

4. ミニッツ及び合同評価報告書（英文、ポルトガル語）

MINUTES OF MEETING  
BETWEEN  
THE JAPANESE EVALUATION TEAM AND THE AUTHORITIES CONCERNED OF  
THE GOVERNMENT OF THE REPUBLIC OF MOZAMBIQUE  
ON THE JAPANESE TECHNICAL COOPERATION  
FOR THE INTEGRATED AGRICULTURAL DEVELOPMENT FOR SMALL SCALE  
FARMERS IN CHOKWE IRRIGATION SCHEME  
IN THE REPUBLIC OF MOZAMBIQUE

The Japanese Terminal Evaluation Team (hereinafter referred to as "the Japanese Team"), organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA") and headed by Mr. Yoshitaka SUMI, visited the Republic of Mozambique (hereinafter referred to as "Mozambique") from November 30 to December 11, 2009, for the purpose of conducting the Terminal Evaluation of the Integrated Agricultural Development for Small Scale Farmers in Chokwe Irrigation Scheme (hereinafter referred to as "the Project") as well as discussing the major issues related to the implementation of the Project.

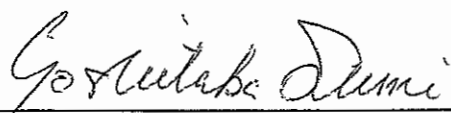
The Mozambican Evaluation Team (hereinafter referred to as "the Mozambican Team") was organized by the Ministry of Agriculture (hereinafter referred to as "MINAG") of the Government of Mozambique and headed by Mr. Inácio NHANCALE, Head of Technical Department, National Directorate for Agricultural Extension, MINAG.

During the Japanese Team's stay in Mozambique, the Japanese Team and the Mozambican Evaluation Team formulated the Joint Evaluation Team (hereinafter referred to as "the Joint Evaluation Team") to conduct the Joint Terminal Evaluation of the Project by carrying out field surveys, exchanging views and holding a series of discussions with staff and personnel of the Project in respect of desirable measures to be taken by both Governments for successful implementation of the Project.

As a result of the evaluation, the Japanese Team and the National Directorate for Agricultural Extension, Ministry of Agriculture of Mozambique agreed to report to their respective Governments the matters referred to in the document attached hereto and the Joint Evaluation Report (hereinafter referred to as the "Report") attached hereto.

Done in duplicate in the English and Portuguese languages, each text is equally authentic. In case of any divergence of interpretation, the English text shall prevail.

Maputo, December 10, 2009



Mr. Yoshitaka SUMI  
Team Leader,  
Japanese Terminal Evaluation Team,  
Japan International Cooperation Agency,  
Japan



Mr. José António GASPAR  
National Director for Agricultural Extension,  
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## Major Points Discussed

1. The Joint Evaluation Team presented the Report to the Joint Coordinating Committee (hereinafter referred to as the "JCC"), and the JCC approved the Report.
2. The JCC appreciated the remarkable achievements and efforts made by the Project stakeholders. The JCC also recognized that the project purpose would be achieved within the cooperation period. The JCC has agreed to terminate the Project in the end of March 2010 as planned.
3. The JCC was informed that MINAG had a plan to recruit more extension officers in the country to increase from current 693 to 1152 by 2011. The JCC welcomed its effort and expected that SDAE in collaboration with HICEP and EAC would play significant roles in disseminating the outcomes of the Project (particularly through distribution of manuals and leaflets developed by the Project as well as through implementation of demonstration farms) and in facilitating to strengthen organization and leadership of farmers' associations, as strongly recommended in the Report.
4. The Japanese side reiterated its importance of maximizing the effects of the rehabilitation of the main channel for which the Government of Japan had extended the grant assistance in 2002 to 2003. The JCC was informed that the cultivated area had been increasing over the years since then and would be further increased through the rehabilitation of the secondary and thirtiary channels covering about 7,000 ha, which would be started next year with Islamic Development Fund). The JCC recognized that the Chokwe Irrigation Scheme put high priority on expanding the cultivated land with high yield.
5. The JCC took notes that a draft action plan of the three counterpart institutions would be presented and finalized at the next JCC to be held in January 2010.
6. The Mozambican side requested to Japanese side for further assistance to disseminate the achievements of the Project to other areas in Chokwe Irrigation Scheme. The Japanese side responded that they would consider it as the following phase of the Project for which a request had been submitted by the Government of Republic of Mozambique to the Government of Japan.

Appendix: Joint Terminal Evaluation Report

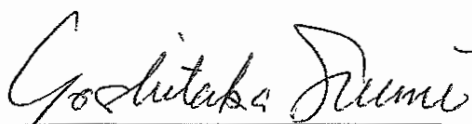


**JOINT TERMINAL EVALUATION REPORT**  
**ON**  
**THE INTEGRATED AGRICULTURAL DEVELOPMENT**  
**FOR SMALL SCALE FARMERS**  
**IN CHOKWE IRRIGATION SCHEME**  
**IN THE REPUBLIC OF MOZAMBIQUE**

Japan-Mozambique

Joint Evaluation Team

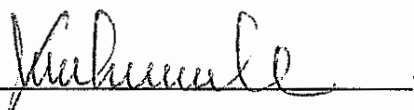
Maputo, December 10, 2009



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## 1. Objective and Method of the Evaluation

### 1-1 Objectives of the Terminal Evaluation

- (1) To conduct a joint study and meetings with the concerned authorities of Mozambican government in order 1) to gather necessary information to verify the outcome of the project inputs for the project period and 2) to assess the level of achievement, overall effect and strategies by the five evaluation criteria (efficiency, effectiveness, impact, relevance and sustainability).
- (2) To analyze lessons learnt from the evaluation processes in order to improve quality of new projects or other ongoing projects.

### 1-2 Method of the Final Evaluation

#### 1-2-1 Evaluation Procedure (Joint evaluation)

The Project was evaluated by the Mozambican and Japanese Evaluation Teams (hereinafter referred to as "the Joint Evaluation Team") in accordance with the R/D. The evaluation study included analysis of documents, field survey, and interview with stakeholders such as counterparts, JICA experts, staff of the Chokwe Agrarian Station (EAC), the District Services for Economic Activities in Chokwe (SDAE), the Chokwe Hydraulics Public Corporation (HICEP), and farmers in model areas.

#### 1-2-2 Evaluation Criteria (Five Evaluation Criteria)

The evaluation was conducted based on the following five Evaluation Criteria.

##### (1) Relevance

Relevance refers to the validity of the Project Purpose and the Overall Goal in connection with the development policy of the Government of Mozambique as well as the needs of beneficiaries.

##### (2) Effectiveness

Effectiveness refers to the extent to which the expected benefits of the Project have been achieved as planned. It also examines whether these benefits have been brought about as a result of the Project.

##### (3) Efficiency

Efficiency refers to the productivity of the implementation process. It examines

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whether the inputs of the Project have been efficiently converted into outputs.

(4) Impact

Impact refers to direct and indirect, positive and negative impacts caused by the implementation of the Project, including the extent to which the overall goal has been attained.

(5) Sustainability

Sustainability refers to the extent to which the Project can be further developed by the Government of Mozambique and beneficiaries, and the extent to which the benefits generated by the Project can be sustained under national policies, technology, systems and financial state.

