of irrigation associations and promoting widespread use of agricultural technologies that make effective use of irrigation facilities. Based on this awareness, "the National Irrigation Sector Rehabilitation and Improvement Project" (Japanese ODA loan; loan agreement signed in March 2012) seeks to maximize the effect of these projects by incorporating some technical cooperation components into a Japanese ODA loan project (although, strictly speaking, it is not a technical cooperation scheme). As well as civil engineering work focused on refurbishing irrigation facilities, these components include support for enhancing the organization of irrigation associations and training in agricultural technologies, with the aim of increasing the ability to maintain and manage irrigation facilities.

(End)