

評価調査結果要約表（英文）
Summary of Terminal Evaluation

I. Outline of the Project	
Country : Republic of Mozambique	Project title : The project for improvement of techniques for increasing rice cultivation productivity in Nante, Maganja da Costa District, Zambezia Province, Mozambique
Issue/Sector : Agricultural Development	Cooperation scheme : Technical Cooperation Projects
Division in charge : Rural Development Department	Total cost : ¥420,000,000
Period of Cooperation	From January 15, 2011 to January 14, 2015 (4 years)
	Partner Country's Implementing Organization : (1) Responsible organization: National Directorate of Agrarian Services, Ministry of Agriculture (2) Coordinating organization: Provincial Directorate of Agriculture, Zambezia Province (3) Implementing organization: District Services of Economic Activities (SDAE), Maganja da Costa district
	Supporting Organization in Japan : None
1. Background of the Project <p>Mozambique has the land area of 799,000km² (360,000km² farming land) with a population of 20.37 million (National Institute of Statistics, 2007), and about 80% of the working population is employed in agriculture. In the country, the consumption of rice is on the increase each year, estimated at 500,000 tons per annum (milled rice). Rice therefore is considered a priority cash crop with increasing demand, but its domestic production as paddy remains at 260,000 tons with the total cultivation area of 204,000 ha (thus an average yield is stagnating at 1.27 tons/ha) in 2009. Mozambique is importing more than 300,000 tons of rice annually to complement the limited domestic supply. As such, increasing rice cultivation productivity and raising food self-sufficiency ratio is an urgent issue in the country for ensuring food security. In this regard, the Government of Mozambique requested Vietnam a project for increasing rice production and yield at the Intabo irrigation scheme in Nante, which is located in Zambezia Province that makes up almost half of the domestic rice production in Mozambique. The project aims at developing, demonstrating and extending a package of improved rice cultivation techniques as well as strengthening the management capacity of the Intabo irrigation scheme.</p> <p>In response to the request, Japan and Vietnam agreed to support the Mozambique through Triangular Cooperation where Japan provides overall project management and offers machinery/equipment, while Vietnam furnishes experts' services on rice cultivation techniques. With the Mozambique's Ministry of Agriculture as the counterpart agency, the 4-year project, the project for improvement of techniques for increasing rice cultivation productivity in Nante, Maganja da Costa District, Zambezia Province, Mozambique (herein after referred to as "the Project"), began in January 2011.</p>	
2. Project Overview (1) Overall Goal Productivity and production of irrigated rice cultivation is increased in Nante, Maganja da Costa district, Zambezia Province.	
(2) Project Purpose Productivity and production of irrigated rice cultivation in the Intabo irrigation scheme is increased through introducing improved techniques.	
(3) Outputs A package of improved techniques for irrigated rice cultivation is developed. Capacity of Water User Association in operation & maintenance of irrigation facilities and farming support activities is improved in the Intabo irrigation scheme. Improved irrigated rice cultivation techniques are disseminated in the Intabo irrigation scheme	