1-3 Members of the Joint Evaluation Team

(1) Japanese Evaluation Team

Mr. Yoshitaka SUMI	Team Leader	Deputy Director General, Rural Development Department (RDD), Japan International Cooperation Agency (JICA)
Mr. Motonori TOMITAKA	Irrigated Rice Cultivation	JICA Senior Advisor/ Chief Advisor Technical, Cooperation for Supporting Service Delivery Systems of Irrigated Agriculture ("TANRICE") in Tanzania
Mr. Kazuyuki FUJIWARA	Planning & Management	Associate Expert, East & Southern Africa Team, RDD, JICA
Dr. Junichi WATANABE	Evaluation and Analysis/ Training	Senior Consultant /Researcher, International Development Center of Japan (IDCJ)

(2) Mozambican Evaluation Team

Mr. Inácio NHANCALE	Team Leader	Head of Technical Department, National Directorate for Agricultural Extension (DNEA), Ministry of Agriculture (MINAG)
Mr. Eugenio COME	Farmers Training	Agronomist, DNEA, MINAG

1-4 Schedule of the Joint Evaluation Team for Terminal Evaluation

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The schedule of the Team is attached as Annex 1.

1-5 The list of main persons interviewed

The list is attached as Annex 2.

## **2. Outline of the Project**

### **2-1 Background of the Project**

Mozambique is a country with 800,000 km<sup>2</sup> land area (180,000 km<sup>2</sup> farmland). Its population is 20.37 million (2007). Agriculture is the main industry, which contains 81% of labor force, 33% of its GDP. Potential area for rice production in the country is estimated to be 900,000 ha. From which only 200,000 ha (Action Plan for Food Production, 2007) are cultivated, and its production is 196,000 ton (2007) (average yield is 0.98 ton/ha). With the increase of demand for rice, rice the self-sufficient rate is low (38.3%), therefore, around 316,000 ton of rice is imported. Rice is the second staple food next to maize. From the food security standpoint, improvement of food self-sufficiency should be achieved immediately.

Chokwe Irrigation Scheme in Chokwe District, Gaza Province is the largest irrigation scheme in the nation. Its irrigation area is 23,000 ha and in former times, more than 100,000 ton of rice was produced. The scheme's function was stagnated and rice production in the scheme was dropped to one tenth of the past production because of the civil war in the 80's, change of the economic system after independence, and the flood of the Limpopo River in 2000.

Mozambique set up the irrigation scheme improvement program in 1992. Japan supported its through the grant aid form 2002 to 2003 by repairing main channels (primary channels of 14 km). During the years 1998 to 2004, secondary and tertiary channels were partially repaired and water user associations were strengthened by French Development Agency's (AFD) support. HICEP manages the Chokwe Irrigation Scheme in 1) management of primary channels to secure water supply and distribution, 2) collection and management of water fee, and 3) operation and maintenance of irrigation facilities. Water user associations have roles in managing and maintaining secondary and tertiary channels, but they lack skills to manage and maintain irrigation facilities appropriately. Therefore, irrigation facilities have been poorly managed.

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In Chokwe district, there are SDAE and EAC. (There is SDAE office in all districts of the country. Chokwe is one of the few districts with agricultural research station (EAC). Those offices are in charge of provision of agricultural technical services and development of agricultural technologies in order to provide agricultural extension services for farmers. But due to lack of number of staff members, their ability, and mutual collaboration of organizations concerned, farming support system such as technical guidance, microfinance, and introduction of rice mills, for small-scale farmers has not been worked well.

Around 90% of farmers in the Chokwe Irrigation Scheme are small-scale farmers. Due to lack of proper farming technology and difficulty on efficient use of water resources, agricultural inputs, and access to market, cultivated area in the scheme is only 6,000 ha. Due to low profitability on agriculture, collection rate of water fee is low, and this brought insufficient management of irrigation facilities by the water users' associations.

The Government of Mozambique requested a technical cooperation to the Government of Japan in order to improve livelihood of small-scale farmers in the Chokwe Irrigation Scheme.

Based on the results of the preliminary study, the Record of Discussions (R/D) on the Project was signed by both Japanese and Mozambican sides on December 4, 2006. The Project has been implemented since March 17, 2007 for the cooperation period of around 3 years (by the end of March 2010).

## 2-2 Summary of the Project

The framework of the Project is shown in the revised Project Design Matrix (PDM) version 3 which was modified the Joint Evaluation Team through Mid-Term Evaluation (See Annex 3).

### (1) Overall Goal

Small-scale farmers' income in Chokwe Irrigation Scheme is improved.

### (2) Project Purpose

Agricultural production by small-scale farmers in the target area in Chokwe Irrigation Scheme is increased.

### (3) Outputs

Output 1: Techniques for small-scale farmers in the target area are improved.

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Output 2: Management of irrigation facilities and water use in the target area is improved.

Output 3: Farming support activities provided by extension officers for small-scale farmers in the target area are strengthened.

Output 4: Collaboration among SDAE, EAC, and HICEP is strengthened.

### **3. Achievement of the Project**

#### 3-1 Inputs

##### 3-1-1 Inputs by Japanese side

###### (1) Dispatch of Japanese Experts

Following fields of Japanese experts have been dispatched, i.e. 1) Chief Advisor, Extension/ Training, 2) Agronomy, 3) Irrigation Water Management, 4) Baseline Survey, 5) Rice Mill Operation/ Marketing, and 6) Coordinator. See Annex 4 in detail.

###### (2) Provision of equipment

Rice mill, irrigation pump, thresher, winnower, bush cutter and office equipment etc. have been provided. Expenditure for such equipment is 232,178Mt (Metical), 2,447,397 JPY (Japanese Yen) and 128,082 US dollars. See Annex 5 in detail.

###### (3) Training in Japan

Six counterparts have participated in training in Japan. Titles of training courses are "Agricultural Development through Farmer Participation", "Extension for Managers" and "Study Visit". One counterpart has participated in "Rice Cultivation Techniques" in Egypt. See Annex 6 in detail.

###### (4) Local cost allocated by Japanese side

Local cost allocated by JICA for the implementation of the Project activities is 50,665,000 JPY (Japanese Yen) in total. See Annex 7 in detail.

#### 3-1-2 Inputs by Mozambican side

##### (1) Assignment of counterpart personnel

Currently, Project Director and Project Manager, and 6 counterparts from SDAE, EAC and HICEP, in total 7 personnel, are assigned to the Project. A counterpart as project manager, who was staff of EAC, transferred to MINAG.

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See Annex 8 in detail.

(2) Budget allocation by Mozambican side

MINAG bears the expenses for water and electricity etc. for the offices for Japanese experts. In addition, SDAE, EAC, and HICEP have allocated for the Project. See Annex 9 in detail.

3-2 Outputs

3-2-1 Output 1: Techniques for small-scale farmers in the target area is improved.

Development of appropriate rice cultivation techniques, preparation of manuals on rice cultivation, capacity development of extension officers, the model farmers, and other farmers are progressing mostly as planned. Further capacity development of extension officers and the model farmers is still important for the remaining period of the Project and extension to other areas in the future.

Indicator 1-1: Number of small scale farmers adopted appropriate agricultural techniques (33 farmers in D4 and 26 farmers in D7, in total 59 farmers)

Target of this indicator means all model farmers (33 farmers in D4 and 26 farmers in D7, in total 59 farmers) adopt appropriately recommended rice cultivation techniques such as nursery preparation, method of seeding, transplanting method, and fertilizing method, to rice cultivation undergoing at present. In addition, development of appropriate animal attraction for land leveling, puddling and leveling for weed control suggested by the Mid-Term Evaluation is also identified as rice cultivation technique.

According to the interview with the model farmers in August 2009, most useful and adopted rice cultivation techniques for increasing rice yield are improved number of plants/hill, improved fertilizer application method and amount in D4 as well as the improved number of plants/hill, improved fertilizer application method in D7 with timely land preparation for good timing of transplanting and sufficient irrigation water availability. The importance of the improved number of plants/hill in transplanting rice is also identified by EAC and SDAE. EAC and SDAE through MINAG are planning to extend those techniques to other communities in Chokwe District and other Districts and

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Provinces.

