

Summary of Evaluation Results

1. Outline of the Project	
Country: The Republic of East Timor	Project Title: The Irrigation and Rice Cultivation Project in Manatuto Phase-II in the Democratic Republic of Timor-Leste
Sector: Agriculture and Rural Development	Cooperation Scheme: Technical Cooperation Project
Division in charge: Rural Development Department,	Total Cost (at the time of evaluation) : 2.19 million yen
Period of Cooperation (R/D) : November 23, 2010-November 22, 2014 (4 years)	Partner Country's Implementation Organization: Ministry of Agriculture and Fisheries
	Supporting Organization in Japan: Ministry of Agriculture, Forestry and Fisheries
<p>1-1. Background of the Project</p> <p>In the Democratic Republic of Timor-Leste (hereinafter referred to as “Timor-Leste”), agriculture sector plays a significant role in food security as well as rural economy since approximately 80% of population living in rural areas depend their livelihoods on the sector. Ministry of Agriculture and Fisheries (MAF) has undertaken substantial efforts over a decade since its independence in order to boost agriculture productivity from the sense of food security and increasing farmer’s income.</p> <p>However, agriculture production has not fully increased due to deterioration of irrigation facilities, malfunction of public services, etc. Although domestic production of maize and cassava among staple crops fulfills national demand, national average yield of rice is relatively low (about 1.5 t/ha as paddy) among other countries in Southeast Asia, and the production of rice is still in shortage against the national demand.</p> <p>The Manatuto district, one of the foremost rice production areas in Timor-Leste with irrigation facilities, has a big potential of paddy farming along with Baucau, Bobonaro and Viqueque districts. Lacro irrigation area in the district was established in 1960s, Portuguese colonial era, and maintained by Indonesian government until the independence of Timor-Leste in 2002. However, after damaged by serious flood in 1996, it was not fully functional.</p> <p>Under the Urgent Rehabilitation Project administrated by UNDP, rehabilitation of the Lacro irrigation scheme in Manatuto district was accomplished in 2003 with financial assistance from the Government of Japan. After the completion, JICA’s technical cooperation project namely “Irrigation and Rice Cultivation Project in Manatuto (IRCP1)” was implemented from June 2005 to March 2010 in order to improve productivity of rice in Lacro irrigation area through combination of improvement of existing irrigated rice farming system and establishment of functional water user’s association (WUA).</p> <p>Although the purposes of IRCP1 were almost achieved, necessity of further capacity building for Timor-Leste counterparts was recommended in order to extend IRCP’s impact to other areas as the results of the Joint Terminal Evaluation. Based upon the request from Timor-Leste, MAF and JICA had a series of discussions for envisaging the Project framework, and the both sides agreed and signed the</p>	

Record of Discussion (R/D) on August 10, 2010 to launch “Irrigation and Rice Cultivation Project in Manatuto Phase II (IRCP2) ”.

IRCP2 officially commenced on November 23, 2010 with cooperation period of 4 years.

1-2. Project Overview

(1) **Overall Goal:** Improved irrigation and rice cultivation will be adopted in other irrigation areas in Timor-Leste.

(2) **Project Purpose:** Productivity of rice farmers in the Project areas will be improved.

(3) **Outputs:**

Output 1: Capacity of MAF Manatuto Office to guide the farmers will be strengthened.

Output 2: (Laclo Irrigation System) Improved rice cropping system will be maintained.

Output 2: (Other Irrigation Areas) Improved rice cropping system will be adopted.

Output 3: (Laclo Irrigation System)

Irrigation system will be properly maintained by Water Users' Association (WUA) .

Output 3: (Other Irrigation Areas) Through the trials of appropriate technologies, existing community (traditional) irrigation method will be improved.

(4) **Inputs (as of February 2014)**

Japanese Side

Dispatch of 4 Long-term Experts and 8 Short-term Experts

Provision of Equipment: Approximately 50.5 million yen.

Local Cost: Approximately 40.0 million yen

Timorese Side

Allocation of C/Ps: 24

Land and Facility (Office Space for Japanese Experts, Demonstration Plots, etc.)

Operation Cost : Salary of C/Ps, Utilities, etc.