(4) Inputs		
<p>Japanese side : Expert: 3 persons in total, Trainees received in Japan: 1person, Provision of equipment: around 0.29 million US dollars, Local cost expenditure: around 0.57 million US dollars</p> <p>Vietnamese side: Expert: 8 persons in total, Trainees received in Vietnam: 7 persons</p> <p>Mozambican side : Counterpart 11 persons (at the terminal evaluation), Local Cost: 0.62 million US dollars and expenses for electricity, Provision of land and facilities: Project office and lodgings for experts</p>		
II. Evaluation Team		
Members of Evaluation Team	<p>1) Leader: Mr. Shiro NABEYA, Senior Advisor to the Director General, Rural Development Department, JICA</p> <p>2) Plan Management: Mr. Hiroyuki HANADA, Program officer, Arid and Semi-Arid Farming Area Division 1, Rural Development Department, JICA</p> <p>3) Evaluation Analysis: Mr. Isao DOJUN, Consultant, Chuo Kaihatsu Corporation</p>	
Period of Evaluation	From May 15, 2014 to June 5, 2014	Type of Evaluation : Terminal
III. Results of Evaluation		
1. Project Performance		
<p>Output 1: A package of improved techniques for irrigated rice cultivation is developed.</p> <p>Achievement: Considering the degree of achievement of the two indicators of Output 1, the facts that developed techniques for irrigated rice cultivation has potential to increase rice yield up to 9.4 tons/ha as the results of field experiments, two manuals on the improved irrigated rice cultivation techniques and the rice seed production are developed, we can conclude that degree of achievement of Output 1 is very satisfactory. In terms of seed production, it can be said that South-South Cooperation has developed a meaningful effect through collaboration with Vietnamese seed expert: as a result, over 15tons of verified pure-line rice seeds were produced.</p>		
<p>Output 2: Capacity of Water User Association in operation & maintenance of irrigation facilities and farming support activities is improved in the Intabo irrigation scheme.</p> <p>Achievement: Two indicators (2-1 and 2-2) of Output 2 are not so suitable for assessing capacity of WUA in O&M of irrigation facilities because current irrigation system does not allow proper irrigation water use yet in the whole area of the scheme. Several major irrigation facilities and flood protection dikes have been rehabilitated significantly under the Project corresponding urgent needs of rehabilitation, however, it was not planned to rehabilitate such large scale infrastructures before the start of the Project. It took certain period for rehabilitating these large infrastructures and because of this, improvement of other irrigation facilities like check gates and irrigation canals could not be done under the Project. As for other two indicators, it is safe to say that degree of achievement is partially satisfactory.</p>		
<p>Output 3: Improved irrigated rice cultivation techniques are disseminated in the Intabo irrigation scheme</p> <p>Achievement: Considering the degree of achievement of the four indicators of Output 3, objectives of all indicators is expected to be achieved within this year and we can conclude that degree of achievement of Output 3 is expected to be very satisfactory by the end of the project period.</p>		
<p>Project Purpose: Productivity and production of irrigated rice cultivation in the Intabo irrigation scheme is increased through introducing improved techniques.</p> <p>Achievement: The average yield of irrigated rice in the demonstration farms recorded 4.10 tons/ha in 2013/14 cropping season. Because most part of the Intabo irrigation scheme did not suffer from flood, rice growth was favorable in 2013/14 cropping season and rice production volume in the scheme can be expected significant increase comparing to production of normal year. Although area of irrigated rice fields was not increased more than by 30% due to the flood damage of January, 2013, it is safe to say that objective of the Project Purpose is achieved at very satisfactorily through considering increase of the average yield and the achievement of 15 tons of rice seed production.</p>		

2. Summary of Evaluation Results

(1) Relevance

The relevance of the Project is considered to be high from the viewpoints as mentioned below.

1) Conformity with needs for improving productivity and increasing production in irrigated rice cultivation in the target area and society, and also needs of the target group (farmers in the Intabo irrigation scheme, management and technical staff of DPA and extension staff of SDAE)

Zambezia province, where the project site is located, is largest rice cultivated province in Mozambique. There are 37 irrigation schemes in the province and the Intabo scheme (the project target area) has largest net irrigated area among them. This irrigation scheme is located in the river flood plain and damages of flood and drought occur very frequently, and level of rice production productivity (unit yield of rice) remains very low. There were high needs for improving rice productivity and production for farmers in order to increase their income, improve their livelihood and ensure food security. In addition, improvement of irrigated rice production techniques and seed production techniques is beneficial for extension officers of SDAE and technical officers of DPA and their acquired knowledge and skills on developed rice production techniques will be disseminated to other irrigation schemes. Therefore, this project has great significance and consistent with needs of rice farmers and extension officers of SDAE.

2) Relevance to the national policies of Mozambique

There are 3 priority objectives in the Poverty Reduction Action Plan 2010-2014 and one of those objectives is production increase and productivity improvement of agriculture and fishery. Moreover, the Strategic Plan for Agricultural Sector Development (PEDSA) 2010-2019 mentions that use of improved techniques and water management are key factors for agricultural growth. This project will contribute to improvement of productivity of rice cultivation and increase of rice production through development and dissemination of improved irrigated rice cultivation techniques. Therefore, this project is well consistent with the above mentioned plan and strategy of the Government of Mozambique.

3) Conformity to the assistance policy of Japan to Mozambique

Within the regional economy activation, which is one of the 3 priority areas of the Japanese official assistance policy to Mozambique, agricultural development through rice production increase is regarded important. One of the objectives in the agricultural sector, which were decided during TICAD IV in 2008, is rice production increase to twice in its amount from 2008 to 2018 through CARD (Coalition for African Rice Development) activities. This project aims at improving rice cultivation productivity and increasing rice production, therefore, this project is very consistent with the official assistance policy of the Government of Japan and objectives of TICAD.