As mentioned in the Mid-Term Evaluation Report in January 2009, regarding to the size of paddy plot and utilization of animal traction for puddling, some technical adjustment is necessary. Farmers make small plots (for example 300m<sup>2</sup> per plot) divided by ridge and transplanting activities are carried out by contracted labors traditionally. Payment is made per plot. In order to apply puddling using animal traction, bigger size of plot is appropriate from the view point of working efficiency. Therefore, farmers are facing difficulty with bigger size of plot and payment to the contracted farmers. Filled level water management is crucial for rice cultivation since the paddy plots are not flat. It seems that some technical adjustment is necessary in regard to the size of plot and method of ridge making considering opinions of model farmers.

Regarding to weed control, it has been observed that there are a lot of weed in paddy plots of not only paddy fields of small-scale farmers but also large-scale farmers including commercial farmers. Growth of weed is very fast and vigorous than growth of rice. It seems that quantity of weed influences rice yield greatly. Among variety of weed control methods, weed can be controlled appropriately to some degree by practicing appropriate land preparation, puddling/land leveling, and keeping appropriate water depth in paddy plots. It is known that more instruction to the model farmers at their paddy fields is necessary.

In response to these requirements, the development of appropriate animal attraction was experimentally conducted in August 2009. The appropriate size of paddy plot prepared by the animal attraction has kept enough water to suppress weeds. It is expected that the development of animal attraction will be extended to model farmers on farms through extension officers.

According to the results of experiments conducted in 2008 on the frequency and amount of fertilizer application, 200kg/ha of urea in three times of topdressing led to the highest yield. With consideration of the budget constraint among small-scale farmers and other risk factors such as the market prices of fertilizer and rice, the Project suggests the application of 100kg/ha of urea in three times of topdressing (50% in the first topdressing and 25% each in the second and third times). The experiences in Chokwe show that P and K are not limiting factors.

The numbers of farmers in the model farms in previous rice cropping season 2007/08 is 15 in D4 and 23 in D7. There are 13 farmers who obtain

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yield more than 4.50 tons/ha, 6 in D4 and 7 in D7. One of the reasons why other farmers could not get higher rice yield was slow growth due to delayed timing of transplanting.

Moreover, the average yield of those farmers in the model farms increased from 4,798kg/ha at D4 and 4,455kg/ha at D7 in 2007/2008 to 5,131kg/ha at D4 and 5,325kg/ha at D7 in 2008/2009. It can thus be said that the model farmers have mostly adopted the appropriate rice cultivation techniques.

Indicator 1-2: Number of extension officers adopted agricultural techniques for small scale farmers (8 officers)

All the nine extension officers in SDAE (one supervisor and eight field extension officers) have participated in the training courses on the basic rice cultivation technique.

More training for the extension officers have been conducted by the Project as the result of the Mid-Term Evaluation suggestion. Thus, it seems that all the nine extension officers in charge of model sites in D4 and D7 have acquired knowledge of both theoretical and practical aspects on basic rice cultivation techniques proposed by the Project and other six extension officers in charge out of D4 and D7 have obtained knowledge mainly of theoretical aspects.

Three extension officers including the supervisor who are in charge of D4 and D7 have sometimes practiced technical instruction to the model farmers at fields. The other six extension officers are in charge of other areas in Chokwe district, therefore, they did not have opportunity to practice knowledge and skills learned from the training due to limitation of input for establishment of demonstration farms. It seems difficult to acquire practical capacity on instruction to farmers sufficiently by only learning theoretical aspect at training.

For the improvement of the capacity, annual extension planning have already formulated. 9 demonstration farms have been started with inputs such as seed, fertilizer, and tractor fee supported by the Project. The demonstration farms have been established by capable farms under supervision of each extension officer. It is expected that practical capacity on instruction to farmers have been actually developed by those experience on demonstration farm.

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Indicator 1-3: Number of agricultural techniques developed and improved (11 kinds)

Following 11 kinds of techniques are target of development and improvement.

- 1) Preparation of nursery (protected semi-irrigated rice nursery, area for nursery, nursery period)
- 2) Choosing variety and seed (Limpopo variety has good quality, use of certified seed)
- 3) Seed preparation (appropriate amount of seed (60 kg/ha), rough selection of seed, selection with water, soaking, and germination)
- 4) Seeding (Seeding density, soil covering and water management)
- 5) Preparation of rice field (farm layout and plough (animal traction) using 2 cows)
- 6) Transplanting method (seedling density and number of seedlings at one plot)
- 7) Fertilizing method (Application of urea in three times, 100 kg/ha of urea in total)
- 8) Rice field management (water management, weed control, and pest control)
- 9) Harvesting (appropriate timing for harvest)
- 10) Post-harvest (moisture content of rice)
- 11) Seed selection by farmers for their own use

(Remarks: underlined issues are techniques under development or improvement)

Techniques of No.5 is under development or improvement. Other 10 kinds of techniques are already developed or improved. Techniques of No.5 will be developed by the end of the Project. Therefore, this indicator will be achieved by the end of the Project. These techniques are described in manuals mostly improved for extension officers and farmers.

Seed selection method conducted by farmers for their own use is explained in the seed production manual. It is good step to produce leaflet for the utilization of the training for the model farmers or for distribution to farmers in project target area and further areas. Especially, it is desirable that model farmers practice seed selection at their fields during this rice harvest season

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(from March).

Regarding to technique of puddle using animal traction, adjustment of this technique considering farmers opinions is necessary as mentioned already (indicator 1-1).

Indicator 1-4: Number of seed production techniques improved (2 kinds)

Following 2 kinds of seed production techniques were improved at EAC (Chokwe Agrarian Station)

- 1) Improvement of working accuracy (Staff of EAC can carry out seed production works in accordance with the procedures described in the manual on seed production techniques, rate of mix of seeds of other variety is reduced.)
- 2) Improvement of seed quality through improvement of facilities and equipment for seed processing (improvement of drying yard, introduction of threshing machine, sorting machine by wind, and awn threshing machine)

Indicator 1-5: Number of various kinds of manuals prepared (5 kinds)

5 kinds of manual as draft have been formulated in Portuguese and English. Drafts of the seed production manual, the rice cultivation manual, the agricultural extension manual, the manual for animal traction have been prepared. Final version of those manuals will be made by the end of December 2009. The upland crop cultivation manual (maize, beans, cabbage and onion etc.) will be made also by the end of December 2009.

3-2-2 Output 2: Management of irrigation facilities and water use in the target area is improved.

Capacity development on water management and irrigation facility maintenance, and preparation of manuals have been almost implemented as planned. In regard to collection rate of water fee, some measures for improvement are necessary to be taken especially to the model farmers in D4 and D7.

Indicator 2-1: Number of water users association members acquired

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management methods of irrigation facilities (38 farmers in D4 and 41 farmers in D7)

Member of WUAs of D4 and D7 are 175 and 176 farmers respectively. Main target of the training courses on the irrigation facility management and the field level water management are leaders of water users' groups (who are in charge of water management of tertiary channels) in D4 and D7, and the model farmers of the Project.

The numbers of participants to trainings have not reached the target. More participation is necessary. Especially, field level water management is important technique in the rice cultivation techniques. Thus, it is planned to hold a training course in February 2009. Most of model farmers, will participate in the training on water management. It seems that more instructions to model farmers on field level water management at model fields are necessary in order that they acquire not only theoretical knowledge but also practical skills on water management.