2. Joint Evaluation Team

Japanese Team Members

(1) **Mr. Takeaki SATO** (Leader) , Visiting Senior Advisor, Japan International Cooperation Agency

(2) **Dr. Yoshihiko NISHIMURA** (Agriculture Policy) , Emeritus Professor, Nagoya University

(3) **Mr. Kazufumi TAIRA** (Irrigation and Water Users' Organization) , Deputy Director, Overseas Land Improvement Cooperation Office, Design Division, Rural Infrastructure Department, Rural Development Bureau, Ministry of Agriculture, Forestry and Fisheries

(4) **Mr. Makoto YAMANE** (Planning and Management) , Advisor, Paddy Field Based Farming Area Division I, Rural Development Group I, Rural Development

Timorese Team Members

(1) **Mr. Bonifacio da Conceicao** (Leader) , Water Management Specialist, Department of Water Management, National Directorate of Irrigation and Water Management, Ministry of Agriculture and Fisheries

(2) **Mr. Boaventura F.S. Soares**, Crop Staff, Department of Plant Protection, National Directorate of Agriculture and Horticulture, Ministry of Agriculture and Fisheries

(3) **Mr. Andre Freitas**, Monitoring Staff, Department of Monitoring and Evaluation, National Directorate of Policy & Planning, Ministry of Agriculture and Fisheries

Department, Japan International Cooperation Agency (5) Dr. Hideaki HIGASHINO (Evaluation Analysis) , Senior Consultant, RECS International Inc.	(4) Mr. Antonio da Silva Soares , Administrator, Sub-District of Manatuto
Period of Evaluation	March 7-27, 2014
Type of Evaluation: Terminal Evaluation	

3. Results of Evaluation

3-1. Project Performances

(1) Project Purpose: Productivity of rice farmers in the Project areas will be improved.

<Laclo Irrigation Scheme> Indicator 1: *Rice productivity will be maintained (2.5t/ha)* .

It is considered that maintaining rice productivity (2.5 t/ha) in the Laclo irrigation area is technically possible.

According to the results of the 1st monitoring conducted in October 2012, 35 out of 79 farmers (44.3%) used the recommended varieties and the unit yield turned out to be 3.0 t/ha. Therefore, at the time of Mid-term Review, it was judged that productivity of the recommended varieties was maintained according to the indicator, although the rate of usage of the varieties was considered insufficient.

According to the yield data available at the time of the Terminal Evaluation, the yield reached 3.28 t/ha in the test plot of MAF Manatuto and satisfied the indicator.

Meanwhile, the yield at a farmer's field in Ihun We'en was 2.3 t/ha despite loss of yield caused by insects and diseases, and temporary suspension of irrigation water to the field.

Therefore, taking these into consideration, it can be concluded that the maintaining rice productivity (2.5 t/ha) under normal conditions in the Laclo irrigation area is technically possible.

	IRCS Rainy Season Cropping (2013.7)	IRCS Dry Season Cropping (2014.1)
Location	Test Plot of MAF Manatuto	Ihun We'en (Farmer's Field)
Cultivated Variety	Nakroma	Nakroma
Productivity	3.28 (t/ha)	2.31 (t/ha)

<Laclo Irrigation Scheme> Indicator 2: *Cropping intensity of rice will be increased by 50 %*

It is considered that the cropping intensity of rice in the Laclo irrigation scheme has not increased, from site investigation and hearings from the C/Ps, the experts, and stakeholders.

Retirement of farmers due to aging, lack of successors, and so on, are considered the underlying reasons. In addition, it is possible that rice imported from Vietnam, Thailand, etc., widely sold at reasonable price in the Timor-Leste market, impair the incentive of farmers to cultivate rice.

<Other Irrigation Areas>Indicator: *Rice productivity will be increased by 20 %*.

Unit yield in the areas is 1.7 t/ha according to the 1st monitoring. Usage and unit yield of recommended varieties in the areas is 25.4% and 1.9 t/ha, respectively. At the time of Terminal Evaluation, it is difficult to conclude whether the indicator has been satisfied or not, as there is no data available. However, as IRCS seems to be disseminating gradually, the rice productivity in "other irrigation areas" is expected to increase in the long term.

(2) Summary of Output Achievements

Output 1: Capacity of MAF Manatuto Office to guide the farmers will be strengthened.

Indicator 1-1: Times of guidance/training for officers (Technical and Extension) of MAF Manatuto Office (7 times) , and the number of participants (10 persons) .

<Improved Rice Cropping System (IRCS) >

Technical training was conducted 16 times with participation of 123 officers and 67 farmers.

<Irrigation System>

Technical trainings, “MAF Manatuto Officers Training on Irrigation” and “MAF Manatuto Officers and Farmers OJT”, were conducted 4 times and 29 times, respectively with participation of 111 officers and 398 farmers.

Indicator 1-2: Times of monitoring to the farmers by officers (Technical and Extension) of MAF Manatuto Office (6 times) .