4) Appropriateness of the approaches taken by the Project

Due to low input type traditional cultivation methods, lack of proper O&M and functional irrigation facilities, its potential for rice production increase is not exploited well and rice productivity remains low. In order to realize productivity improvement and production increase, 3 kinds of project approach have been applied for the Project, such as 1) development of improved irrigated rice cultivation techniques, 2) dissemination of developed techniques to farmers, and 3) capacity building of WUA for carrying out proper O&M of irrigation facilities and supporting activities for farming.

5) Comparative advantage of technical cooperation by Japan and Vietnam.

Japan has a lot of experiences of technical cooperation project on irrigated rice cultivation in Africa and there are comparative technical advantages in implementing this kind of project. In the case of Vietnam, climate conditions and agricultural ecosystems in Vietnam and those of Mozambique are similar, and agricultural techniques of Vietnam can be applicable in Mozambique. Therefore, Vietnam has also comparative technical advantages in implementing this kind of technical cooperation.

(2) Effectiveness

The Project Purpose is expected to be produced in an effective way mostly at the end of the Project and the overall effectiveness of the Project is considered to be moderately high based on the following analysis.

The average yield of irrigated rice in the demonstration farms recorded 4.10 tons/ha in 2013/14 cropping

season. Rice production of this year in the scheme can be expected significant increase comparing production of normal year. Nearly 300 farmers in the scheme adopted several improved rice cultivation techniques at the demonstration farms. Therefore, level of achievement of the Project Purpose is high.

(3) Efficiency

The efficiency of the Project is considered to be moderate satisfactory from the four viewpoints as below.

1) Appropriateness of inputs provided by Japan and Vietnamese sides

Two (2) Japanese long-term experts have been dispatched to the Project. Expert in charge of coordination/ training was vacant around 1 year from March 2012 to April 2013. During this period, therefore, Japanese Chief Advisor had to carry out tasks of coordination/training.

Vietnamese experts have been dispatched mostly as planned for the areas of team leader, cultivation, seed, irrigation, extension, and interpreter. According to participants in counterparts training in Vietnam in 2013, the training contents (extension methodology on rice cultivation, rice seed production and distribution system and so on) were useful and the duration of the training was appropriate.

2) Inputs provided by Mozambican side

In addition to 4 officers of DPA of Zambezia, 4 officers of SDAE of Maganja da Costa, 2 more extension officers of SDAE (supported by PRODEZA) have participated in the project activities as counterpart. 3 extension officers of SDAE and 2 extension officers of SDAE (supported by PRODEZA) have participated in the project activities more frequently at the fields. These 5 extension officers have received technical trainings and instructions from the Vietnamese experts and their learned knowledge and skills have been transferred to the farmers in the Intabo irrigation scheme.

Furthermore, Mozambican side constructed 4 new buildings for use as project office and lodging for the Vietnamese and Japanese experts. Mozambican side purchased motorcycles and equipment for the project office. Mozambican side has born expenses for electricity for the project office and fuels for activities of extension officers. These Mozambican inputs have been contributing effective implementation of the project activities.

3) Project management

As mentioned in section on implementation structure of the Project, 5 kinds of meeting related to project management have been held (JCC, Steering Committee, DPA counterpart meeting, SDAE counterpart meeting, and meeting of expert team (Japanese and Vietnamese experts)). At these meetings, discussion and information sharing on the project plan and progress of the project activities, and exchanges of opinions on the issues and problems have been carried out and it seems these meetings have made positive effect on good project management. Thus, project management has been carried out appropriately under close communication and collaboration among the project team members.

➤ Factors contributed for effective implementation of the project activities

It seems that rehabilitation works of irrigation facilities and flood protection dikes have been carried out in cost effective way to some extent because farmers in the Intabo irrigation scheme have participated in the rehabilitation works as wage labor positively.

➤ Factors impeded for effective implementation of the project activities

Dike beside the pumping station of the Intabo irrigation scheme was collapsed due to flood of Licungo River at the end of January 2013. This flood continued certain long period and it was impossible to use the road between Nante and Intabo. Because of these situations, it was difficult to carry out activities at experimental fields and instructions at the demonstration farms, and implementation of planned trainings (fertilizer application, weed control, and water management, etc.) was delayed.

(4) Impact

The Overall Goal will be attained in the middle term.

1) Prospect of achieving the Overall Goal “Productivity and production of irrigated rice cultivation is increased in Nante, Maganja da Costa district, Zambezia Province.”

It is very possible that productivity and production of irrigated rice cultivation is increased in Nante gradually. It is adequate to set up indicators for overall goal that can be attained within 3 to 5 years after

the completion of a project in general. However, based on the following assessments on prospect in achieving 3 kinds of indicators, it seems that it will take more than 5 years in achieving all indicators.