Numbers of participants to the training courses and practical trainings on the job trainings in 2009 are as follows.

Table 2: Number of participant to the trainings in 2009

Date	Place and Training type	Purpose and Activities	Participation Numbers
27 May	D4 model farmers Maintenance method for paddy field drainage	Maintenance of paddy field drainage channel in D4 model farm (from 1-17 July 2009)	Guidance to 3 HICEP C/P 8 Training farmers Total number numbers: 102
12 June	D4 model farmers Guidance for tertiary irrigation channel intake gate operation	The 2 places (R11 and R13) of intake gate maintenance works (from 3-15 July 2009)	Guidance to 2 HICEP C/P 9 Training farmers Total number numbers: 55
19 June	D7 model farmers Guidance for tertiary irrigation channel intake gate operation	1 day	Guidance to 1 HICEP C/P 7 Training farmers
28 June	D4 model farmers Rotational irrigation method training	The rotational irrigation order & conveyance 1 day	Guidance to 1 HICEP C/P 27 Training farmers
29 June	D7 model farmers Rotational irrigation method training	The rotational irrigation order & conveyance 1 day	Guidance to 1 HICEP C/P 32 Training farmers
26 Oct.	D4 model farmers Tertiary irrigation channel piling up maintenance works for bricks and reinforced	Maintenance of the tertiary channel in D4 (from 27 Oct. -30 Nov. 2009)	Guidance to 24 HICEP C/P 136 Training farmers

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Resource: JICA project report

Indicator 2-2: Collection rate of water fee from the model farmers (80%)

The average collection rate of water fee in the Chokwe Irrigation Scheme from 2003/04 to 2006/07 (before the Project) was 56.6%. It is assumed that if rice yield is increase with proper provision of water supported by project implementation, water fee collection rate will be increased. Therefore, 80% is set as target.

Water fee collection rates on average from the model farmers at 2002/2003-2005/06 cropping season were 79.5% at the model area of D4 and 68.2% at the model area of D7, according to HICEP report. The irrigation facilities in D4 and D7 have been improved by the Project. As a result, the collection rate has been improved such as 81.8% (27 farmers of 33) at D4 and 92.3% (24 farmers of 26

Indicator 2-3: Number of various kinds of manuals prepared (3 kinds)

Drafts of the water management manual and the irrigation facility maintenance manual have been prepared and final version (practical manual) in Portuguese and English will be produced by the end of March 2010. In addition, draft of construction management manual is prepared and final version (practical manual) in Portuguese and English will be produced by the end of March 2010. According to the counterparts of HICEP, construction management manual will be referred at the preparation of tender document.

3-2-3 Output 3: Farming supporting activities provided by extension officers for small scale farmers in the target area are strengthened.

Farming support activities are progressing with good effects for small-scale farmers. Further strengthening in terms of preparation of a vision, marketing, management, regulation etc. are important.

Indicator 3-1: Number of trainees trained on rice mill operation (10 persons)

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A farming support group was organized in each WUA of D4 and D7. A farming support group is composed of 5 members. Training for the 10 members of farming support groups has been carried out twice. Total duration of the training is 6 days. Main contents of the trainings were structure of rice mill machine, operation and maintenance of machine, financial management, and profitability of rice mill operation.

Through interview to the members of farming support groups, following information was obtained.

- They can understand the contents of training such as operation and maintenance of rice mill machine easily because there are members who have experiences on usage of machinery.
- They can understand about accounting easily. However, they want to strengthen knowledge about accounting further.
- Condition of rice mill machines is good.
- Both groups carry out financial management using bank account. A part of profit from the rice mill operation is utilized for farming loan to model farmers. However, regulation on usage of profit of rice mill operation is necessary to be set up properly for ensuring sustainability.

In respond to the requirement of the above practical accounting, farmer to farmer training about accounting was carried out in 24 June 2009. An account in D7 implemented a day training of accounting for D4. Moreover, the above regulation for farming supporting group, particularly on usage of profit of rice mill operation, was formulated with SDAE and HICEP in September 2009. After the regulation was authorized, name of farming support group was changed to farming group.

Indicator 3-2: Operation rate of rice mill (operated throughout the year and more than 90,000 kg of rice is milled annually)

The farming support groups of D4 and D7 started rice mill operation from June 2008. Average monthly quantities of rice mill during 5 months from the start of operation were 7,880kg and 5,864kg respectively. Assuming monthly operation are 25 days, average daily quantities of rice mill are 315kg (D4) and 235kg (D7) respectively. In the case of D4, daily quantity is more than 300kg

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(90 ton annually) and this amount profitable level. In the cases of D7, quantity is not sufficient yet.

According to JICA project report, cost of rice mill (kg) at D4 improved from 2.64 in 2008 to 1.64 in 2009. The cost in D7 also improved 3.69 in 2008 to 2.3 in 2009. There are two reasons to explain the different cost between D4 and D7. One is warehouse rent (1,500 monthly) in D7. The other is different volume of rice mill monthly, namely 6,926kg in D4 and 5,113kg in D7. The amount of rice milling in D7 is not still at profitable level in 2009. It can be suggested that reduction of cost such as personal cost will be reduced or the volume of rice mill will be increased, particularly from December to March as the period just before the new-crop rice replaces the old. However, it is not easily to improve the condition, in a short time because there is a competitor in D7 who established a rice mill machine at next to D7. ..

Indicator 3-3: Contents and size of joint sale of product

A part of milled rice (polished rice) is sold to Maputo as trial by the WUA of D4 and D7. Following table shows quantity of rice sold and selling price at Maputo.

Table 3: Trial sale of milled rice for Maputo in 2008/9

WUA	Quantity (polished rice)	Selling price	Purchasers
D4	2.5 ton	30 Mt	Maputo
D7	3.0 ton	30 Mt	Maputo

The selling price of polished rice for Maputo is 2.76 times (30Mt/kg) than the price of unhulled rice. The price of Australia's rice for Sushi is 100Mt/kg at Maputo, and then Limpopo rice has strong competitive strength. It is expected that number of farming group in D4 and D7 with SDAE make an effort to carry out marketing in Maputo.

3-2-4 Output 4: Collaboration among SDAE, EAC, and HICEP is strengthened.

Collaboration among three institutions is under strengthening through joint planning and implementation of activities in the Chokwe Irrigation Scheme.

Indicator 4-1: Achievement of collaboration activities of SDAE, EAC and HICEP

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(number of periodic meetings held, number of officers concerning the Project, number of workshops and participants)

Three partner institutions meeting (SDAE, EAC and HICEP) has been held 8 times and Workshop involved leaders of model farmers has been held 7 times as of November 2009 (see annex 10 in detail). Around 50 officials of three partner institutions including extension officers and water management staff have engaged in the project activities. By collaborating three partner institutions, a rice production promotion plan in the Chokwe Irrigation Scheme was prepared. Through these activities, collaboration among three partner institutions under MINAG has been strengthened.

Indicator 4-2: Action Plan prepared

SDAE, EAC and HICEP prepared draft of action plan jointly through three times of meetings from November to December 2009. The draft will be authorized at JCC meeting in March 2010. It is observed that the necessary in the three counterparts to follow up the result of the Project, which has been formulated by preparation of the draft. It is expected that financial management for implementation of the action plan will be implemented.

Indicator 4-3: Implementation status of action plan

As mentioned above.

### 3-2-5 Others (trainings implemented)

Various trainings for extension officers, model farmers, members of WUA, members of farming support groups and member of animal traction promotion etc. groups have been carried out under the Project. Kinds of trainings, times of trainings held, participants and contents of trainings are as follows. (See Annex 11 in detail).