As for irrigation, monitoring items for Laclo intake, sedimentation, water velocity, and water level were selected in November 2011 and have been measured on weekly basis. Sedimentation has been measured 47 times since March 2013.

Meanwhile, monitoring of IRCS was conducted in October 2012 for the first time, but has not been conducted since then.

Indicator 1-3: Preparation of extension materials (7 types) .

5 flip charts and 7 video tutorials were prepared in July 2013 in addition to the 5 types of extension materials previously prepared.

Indicator 1-4: Attendance at the trials of appropriate technologies (more than 6 times)

Technical officers of MAF Manatuto together with farmers attended at the trials of appropriate irrigation technologies 29 times.

Output 2: <Laclo Irrigation Scheme> Improved rice cropping system will be maintained.

Indicator 2-1: The number of farmers who continuously adopt improved rice cropping system (80 % of farmers) .

It is considered difficult that Indicator 2-1 will be satisfied in a short term. According to the 1st monitoring, 50%, 50% and 80% of 79 surveyed farmers answered they used quality seeds, practiced line transplanting and conducted weeding at least once. As monitoring has not been conducted since, it is difficult to judge whether the indicator 2-1 is satisfied or not. Dissemination is delayed partly due to change of social conditions such as aging of farmers, lack of successors, etc.

Output 2: <Other Irrigation Areas> Improved rice cropping system will be adopted.

Indicator 2-2: More than one (1) technical skill in improved rice cropping system will be adopted (340 farmers or 50 % of farmers) .

According to 1st monitoring, 25%, 28% and 31% of 71 surveyed farmers answered they used quality seeds, practiced line transplanting and weeding at least once. Meanwhile, according to the follow-up study of 67 ex-IRCS trainees in February 2014, the figures are 88.9%, 44.4%, and 77.3%. Therefore, it is considered that farmers are gradually and steadily applying the IRCS in “other irrigation areas”.

Indicator 2-3: Distribution rate of quality seeds (10 % of farmers) .

In 2012, 299 (23.0%) farmers obtained recommended varieties of IRCS. In 2013, 258 (19.8%) farmers obtained quality seeds.

Indicator 2-4: Times of training for farmers (10 times) , and the number of participants (100 farmers) .

Achievement according to the Indicator 2-4 is satisfactory. IRCS Farmers training was conducted 10 times with 117 participants.

Output 3: (Laclo Irrigation Scheme) Irrigation system will be properly maintained by Water Users' Association (WUA)

Indicator3-1: Water is distributed according to the water distribution schedule.

The Evaluation Team confirmed that there is a WUA regulation that stipulates rotational irrigation between the upper and lower areas of the main canal.

However, as sufficient amount of water can be taken from the Laclo intake at the moment, there is no need to apply the rule to distribute water to farmers.

Indicator3-2: Amount of sedimentation (decreased by 50 %)

During the 2012 rainy season, dredging was conducted several times per month. Meanwhile, dredging was conducted only 3 times in the rainy season of 2013. It is considered that the modification of Laclo intake structure by the Project (raising the height of foundation) was effective to reduce the sedimentation.

Indicator3-3: Maintenance works conducted with appropriate technologies

Maintenance works conducted with appropriate technologies under the Project include: raising foundation height of Laclo intake to reduce sedimentation, repair of farm roads by gabion, lining of canals, etc. These works are considered effective as maintenance works.

Indicator3-4: Water fee collection rate (more than 70 %) .

According to the baseline survey, water fee collection rate was 67.4 (WUA members: 479, WUA members who paid the water fee: 323)

Output 3: (Other Irrigation Areas) Through the trials of appropriate technologies, existing community (traditional) irrigation method will be improved.

Indicator3-5: Times of training for appropriate technologies for community (traditional) irrigation (3 times) .

For the community farmers, 19 hands-on trainings (trials) for appropriate technologies were conducted with participation of 345 farmers.

Indicator 3-6: Manual for appropriate technologies for community (traditional) irrigation.

2 draft manuals for appropriate technologies for community (traditional) irrigation were prepared. In addition, "The Simple Manual for Maintenance of Irrigation Facilities (tentative title) " is under preparation and will be completed by August 2014.

Indicator3-7: Number of trials of appropriate technologies (6 times and more)

For the community farmers, 19 trials (hands-on trainings) for appropriate technologies were conducted with participation of 345 farmers.

3-2 Summary of Terminal Evaluation Results

Evaluation results based on 5 evaluation criteria are as follows:

(1) **Relevance: High** The Project is highly relevant with the Timorese development policies, and Japan's aid policies, too. However, it should be pointed out that local communities' needs to the Project has decreased due to change of social conditions such as aging of farmers.

