

Country Name	The Project for Rehabilitation and Improvement of Maliana I Irrigation System
Timor-Leste	

I. Project Outline

Project Cost	E/N Grant Limit: 737 million yen	Contract Amount: 732 million yen
E/N Date	August, 2007	
Completion Date	February, 2009	
Implementing Agency	Ministry of Agriculture and Fisheries (MAF), National Directorate for Irrigation and Water Management (NDIWM or IMWD before the organizational reform)	
Related Studies	Basic Design Study: February, 2005 - March, 2006 (Implementation Review Study: February – May, 2007)	
Contracted Agencies	Consultant(s)	Sanyu Consultants
	Contractor(s)	Toa Corporation
	Supplier(s)	-
Related Projects (if any)	[Japan's cooperation] • Agricultural Promotion Advisor (Irrigation and Rice Cultivation) (Individual expert, August, 2010 - August, 2013) [Other donors' cooperation] • Rural Development Programme IV (Strengthening of agricultural extension) (EC/GIZ, 2011-2016)	
Background	In Timor-Leste, agriculture was an important production sector that employed more than 70% of the total population and accounted for 32% of GDP. However, the food self-sufficiency ratio remained at around 60%, and more than 60,000 tons of rice had to be imported every year. The Mariana I irrigation system was one of the main irrigation systems of Bobonaro District, the second largest rice producer among the 13 districts of the country. However, the portion of the fixed weir that had been raised was washed out during the flood in 1992, which made it difficult to ensure stable supply of irrigation water.	
Project Objectives	Outcome To ensure stable distribution of irrigation water by rehabilitating the Marian I Irrigation System in Mariana Sub-district of Bobonaro District.	
	Outputs(s) Japanese Side <ul style="list-style-type: none"> • Rising of the fixed weir • Widening and rehabilitation of canals (main canal, Ramaskora secondary canal and Ritabau secondary canal) • Rehabilitation of related structures • Technical transfer on organizational management and water management (soft component) Timor-Leste Side <ul style="list-style-type: none"> • Acquisition of land for widened canals and control facilities • Renting of land for temporary canals for rehabilitation of the intake and for revetment works • Establishment of a water user association (WUA) • Construction of tertiary canals in the new irrigation area (labor contributed by beneficiaries) 	

II. Result of the Evaluation

Summary of the Evaluation
<p>The Mariana I irrigation system was one of the main irrigation systems of Bobonaro District, the country's second largest rice producing district. However, the raised portion of the fixed weir was washed out during the flood in 1992, and it was difficult to ensure stable supply of irrigation water.</p> <p>This project has largely achieved the stable distribution of irrigation water in Mariana Sub-district of Bobonaro District as shown in the increase in the cropping area as well as yield of paddy. As for sustainability, problems have been observed in the financial aspect and the current status of operation and maintenance due to non-payment of water fees and a possibility of serious troubles on the irrigation facilities.</p> <p>For relevance, the project has been highly relevant with Timor-Leste's development policy, development needs as well as Japan's ODA policy at the time of both ex-ante and ex-post evaluation. For efficiency, both the project cost and the project period were within the plan.</p> <p>In the light of above, this project is evaluated to be satisfactory.</p>

1 Relevance
<p>This project has been highly relevant with Timor-Leste's development policy "rice self-sufficiency as set in the National Development Plan (NDP) and the Strategic Development Plan (SDP)", development needs "increase in rice production by expanding irrigation area", as well as Japan's ODA policy "development of basic infrastructures including irrigation, strengthening of operation and maintenance capacity, and rehabilitation of irrigation facilities for enhancing food self-sufficiency and sustainable economic development, as set in the Country Assistance Program" at the time of both ex-ante and ex-post evaluation. Therefore, relevance of this project is high.</p>

2 Effectiveness/Impact

This project has largely achieved its objectives in terms of the quantity of water intake for agriculture and the cropping area. Concerning paddy cultivation during wet season, although the performance of the indicator was below the planned values due to the delays in conversion of dry fields to paddy fields, the conversion process has progressed since then, and the actual values almost reached the target in 2012 (at the time of the ex-post evaluation). The cropping area of paddy during dry-season has been far beyond the planned value. These have led to high positive impacts including the twofold increase in the paddy yield in the target area (1,410 tons in 2007 and 3,675 tons in 2011). Some issues were observed at the same time: the collection of water fees by the WUA has not been as successful as planned (see “4 Sustainability”); and the construction of the tertiary canals by farmers took long time in some target cultivation areas. Overall, nevertheless, the project has increased rice production by increasing irrigation water supply in a stable manner. Therefore, effectiveness/impact of this project is high.