Total participant for all the trainings as of November 2009 are 985, and the participant for technical training are 523.

Followings are opinions of participants to trainings and their situation on practice.

In general, most of farmers in Chokwe Irrigation area are engaged in

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rice production either as labor or subsistent farmer using traditional farming system. This project has introduced new rice cultivation techniques on mainly germination of seed, nursery preparation, number of seedling, and fertilizer application method, etc.

Important opinions of participants to training were described in Mid-Term Evaluation report. In general, the content of the training, and way of teaching were very good for extension officers, model farmers, farming support group, and animal traction promotion group, although some of participants did not understand difficult subject.

### 3-3 Prospect to achieve the Project Purpose

(Project Purpose: Agricultural production by small-scale farmers in the target area in Chokwe Irrigation Scheme is increased.)

Indicator: Yield of rice at the model farmers (59 farmers) in the project target area is increased from current yield level (level of 3 t/ha) to 5.0 t/ha.

Average yield of rice in D4 and D7 areas are as follows.

Table 4: Data on rice yield

Area	Results of the baseline survey (t/ha)	Average yield of some model farmers (yield data was obtained), 2007/08 crop season (t/ha)	Average yield of some model farmers (yield data was obtained), 2008/09 crop season (t/ha)
D4	3.83	4.71	5.1
D7	3.24	4.32	5.3

Average yields of rice of the model farmers (not all farmers) in 2007/08 cropping season in D4 and D7 are around 4.71 t/ha and around 4.32 t/ha respectively. Average yield of rice of 11 small-scale farmers in D4, D5, D6 and D7 was 3.38 t/ha according to the results of sampling survey carried out in April 2007 by the Project. Although average yield of model farmers at 2007/08 cropping season was not yet reached 5.0 t/ha, average yield was increased around 1 t/ha. Average yield of rice produced by the model farmers in 2008/09 cropping season are 5.1t/ha in D4 and 5.3t/ha in D7. Thus, these yields have reached the 5.t/ha as target yield.

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#### 4. Results of the Evaluation with Five Criteria

##### 4-1 Relevance

Relevance of the Project is high.

Household survey was carried out as a baseline survey under the Project for 202 small-scale farmers in D4, D5, D6, D7, and D12 areas in the Chokwe Irrigation Scheme. According to the results of the baseline survey, share of the agricultural income is around 20% only and main reasons of this low percentage of agricultural income in the total income are inappropriate crop production techniques, lack of agricultural machinery, lack of irrigation water, lack of finance for farming, weak marketing, etc. Average agricultural area (registered area) of small-scale farmers is 1 ha. However, due to the constraints mentioned above, it is said that actual crop cultivation area is around half hectare. Accordingly, necessity to take appropriate measures to tackle above mentioned problems and to promote increase of agricultural income through improvement of agricultural productivity is high.

Main objective of the Government Program for 2005-2009 is reduction of absolute poverty through promotion of sustained socio-economical development. In this program, 7 key sectors are pointed out and one of them is agriculture. The objective of the Action Plan for the Reduction of Absolute Poverty 2006-2009 (PARPA II) is to reduce poverty rate from 54% in 2003 to 45% in 2009. In agricultural sector, production increase, improvement of productivity, food security, income increase, strengthening of competitiveness of farmers are important issues. The objectives of the National Program for Agrarian Development II are poverty reduction and food security and main principle of this program is to take right of small-scale farmers and their needs into well consideration. The objective of the Action Plan for Food Production 2008-2011, which was prepared last year, is to achieve sustained increase of agricultural production and food self-sufficiency in national level. Main target of this program is to achieve self-sufficiency of main food crops in the next 3 years and to reduce dependence on food import. Rice is one of the important crops. This Project is well relevant to Government Plans of Mozambique.

In Japanese ODA (Official Development Assistance) policy, assistance to the agricultural sector for food production and rural development is considered important for poverty reduction and sustainable development. One

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of the important sectors of ODA policy to Mozambique is "rural development and economic development". At TICAD IV (Tokyo International Conference on African Development IV), it is decided to provide assistance with priority in order to double rice production in Sub-Saharan Africa through CARD (Coalition for African Rice Development) by promoting self-help of countries of Sub-Saharan Africa. Republic of Mozambique was selected as first targeted country at the CARD Nairobi conference which was held in October 2008. Therefore, this project is well conformity with priority subjects of Government of Japan.

The baseline survey was carried out in order to select target groups and target areas of the Project. Criteria for the selection of survey areas were 1) water users association is in existence, 2) ratio of small-scale farmers is high, 3) rehabilitation of irrigation facilities has been mostly completed, 4) it can be expected good effect by demonstration activities. And then, water users association of D4, D5, D6, D7, and D12 were selected. And then, a baseline survey were carried out in these selected areas, and by analyzing collected data and considering effect on publicity, stable supply of irrigation water, road access in rainy season, and situation of rehabilitation of irrigation and drainage facilities, etc., D4 and D7 areas were selected as project target area. It seems that selection of target areas is appropriate.

#### 4-2 Effectiveness

Effectiveness of the Project has reached at a satisfactory level.

As mentioned earlier, the average yield of rice of the model farmers in 2008/09 are 5.1 t/ha in D4 and 5.3 t/ha in D7, because the model farmers have adapted new techniques developed by the Project with available water properly managed by them.

#### 4-3 Efficiency

Efficiency of the Project is at a moderately satisfactory level.

As mentioned in the Mid-Term evaluation, Inputs of Mozambican and Japanese sides were appropriate in general in terms of quantity, quality and timing, and have been utilized well for the Project activities. That is confirmed in the Terminal Evaluation. However, Mozambican counterparts have pointed out again that duration of stay of Japanese experts is short and it is necessary to

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stay at least whole period of a rice cropping season particularly for the first year of the Project. As for counterparts, it is important that the Government of Mozambique assign full-time counterparts to work directly with Japanese experts in order to ensure technical transfer.

#### 4-4 Impacts

It is still early to judge whether the Overall Goal will be achieved or not. However, some other side effects or unexpected effects have been observed.

##### 4-4-1 Prospect of achieving the Overall Goal

Overall Goal: Small-scale farmers' income in Chokwe Irrigation Scheme is improved.

Indicator: Farming income by rice production of small scale farmers in D4, D7, and neighboring areas of rice production is increased 30%.

The Baseline surveys were carried out under the Project in D4, D5, D6, D7 and D12 areas in the Chokwe Irrigation Scheme in 2007 and 2009. The surveys show that average rice production has increased from 1,285kg/a household to 1670.5 (1.3 times) in the above areas. Accordingly average income produced by rice selling has increased from 5,835 Mt to 11,086.5 Mt (1.9 times). It seems that this amount of income increase is significant for small-scale farmers.

In order to achieve this kind of income increase, following conditions should be fulfilled.

- 1) Small-scale farmers can get finance for farming such as fertilizer and land preparation, etc.
- 2) Irrigation water management and management of irrigation facilities are carried out appropriately by WUA.
- 3) Small-scale farmers adopt cultivation techniques which this project recommends.
- 4) Secondary and tertiary irrigation channels and drainage channels are rehabilitated and maintained.
- 5) Agricultural extension services are provided appropriately to small-scale farmers.
- 6) The price of rice as part of external condition is not deteriorated.

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- 7) Leadership of farmers' association and WUAs need be improved.
- 8) Main irrigation channel and drainage need to be maintained.
- 9) Appropriate mechanization is needed, especially for puddling and leveling of paddy plots.

Where these conditions are satisfied, it is expected that small scale farmers in D4, D7, and neighboring areas of rice production can achieve significant increase of income by rice production.