(2) **Effectiveness: Moderate** Achievement of Project Purpose is not sufficient; IRCS proved effective at the MAF test plot, but not at farmers' field level because of limited dissemination. It is considered that crop intensity has not increased.

(3) **Efficiency: High.** Both the Japanese and Timorese sides reasonably made input in general. However, Output2 (dissemination of IRCS) was not achieved sufficiently.

(4) **Impact:** Some positive impacts (policy and technical aspects) are observed. No negative impacts have been observed so far.

(5) **Sustainability: Moderate** There is a concern about budget arrangement by the Timorese side after the Project cooperation period.

3-3. Factors promoting the production of effects

3-3-1. Factors pertaining to planning

No particular factors pertaining to planning were recognized.

3-3-2. Factors pertaining to the implementation process

(1) Improvement of information sharing among the Japanese experts and the Timorese C/Ps through various meetings, such as monthly meeting in Dili and weekly meeting in Manatuto.

(2) Dispatch of the three (3) third country experts from Indonesia was effective to introduce rice cultivation and related techniques conducted in the neighboring country to Timorese C/Ps.

3-4 Factors inhibiting the production of effects

3-4-1. Factors pertaining to planning

(1) When IRCP2 was formulated (2010), farmers' eagerness to cultivate rice was assumed, and the Project activities such as stabilizing irrigation water intake, dissemination of IRCS were relevant to the needs of the local communities of Manatuto.

However, active agricultural population is decreasing as aging of farmers has been progressing in Manatuto. As a result, it is supposed that farmers' dependence on rice cultivation in Manatuto area has decreased as compared when the Project started although promotion of domestic rice cultivation is highly needed from the standpoint of food self-sufficiency.

(2) Some description of PDM (definition of terminologies, description of Outputs and related indicators, etc.) was not clearly made and caused confusion in implementing activities.

3-4-2. Factors pertaining to the implementation process

(1) In rainy season, flood frequently occurs and causes damage to the irrigation and related facilities, roads and paddy fields, and hampered the progress of the Project. In addition, a part of the target areas, namely, Sumasse, Dirimane, and Rembor, is difficult to access due to lack of road network.

3-5 Conclusion

The Joint Evaluation Team conducted the Terminal Evaluation of the Project based on five evaluation criteria, through site inspection, interview to stakeholders (Timorese C/Ps, Japanese experts, and

farmers, etc.) and a series of discussion with Timorese governmental officials.

The Project was evaluated highly relevant with the Timorese development policy and Japan's aid policy as well as strategy, at the time of Terminal Evaluation. As for Impact, some positive impacts were observed in terms of policy and technology.

Meanwhile, delay of implementation of activities in the 1st half of the Project could not be completely made up even in the 2nd half of the Project. Although Output has been generated reasonably as a whole, dissemination of IRCS is delayed. It also should be pointed out that the 2nd monitoring of IRCS has not been conducted yet at the time of Terminal Evaluation. These issues affected the evaluation results of Effectiveness and Efficiency. Sustainability was evaluated moderate because of the concern about the future arrangement of budget by the Timorese side.

Based on the analyses, it is considered difficult that the Project Purpose will be achieved by the end of the cooperation period stipulated in R/D (November 2014) .

However, in the 2nd half of the Project cooperation period, improvement of communication among the Project stakeholders and strengthening of capacity of C/Ps through various trainings were found significant and it is expected that the Project activities will be accelerated from now on.

Therefore, the Evaluation Team concluded it is appropriate that the Project will be extended one year until November 2015 to achieve the Project Purpose to a reasonable extent by addressing issues that were clarified at the Terminal Evaluation with emphasis on the dissemination of IRCS.

3-6. Recommendations (Details are in the Chapter 5 of the Joint Evaluation Report)

3-6-1. Extension of the Project Period

There is a concern that the Project Purpose will not be achieved within the Project period. In order to attain the Project purpose, the Project Team should take further efforts to the following activities in close consultation with relevant authorities of the Government of Timor-Leste.

- 1) Establishment of the dissemination structure of IRCS in the target area.
- 2) Utilizing milling plant which was newly installed in MAF test plot, the development of postharvest technology and marketing strategy for rice should be tackled to increase farmers' motivation for rice cultivation and develop commercialization of rice.

In line with this, extension of the Project period until November 2015 is recommended.

3-6-2. Revision of PDM

New output and activities should be included in the Project for the development of postharvest technology and marketing strategy to achieve the Project Purpose. It is necessary that PDM will be revised and approved in the 6th JCC. See ANNEX 12 for proposed revision of PDM.