2) Other Impacts Observed and Possible Future Impact

a) Adoption of the improved irrigated rice cultivation techniques by farmers in the Intabo irrigation and the Munda Munda irrigation schemes

According to the result of interview to extension officers and farmers in the Intabo irrigation scheme, some farmers adopted improved irrigated rice cultivation techniques in the Intabo irrigation scheme. It is also reported that some farmers who attended training of the Project and other farmers in Munda Munda irrigation scheme adopted some improved techniques.

b) Recognition of effectiveness of use of quality rice seeds

It is also reported that farmers in the Intabo irrigation scheme recognize importance and good effect of utilization of quality rice seeds for increasing yield. It is expected that farmers in the Intabo irrigation scheme continue to use quality seeds.

c) Possible impact in near future

A program for improvement of some irrigation facilities and construction of dike in the Intabo irrigation scheme is going to be carried out this year using fund of the Embassy of Japan (Grass-root Grant Aid).

(5) Sustainability

Sustainability of the Project in terms of policy is high. In order to ensure organizational, financial and technical sustainability of the Project, adequate measures are needed to be taken.

1) Policy aspect

Productivity improvement and production increase in agricultural sector are priority objectives of the policies of the Government of Mozambique and importance of irrigated agriculture is increasing. Therefore, policy sustainability of the Project is secured.

2) Organizational aspect

It is possible for DPA and SDAE to disseminate the developed techniques by the Project to farmers in other irrigation schemes and also extension officers of other districts in Zambezia province by arranging suitable dissemination activities such as trainings and workshops. For effective dissemination of the outcomes of the Project, good linkage between DPA and SDAE, and use of practical knowledge and skills which acquired by extension officers of SDAE in Maganja da Costa are important.

3) Financial aspect

Mozambican side has made efforts to allocate government budget for construction of the project office and lodgings for the Vietnamese and Japanese experts. This effort is appreciated a lot and it is expected the Government of Mozambique allocate financial resources for disseminating the outcomes of the Project such as the developed irrigated rice cultivation techniques and rice seeds production techniques to farmers in other irrigation schemes and also extension officers of other districts in Zambezia province.

4) Technical aspect

Practical knowledge and skills of the extension offices who involved in the project activities are very useful for disseminating the improved techniques not only in the Intabo irrigation scheme but also in the Munda Munda irrigation scheme. If land property system for extension officers is continued, their skills and ability regarding improved techniques will be further raised and they will have more confidence in applying the improved techniques and also they can transfer the techniques to other extension officers and farmers with confidence.

Nearly 300 farmers have practiced rice cultivation utilizing several improved techniques. Growth of rice was very well comparing normal years, therefore, it is expected that most of farmers use improved techniques continuously. There are 293 farmers who are participating demonstration activities within the Project. They were recommended by WUA (Water User Association) and have the right to get credit for seeds and land consolidation.

In the course of development of rice seed production techniques, several farmers in the Intabo irrigation scheme have involved in the seed production activities and some of them have acquired good knowledge and skills on seed production. It seems possible to continue quality rice seeds production in the Intabo

irrigation scheme by utilizing capable farmers.

Capacity of board members of WUA has been enhanced in terms of rehabilitation and O&M of irrigation facilities through rehabilitation of flood protection dikes with farmer participation, and farming support activities such as farm land plowing service using tractor and seed sales. It is necessary for WUA to acquire capacity on irrigation planning and irrigation water management when irrigation facilities are well improved.

3. Factors that promoted realization of effects

(1) Factors concerning to planning

None

(2) Factors concerning to the implementation process

Technical instruction methods used by the Vietnamese experts are very practical and Vietnamese experts have worked as team organized well. These characteristics were effective for improving farmer's and extension officer's practical skills. Information sharing on the progress of project activities among the project team members through holding various kinds of meetings and regular communications was effective for carrying out planned activities and producing good outcomes.

4. Factors that impeded realization of effects

(1) Factors concerning to planning

Risk of flood damages was not prospected before start of the Project and study and diagnosis on existing irrigation facilities about its functionality were not done sufficiently.

(2) Factors concerning to the implementation process

Due to flood damages on infrastructures such as irrigation facilities and river protection dikes and also on rice cultivation, it was necessary to rehabilitate damaged major infrastructures urgently and it was difficult to rehabilitate sufficiently irrigation facilities in the project site. Flood damages also brought delay of implementation of planned activities.