#### 4-4-2 Side effects or unexpected effects

Following positive side effects or unexpected effects of the Project have been observed.

- (1) Dissemination of the rice cultivation techniques of the Project to farmers of neighboring areas.

Several farmers in D8 and D9 areas were interested in the rice cultivation techniques of the Project and they learned from the model farmers in D7. They are practicing rice cultivation using learned knowledge.

- (2) Reduction of women's work load and time on rice milling

Traditionally women carry out rice milling manually for their home consumption. It is heavy and time consuming work for women. By introducing the rice milling machines, not only farmers of the WUAs of D4 and D7, other farmers are utilizing the rice milling service which is carrying out by the farming support groups. Farmers bring their rice for milling and after then they sell a part of milled rice and also they consume a part of its. It seems that women's working load and time for manual rice milling is reduced by using the rice milling service.

- (3) Increase of employment opportunity for the people in this area as labor.

Because of introduction of new rice cultivation techniques to the model farmers and increase of cultivated area, more labors become necessary in order to carry out transplanting, weed control, harvest and post-harvest etc. appropriately.

- (4) Increase of areas cultivating rice in the Scheme

According to the HICEP presentation on 2<sup>nd</sup> December 2009, rice

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cultivation area in Chokwe Irrigation Scheme has increased from 1,998 ha in 2004/05, 2,713ha in 2006/07, 2,981ha in 2007/08, and 5,834ha in 2008/09. 7,000ha in 2009/10 is planned as target area.

(5) Rice mill income contributed for extending credit to neighboring farmers, credit for land preparation and purchase of fertilizer to initial farmers

Farming groups in D4 and D7 have utilized profit produced by rice mill income for agricultural credit mainly for land preparation and purchase of fertilizer that is refunded by unhulled rice. The rate of the repayment is 84.5% in D4 and 651% in D7. There is a room to improve the rate in D7 for sustainable operation

(6) Crop rotation also contributed to higher income

It is necessary to introduce raising two crops a year or double-cropping at agricultural plots for generating more annual income. The raising crops also alleviates problem produced by repeat cultivation.

#### 4-5 Sustainability

Sustainability on policy aspect will be assured. In order to assure sustainability of institutional & organizational, financial and technical aspect, necessary measures should be taken.

##### 4-5-1 Policy aspect

Chokwe District is one of the target districts of the Action Plan for Food Production 2008-2011 and focused crops for Chokwe District are rice, maize and vegetable. Chokwe is one of the largest rice production areas and increase of rice production is important issue of the Government of Mozambique. Activities for increasing rice production are regarded as important. Therefore, policy sustainability will be assured.

##### 4-5-2 Institutional and Organizational aspect

Number of staff of SDAE, EAC and HICEP is not so sufficient. In the case of extension officers in Chokwe District (SDAE in Chokwe), there are 8 extension officers and this number is bigger than other district in general. It is considered that minimum requirement to establish extension team is covered and increase of extension officers is difficult. However, the Government of

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Mozambique makes efforts to increase the number of extension officers in the country through PRONEA (National Agricultural Extension Program). Coordination and collaboration among three institutions (SDAE, EAC and HICEP) are being promoted under the Project and collaboration has been improved. In order to extend or disseminate rice cultivation techniques and related techniques which are introducing by the Project to other areas, it seems that preparation of an action plan for dissemination is necessary. Not only activities of the plan but also roles of each three institutions should be included in the action plan. MINAG has a plan to recruit more extension officers in the country to increase from current 693 to 1152 by 2011.

#### 4-5-3 Financial aspect

MINAG carries out various activities based on the annual plan and budget. There is budgetary constraint for implementing new project by using proper governmental budget in general. In order to disseminate outcomes of the Project to neighboring areas in the Chokwe Irrigation Scheme, utilization of budget of Local Initiative Investment Fund or budget from donor institutions will be necessary.

There is a plan for rehabilitation of channels in the Scheme aiming at expansion of rice cultivation by internal and external investments such as the Islam Development Bank.

Government support and water usage fee are essential for maintenance of the irrigation facilities.

Activities of the A/P should be incorporated in the Annual Work Plan and Budget (PAAO) of respective institutions.

#### 4-5-4 Technical aspect

The Mozambican counterparts of the Project, who are staff members of SDAE, EAC and HICEP, have certain good capability as instructor for training courses carried out under the Project. In the case of extension officers, 2 extension officers have engaged in extension activities for model farmers. However, more engagement and practice with farmers may necessary. In the case of other 6 extension officers, they have participated in training courses twice. But they learned mainly theoretical subjects and opportunity to practice with farmers on rice cultivation at farms is lacking. It is necessary to

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strengthening practical capacity of those 6 extension officers.

Overall, increasing number of extension officers as well as rice researchers and further capacity development will be crucial for assuring technical sustainability of the Project.

## 5. Conclusion

The project activities have been progressed mostly as planned and the project performance is at a satisfactory level. Although the Project Purpose has been almost achieved, followings are recommended for the remaining period as well as after the termination of the Project.

## 6. Recommendations

### 6-1 Recommendations for the remaining period

- Action Plan of the three institutions, SDAE, EAC and HICEP, should be developed as planned and endorsed by the JCC to be held in January.
- Organization and leadership of farmers' associations need to be strengthened.
- Sufficient copies of manuals and leaflet developed by the Project should be produced and distributed to extension officers and small-scale farmers.
- Nine demonstration model plots set by nine extension officers should be monitored.

### 6-2 Recommendations after the termination of the Project

- Activities of the Action Plan promoting the Project technologies of the three institutions, SDAE, EAC and HICEP, should be incorporated into the respective PAAO and be implemented.
- Manuals and leaflet to extension officers and small-scale farmers for the dissemination of technologies developed by the Project should be further distributed and updated.
- Organization and leadership of farmers' associations need to be further enhanced.
- Management of the irrigation scheme for more efficient water use is crucial and needed to be improved.
- Among conditions to achieve the Overall Goal mentioned in 5-4-1, appropriate mechanization should be especially promoted, in particular for puddling and leveling of paddy plots.

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## 7. Lessons learned

- Collaboration and partnership among the relevant institutions, SDAE, EAC and HICEP produced more and better impacts than those institutions work separately.
- It is also significant to involve authorities at three levels of national, provincial and district in order to scale up and extend the results of the Project to wider regions. In particular, the involvement of Provincial Directorate of Agriculture (DPA) is crucial to further dissemination of results of the Project beyond the project target and areas in this case.
- The adjustment and adaptation of technology to local culture and socioeconomic environment is important – some farmers adopted animal traction which contributed to the land preparation while other farmers hesitated since they were concerned about foot mouth disease and destruction of ledges which is needed for the management of wage labor.
- Appropriate machinery between animal traction and large tractors which farmers constantly demanded need to be examined.
- The project approach of completing value chain from production to processing, sales and marketing with credit/finance and revolving fund brought more impacts on the increase of agricultural production and income of small scale farmers.
- It is recalled that demonstration in training is effective to translate theories into practices since there is a difference between theoretical understanding and practical skills on the ground.
- The involvement of extension officers is critical to transfer agricultural technologies to farmers. However, pragmatic approach should be sought, depending on the socioeconomic circumstances of the country.
- Initially the Project considered the rice planting only – other crops in the winter/monsoon season can also be considered to improve the income of farmers and soil fertility.
- It takes long time to develop capacity of farmers' associations, therefore, it requires long time cooperation.