3-6-3. IRCS and its Dissemination

IRCS originally introduced in IRCP1 was taken over by the Project for further dissemination. However, the original IRCS has been not fully applied or disseminated among farmers in the target area although it is technically verified that it would contribute to increase of rice yield. On the other hand, IRCS is being modified applying new technologies (line marker, low-density planting and ratooning, etc.) with support of the third country experts. The Project Team is recommended to clarify the concept and elements of IRCS that can be accepted by farmers through trial and error for its smooth

dissemination as well as to plan dispatching a Japanese expert in order to supervise the strategy and output of IRCS.

3-6-4. Monitoring System for IRCS

Despite that regular monitoring is indispensable for the progress management of the Project, monitoring has not been conducted since the 1st monitoring in October 2012. Since the role of extension workers is crucial for the monitoring, they should conduct proper monitoring by visiting farmers regularly, which will contribute to the dissemination of IRCS. Basic information about the farmers in the Project area, such as the number of farmers, cultivated area, crops, yield, land ownership, and so on should be updated immediately.

3-6.5. Water Users Association

WUA is currently under the reconstruction due to the past internal conflict. If this condition persists, it will lead to the decrease in membership of the WUA and collection of water fee. To tackle with this problem, MAF Manatuto set up WUA reconstruction committee (the committee). The committee should clarify the division of roles and ownership of the facilities between the government and WUA (farmers) taking into consideration of farmers' participation. The Project Team should also give technical advice to the committee when necessity arises in order to bring the WUA's activities on track as soon as possible.

3-6-6. Maintenance of Irrigation Facility

Some troubles are observed as for irrigation facilities of Laclo Irrigation Scheme. The most serious one is maintenance of intake on the main canal. Lot of budget, time and labor has been taken to dredge sedimentation. Since it is difficult to prevent sedimentation completely, more careful operation of the gates by a gatekeeper is the practical countermeasure to reduce the problem of sedimentation at the intake. The gatekeeper is requested to carry out thorough control of the gates by going to the intake to close the gates before rain starts to avoid inflow of sedimentation to the canal.

3-6-7. Third Country Experts

Indonesian experts, who have similar culture and language to Timor-Leste, are playing an important role in improving IRCS and its dissemination. It is an effective way to use the third country experts for transferring technology to the counterparts and farmers. The Project Team should continue to invite Indonesian experts for further development of IRCS.

3-6-8. Postharvest and Marketing

It is expected the rice milling plant set up in Laclo area in February 2014 will contribute to the improvement of market value of rice produced in Laclo area. In order to run the plant successfully, management structure should firstly be considered along with the policy for operation and management of the plant including future maintenance system. It is also necessary to avoid negative impacts on private rice milling sector. Japanese experts for postharvest technology and marketing should also be dispatched if necessary.

3-6-9. Budget

The outputs of the Project are to be maintained by the Timorese side with their ownership after the Project. As a large portion of the Project operation budget has been provided by JICA, Timorese Government should make possible efforts to secure budgets for achieving Overall Goal. The Project

should support MAF by informing the finance department of the importance and effectiveness of the Project and strengthen public relations activities about the Project.

3-7 Lessons Learned

3-7-1 Design of a project framework

Economic and social issues, such as aging of farmers, establishment of pension system, increasing cash income opportunities other than farming and inexpensive imported rice in the market, influenced negatively on the motivation of farmers to develop rice cultivation.

It is pointed out as a lesson learned that a project should be designed with thorough consideration of the possible change of future social and economic conditions.

3-7-2 Network among Concerned Agencies

The Project has worked with MAF Manatuto Office and the district and sub-district governments in addition to the central government of MAF. The Project personnel have closely coordinated with each other through the stakeholder networks at the field level on the day-to-day operations, while the overall supervision was provided by central MAF. The network has facilitated smooth implementation of the Project activities. From the experience, it is considered useful for a project that will be implemented in plural sites to strengthen the network among stakeholders at the field level, in addition to the institutional supervision by the central office.

3-7-3 Promotion of the Third Country Cooperation

During the Project implementation, due to the unavailability of the Japanese resources for transferring locally suitable technologies and difficulty of communication with the Timorese C/Ps in English, some activities of the Project were delayed. As a countermeasure to these problems, Indonesian expert was dispatched and successfully transferred innovated cultivation methods, simplified agricultural tools and extension materials utilizing multimedia, etc. As technical exchange among countries with similar cultural and natural environments is considered effective as exemplified by the Indonesian and Timorese case, it would be important to design the framework of a technical cooperation project taking into consideration utilization of the technical resources of neighboring countries, namely, the third country cooperation.