5. Conclusion

As a result of experiments, it is proved that yield up to 8 tons/ha or 9 tons/ha can be obtained when rice cultivation is carried out adopting the developed technical package on irrigated rice cultivation using short-term high yield variety (ITA312). When farmers carried out rice cultivation adopting several techniques of the packages and using local long-term variety (Chupa and Mocuba), 4.10 tons/ha of yield were obtained. This yield is around 50 % higher than average yield of local rice variety when traditional cultivation techniques are used. As results of variety experiment, the rice varieties recommended by the project team are 3 high yielding short-term varieties (ITA312, Limpopo, Macassane) and 2 local long-term varieties (Chupa and Mocuba: even though, yield potential of these 2 varieties are less than 3 other varieties). Seeds of 4 kinds of varieties (Chupa, Mocuba, Limpopo, and Macassane), which have higher purity as seed, have been produced 15.52 tons in total. It is expected that these quality seeds are utilized effectively.

As results of negative effects of floods such as destruction of flood protection banks, damages to main feeder canal, damages caused by water logging at rice fields, and damages to the access road to the Intabo irrigation scheme, long-term and significant amount of expenses had to be spent for rehabilitations of damaged main infrastructures. Although, a part of irrigation facilities in Intabo irrigation scheme have been improved under the Project, there remains necessity of further improvement of irrigation facilities for enabling proper distribution of irrigation water in wider area in the scheme. It is expected that certain sustainability on O&M of rehabilitated infrastructure is ensured and farmers' awareness of ownership on irrigation facilities is raised as effects of farmer participatory rehabilitation of infrastructures.

Most of important objectives of the Project is expected to be attained by the end of the project term, therefore, it is concluded that the Project will be terminated in January 2015 as planned.

6. Recommendations

6-1. Recommended Actions to be taken by the Project Team in the Remaining Cooperation Period

(1) Effective use of 3 kinds of manuals which are finalized

6-2. Recommended Actions to be taken by the Mozambican Authorities Concerned

- (1) Continuation of dissemination of improved techniques in the Intabo irrigation scheme and the Munda Munda irrigation scheme
- (2) Utilization of the Intabo irrigation scheme as a model site of the improved rice cultivation techniques
- (3) Further improvement of irrigation and drainage facilities in Intabo irrigation scheme and further capacity building of WUA in terms of irrigation planning and irrigation water management
- (4) Improvement of post-harvest, access to market and road access
- (5) Seeds production (utilization of farmers' experiences and preparation of foundation seeds production)

7. Lessons Learned

(1) Traditional rice cultivation method used in the project area is low cost method without using fertilizer and using local varieties which have more tolerant to flood and drought. This kind of rice cultivation method can expect lower yield. On the other hand, this cultivation method is reasonable considering higher risks of damages by flood and drought which happen every few years. When the improved irrigated rice cultivation techniques are applied, cultivation cost (expenses for fertilizer, land leveling and transplanting, etc.) is increased. It is risky for farmers in utilizing the improved techniques if rice fields affect frequently by natural disasters. It was necessary to be conducted more detailed surveys on the past records of flood and drought damages before the start of the Project. It was also necessary to study about what kinds of rehabilitation/improvement works of irrigation facilities are necessary for enabling stable irrigation water supply in the project target area.

(2) Rice cultivation area within flood plains is larger than rice cultivation area in irrigation schemes. It is said that proper irrigation is not carried out in most of irrigation schemes due to obsolete or damaged irrigation facilities, lack of proper O&M, and higher risks of flood and drought. Considering this situation, necessity of large expenses and long-term for rehabilitating existing irrigation schemes, it is worth to promote developed rice cultivation techniques that have characteristics of low cost and better yield (comparing traditional cultivation method) and disseminate such techniques widely.

(3) In implementing a triangular technical cooperation, there is a need for all parties to clarify what techniques of the Third Country should be utilized as technical guidances, based on the country's social and historical background. It is also considered that sharing the applicable techniques among with stakeholders as many as possible may bring effective achievements in a triangular technical cooperation project.

8. South-South Cooperation

Based on the agreement among Japan, Mozambique and Vietnam, JICA experts had responsibility of the project management, and Vietnamese experts such as rice cultivation and operation and maintenance of irrigation facilities were in charge of technical guidance in the Project. Despite of the severe environment, the Vietnamese experts proceeded their activities vigorously; as a result, they obtained high evaluation from the counterparts and the farmers.

On the other hand, JICA had to bear much burden regarding procedure to receive the Vietnamese experts to the Project.