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**Annex 1: Schedule of Joint Terminal Evaluation Team**

no.	day	date	time	activities	accommodation
1	29, Nov.	Sun	18:40 23:50	(3)(4) Dep't from Tokyo <NH 911> (3)(4) Hong Kong <SA 287>	
2	30, Nov.	Mon	09:35 10:40 13:30 15:00	(3) (4) Johannesburg <SA 142> (3) (4) Arrival at Maputo (3) (4) C/c to JICA Office (3) (4) (5) (6) C/c to MINAG	Maputo
3	1, Dec.	Tue	08:00 11:00 13:00	(3) (4) Move to Chokwe Meeting point in Chokwe: Hotel Limpopo (3) (4) (5) (6) Joint Evaluation Team Meeting (3) (4) Interview with JICA Consultant Team	Chokwe
4	2, Dec.	Wed	07:30 09:30 11:45	(3) (4) (5) (6) Interviews with; (a) SDAE (Rep., C/P, Trainees & etc) (b) HICEP (Rep., C/P & etc) (c) Visit seed production sites (if possible)	Chokwe
5	3, Dec.	Thur	07:30 11:00 12:30 14:00 18:40 23:50	(3) (4) (5) (6) Interviews & Site Observation (in D4) (a) Groups members of Animal Traction & Farming Support) (b) Model Farmers & Visit model farms (c) WUA & Site Visit (d) EAC (Rep., C/P & etc) (rescheduled) (1) Dep't from Tokyo <NH 911> (1) Hong Kong <SA 287>	Chokwe
6	4, Dec.	Fri	07:30 11:00 12:30 09:40 10:45 07:25 14:55 16:00	(3) (4) (5) (6) Interviews & Site Observation (in D7) (a) Groups members of Animal Traction & Farming Support) (b) Model Farmers & Visit model farms (c) WUA & Site Visit (1) via Jo'burg <SA 142> Arrive at Maputo (2) Dep't from Dar es Salaam <SA189>, (2) 10:05 Jo'burg 13:50 <SA 144> (2) Arrive at Maputo (1) (2) c/c JICA Office	(3)(4)(5)(6) Chokwe  (1)(2) Maputo
7	5, Dec.	Sat	06:00 09:00 11:00	(1) (2) Move to Chokwe MIA Macaratane weir Supplementary Survey (if necessary)	Chokwe
8	6, Dec.	Sun		Drafting of the Joint Evaluation Report (JER) & of Meeting of Minutes (M/M)	Chokwe
9	7, Dec.	Mon	07:30 09:00	Supplementary Interview; SDAE (if necessary) Joint Terminal Evaluation Team Meeting; Debriefing of the filed surveys Workshop on outcomes by the Project	Chokwe
10	8, Dec.	Tue	14:00	Move to Maputo Joint Evaluation Team meeting; discussion on the draft JER & M/M	Maputo

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11	9, Dec.	Wed	13:00 14:30	Meeting with MINAG on M/M modification of M/M & JER (2) Dep't from Maputo <SA143>, 12:55 Jo'burg 15:00 <SA 188>, 19:25 Arrive at DSM	Maputo
12	10, Dec.	Thur	10:30	Joint Evaluation Team meeting; Signing JER JCC meeting, Signing of M/M @Hotel VIP	Maputo
13	11, Dec.	Fri	10:30 13:30	(1) – (4) Embassy of Japan (1) – (4) JICA Office	Maputo
14	12, Dec.	Sat	11:45 16:45 20:20	Dep't from Maputo <SA 143> via Jo'burg (3) (4) Jo'burg <SA 286>, via Hong Kong (1) via Jo'burg <LX 289>, Via Zurich	
15	13, Dec.	Sun	15:25 20:15 07:40 08:30	(3) (4) via Hong Kong <NH 910> (3) (4) Arrive at Tokyo (1) via Zurich <LX2802> (1) Arrive at Geneva	

(1) Mr. Yoshitaka SUMI	Team Leader	Deputy Director General, Rural Development Department (RDD), Japan International Cooperation Agency (JICA)
(2) Mr. Motonori TOMITAKA	Irrigated Rice Cultivation	JICA Senior Advisor/ Chief Advisor Technical, Cooperation for Supporting Service Delivery Systems of Irrigated Agriculture ("TANRICE") in Tanzania
(3) Mr. Kazuyuki FUJIWARA	Planning & Management	Associate Expert, East & Southern Africa Team, RDD, JICA
(4) Dr. Junichi WATANABE	Evaluation and Analysis/ Training	Senior Consultant /Researcher, International Development Center of Japan (IDCJ)
(5) Mr. Inácio NHANCALE	Team Leader	Head of Technical Department, National Directorate for Agricultural Extension (DNEA), Ministry of Agriculture (MINAG)
(6) Mr. Eugenio COME	Farmers Training	Agronomist, DNEA, MINAG

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**Annex 2: List of main persons interviewed by the Joint Terminal Evaluation Team**

Date	Place	Attendee Name	Position Held
30.11.2009	Ministry of Agriculture (MINAG)	Albertina Alage	Deputy Director for National Directorate for Agricultural Extension (DNEA), MINAG
02.12.2009	SDAE	Inacio Mugabe	SDAE Director
		Amandio Lopes	Extension Supervisor
	HICEP	Salomao Mastule	President of Administration Council
		Alberto Banguine	Land Use Manager
		Cesar	Water Manager
03.12.2009	D4	David Ngovine	D4 President
		Betuele Chongo	Association Leader
		Pedro Mucavele	Deputy President
		Fernando Checo	Water Management
	Processing Site	Rebeca	Accountant
		Alfredo Mucavele	Operator
			Secretary
	EAC	Samuel Camilo	Research Coordinator
04.12.2009	D7	David Manjate	Farmer
		David Nauce	Farmer
		Domingos Mbunze	Farmer
	Proccesing Site	Felizardo Bila	Operator
		Renato Mapossa	Operator Assistant
		Albino Ntovele	Administrator (absent)
07.12.2009	Government Office	Agostinho Fakir	Administrator

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**Annex 3 PDM version 3**

Project Title: The Integrated Agricultural Development Project for Small Scale Farmers in Chokwe Irrigation Scheme

Target Area: The areas where model farms located in D4 and D7 in Chokwe Irrigation Scheme

Target Group: Direct beneficiaries are model farmers (59 small-scale farmers) in D4 and D7, and the counterparts of the project and technical staffs of three partner institutions (around 50 persons) in Chokwe Irrigation Scheme. Indirect beneficiaries are small scale farmers in D4 and D7 areas and neighboring areas in Chokwe Irrigation Scheme

Implementation Organization: 1) National Directorate for Agricultural Extension of the Ministry of Agriculture, 2) SDAE (District Services for Economic Activities), 3) EAC (Chokwe Agrarian Station), and 4) HICEP (Chokwe Hydraulic Public Corporation)