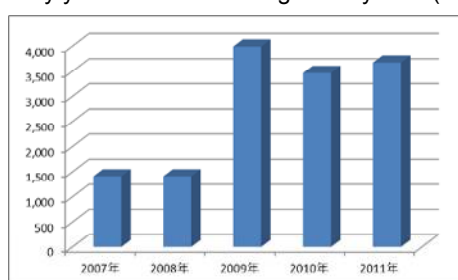
Quantitative Effects

	Actual value 2007 (Implementation review study)	Planned value 2009 (target year)	Actual value 2009 (target year)	Actual value 2010	Actual value 2011	Actual value 2012 (Ex-post evaluation)
Indicator 1 Agriculture water intake (capacity) of Mariana I irrigation system (m ³ /second)	0.88	1.37	1.37(wet season) 0.46(dry season)	1.37(wet season) 0.46(dry season)	1.37(wet season) 0.46(dry season)	1.16(wet season)
Indicator 2 Cropping area of Mariana I irrigation system (paddy) (ha)	600(wet season) 100(dry season)	1,050(wet season) 150(dry season)	920(wet season) 200(dry season)	1,000(wet season) 415(dry season)	1,000(wet season) 450(dry season)	1,000(wet season)
Cropping area of Mariana I irrigation system (dry field) (ha)	100(wet season) 100(dry season)	200(dry season)	120(wet season)	120(wet season)	120(wet season)	No data

Sources: BD for planned values; interviews with the Bobonaro agricultural office for actual values of 2009-2011; measurement by the ex-post evaluation team for the actual water intake of 2012

Notes: wet season is from January to May; dry season is from July to November. The actual values for Indicator 1 in 2009 – 2011 are not the actual measurement but the planned capacity due to lack of measurement devices such as flow meters.

Paddy yield in Mariana I irrigation system (ton)



Source: statistics from the Bobonaro agricultural office



Secondary canal in Ramaskora



Bulobo River area under cultivation

3 Efficiency

The outputs of the project were produced mostly as planned, and both the project cost and the project period were within the plan (ratio against the plan: 99%, 99.4%). Therefore, efficiency of this project is high. The construction of the tertiary canals by the Timor-Leste side has been completed, and the lining works is planned to be continued.

4 Sustainability

The facilities developed by the project are maintained by the WUA, and MAF, the implementing agency, is responsible for technical and financial support through the Bobonaro agricultural office.

No problems have been observed in terms of the systems of staff assignment and monitoring, as well as the technical aspect of operation and maintenance by WUA, owing in part to the training under the soft component of this project. However, the financial status of the WUA, that has the primary responsibility for operation and maintenance, is serious as MAF had not allocated subsidies for operation and maintenance of the irrigation scheme till 2011 despite its explanation before the project, and the farmers reacted to it by not paying the water fees. This resulted in no collection of the water fees at all in the fiscal year 2011 (the government provided the subsidy only in that year). Also, the site observation and the interviews with the implementing agency revealed a problem of declination of the piers of the aqueduct bridge, the existing infrastructure that is still utilized (outside the project scope). The function of the irrigation system has not been affected by this problem so far, but there is a concern on a possible adverse effect in the future. This problem was not foreseen in the planning stage, and may be beyond the operation and maintenance capacity of the WUA and the implementing agency.

Due to these major concerns in the financial aspect and the current status of operation and maintenance, sustainability of the effects of this project should be evaluated at low at this time. Nevertheless, the above-mentioned problem in the aqueduct bridge piers has already been taken care of by JICA, including a follow-up study, emergency construction works with surveys toward planning of mid and long term countermeasure construction works.



A crack on a side wall portion of the aqueduct under the bridge

III. Recommendations & Lessons Learned

Recommendations for Implementing agency

The non-allocation of the subsidies for operation and maintenance of the facilities that MAF had agreed with farmers before the implementation of this project resulted in the farmers' refusal of payment of water fees. MAF is recommended to allocate funds for operation and maintenance of the project facilities and, in case of shortage of funds, to make budgetary requests to the Ministry of Finance.

Lessons learned for JICA

As stated above, the implementing agency's failures to pay its contribution (subsidy) may result in the decline of water fee collection rate. JICA should ask the partner government including the Ministry of Finance and other agencies concerned to fulfill the responsibilities on the partner country side so that the line ministry could allocate budget properly.

In case of utilizing existing physical structures in Timor Leste:

This project had a policy to make the best use of the existing structures to contain costs. Based on it, the entire part of the aqueduct including piers was utilized. However, there found a problem of the declination of the piers, which brought a concern on a possible problem in the water flow function in the future. This problem was not foreseen in the basic design study of this project, and may be difficult for the implementing agency to handle considering its financial and technical capacity. In Timor-Leste where design drawings and other information on physical structures are not always available, utilization of existing structures should be based on careful planning and due consideration backed by sufficient studies on the scope of cooperation and construction methods.