Duration: From March 17, 2007 to March 31, 2010

Date of revision: January 20, 2009

Narrative Summary	Objectively Verifiable Indicator	Measures of Verification	Important Assumption
<p><b>[Overall Goal]</b> Small scale farmers' income in Chokwe Irrigation Scheme is improved.</p>	<p>Farming income by rice production of small scale farmers in D4, D7, and neighboring areas of rice production is increased 30%. (*1)</p>	<p>Statistics data (Farmers' household survey and baseline survey results)</p>	
<p><b>[Project Purpose]</b> Agricultural production by small scale farmers in the target area in Chokwe Irrigation Scheme is increased.</p>	<p>Yield of rice at the model farmers (59 farmers) in the project target area is increased from current yield level (level of 3 t/ha) to 5.0 t/ha. (*2)</p>	<p>Baseline survey results and project report</p>	<p>- Agricultural production is stabilized.</p>
<p><b>[Output]</b> 1. Techniques for small scale farmers in the target area are improved.</p>	<p>1-1. Number of small scale farmers adopted appropriate agricultural techniques (33 farmers in D4 and 26 farmers in D7, in total 59 farmers) (*3) 1-2. Number of extension officers adopted agricultural techniques for small scale farmers (8 officers) (*4) 1-3. Number of agricultural techniques developed and improved (11 kinds) (*5) 1-4. Number of seed production techniques improved (2 kinds) (*6) 1-5. Number of various kinds of manuals prepared (5 kinds) (*7)</p>	<p>Common measure: Interview to farmers 1-1 Project report 1-2 Project report 1-3 Project report 1-4 Project report 1-5 Project report</p>	<p>- Serious natural disaster or disease doesn't affect extremely in the Chokwe Irrigation Scheme. - Lack of irrigation water due to severe drought is not occurred.</p>
<p>2. Management of irrigation facilities and water use in the target area is improved.</p>	<p>2-1. Number of water users association members acquired management methods of irrigation facilities (38 farmers in D4 and 41 farmers in D7) 2-2. Collection rate of water fee from the model farmers (80%) 2-3. Number of various kinds of manuals prepared (3 kinds) (*8)</p>	<p>Common measure: Interview to farmers 2-1 Project report 2-2 Data of HICEP 2-3 Project report</p>	
<p>3. Farming support activities provided by extension officers for small scale farmers in the target area are strengthened.</p>	<p>3-1. Number of trainees trained on micromill operation (10 persons) (*9) 3-2. Operation rate of rice mill (operated throughout the year and more than 90,000 kg of rice is milled annually) (*10) 3-3. Contents and size of joint sale of product</p>	<p>Common measure: Interview to farmers 3-1 Project report 3-2 Project report 3-3 Project report</p>	
<p>4. Collaboration among SDAE, EAC,</p>	<p>4-1. Achievement of collaboration activities of SDAE, EAC and HICEP</p>	<p>Common measure: Interview to</p>	

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<p>and HICEP is strengthened.</p>	<p>(number of periodic meetings held, number of officers concerning the Project, number of workshops and participants) 4-2. Action Plan prepared 4-3. Implementation status of action plan</p>	<p>counterparts 4-1 Project report 4-2 Action Plan 4-3 Project report</p>	
<p><b>[Activities]</b>          0 Conduct baseline survey          1-1 Train extension workers in agricultural technology          1-2 Establish model farm          1-3 Promote animal traction          1-4 Strengthen capacity of EAC          1-5 Examine and establish rice cultivation techniques for small scale farmers          1-6 Examine and improve up-land crop cultivation techniques for small scale farmers          1-7 Improve rice seed multiplication techniques          2-1 Conduct survey on management of the irrigation facilities          2-2 Rehabilitate canals in model plots          2-3 Prepare manuals on irrigation facility management and water supply management          2-4 Train HICEP personnel and leaders of model water user associations in use and management of canals          2-5 Monitor management of irrigation facility and water supply in the target area          3-1 Review existing farming support activities (AFD, IFAD, NGO etc)          3-2 Train farming support groups of model WUAs          3-3 Carry out farming support activities by extension workers and WUAs          3-4 Monitor farming system support activities conducted by extension staff and model WUAs          4-1 Hold periodic meetings to mutually review activities of EAC, SDAE and HICEP          4-2 Conduct workshops for reinforcing the collaboration among EAC, SDAE and HICEP          4-3 Conduct activities to promote collaboration among SDAE, EAC, and HICEP, and strengthen the extension system          4-4 Monitor collaboration among SDAE, EAC, and HICEP          4-5 Prepare action plan for agricultural production through collaboration among SDAE, EAC, and HICEP          4-6 Carry out each activity conducted by EAC, SDAE and HICEP, according to the action Plan</p>	<p><b>[Inputs]</b>          &lt;Mozambican Side&gt;          Counterpart staffs :          Responsible counterparts for Japanese experts          Supporting staff          Facilities:          Project offices and other facilities for the project          Other related cost</p>	<p>&lt;Japanese Side&gt;          Main Experts:          1. Chief Advisor/ Extension/ Training          2. Sub Advisor/ Farming System Management          3. Irrigation and Water Management          4. Coordinator          Short-Term Experts: if necessary          Equipment          Vehicle, Rice mills, Small pumps, etc.          Materials for rehabilitation of secondary and tertiary canals, etc.          Counterparts training: if necessary</p>	<p>- Agricultural policy doesn't change drastically.          - Water users' association members cooperate to the Project activities.  <b>[Precondition]</b>          - The condition of public safety is not deteriorated.</p>

(\*1) According to the results of the baseline survey, farming incomes by rice production per farmer in D4, D5, D6 and D7, which is sales income of unhusked rice deducted

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cost, were 7,590Mt, 8,034Mt, 1,785Mt, and 5,608Mt respectively.

(\*2) According to the results of the baseline survey, average rice yields in D4 and D7 were 3.83 t/ha and 3.24 t/ha respectively. According to the results of rice yield sampling survey (harvesting rice of one square meter) carried out under the Project, average yield of 11 small-scale farmers was 3.38 t/ha. Considering these survey data, target rice yield is set as 5.0 t/ha.

(\*3) Number of the model farmers means model farmers who cultivated rice in 2008/09 year in D4 and D7.

(\*4) All agricultural extension staffs in SDAE

(\*5) 11 kinds of technique such as 1) rice seed preparation (selection, soaking, and germination), 2) rice varieties and seeds (Limpopo variety, use of certified seeds, appropriate quantity of seeds is 60 kg/ha), 3) nursery preparation (protected semi-irrigated rice nursery, size of rice nursery, and nursing term), 4) sowing (density, covering up seeds with soil, and water management), 5) preparation of paddy field (plotting and animal traction), 6) transplanting methods (planting density and number of seedlings per plot), 7) techniques on fertilizer application (application of urea in three times, total 100kg/ha), 8) paddy field management (water management, weed control and pest control), 9) harvesting (appropriate timing of harvesting), 10) post-harvest (appropriate rice drying), 11) farmers' seed production.

(\*6) 1) Improvement of accuracy of works (techniques described in the Manual on High Quality Seed Production Technique) and 2) improvement of facilities and equipment for seed production such as drying yard for rice seeds, threshing machine, seed selection machine, etc.

(\*7) 1) Manual on High Quality Seed Production Technique, 2) Manual on Rice Cultivation for the Extension Workers in Chokwe District, 3) Manual on Upland Crop Cultivation, 4) Manual on Agricultural Extension, and 5) Manual on animal traction

(\*8) 1) Chokwe Irrigation Scheme Maintenance Manual for Water Users' Association, 2) Chokwe Irrigation Scheme Water Management Manual for Water Users' Association, and 3) Manual on Irrigation Facilities Construction Management

(\*9) 5 persons in D4 and 5 persons in D7, in total 10 persons

(\*10) Rice mill operation is profitable when more than 300kg of rice is milled daily. Operation days per month are estimated 25 days. In one year, 90,000kg of rice should be milled. (300kg x 25 days x 12 months = 90,000kg)

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**Annex 4: List of JICA Experts Dispatched**

(Name, assigned profession, assigned period, the organization in Japan)

Name of expert	Assigned profession	Assigned period	Organization before the assignment
Masato TAMURA “	Chief advisor, Extension/training	March 18~July 11, 2007 September 29~Nov. 27, 2007 January 12 ~March 12, 2008 May 8 ~June 27, 2008 August 30~ Feb. 13, 2009 May15~Sep.21, 2009 Nov.7, 2009 ~Feb.5, 2010	Rural Development Institute LTD.
Teruhisa NAMBA	Agronomy	March 18~July 14, 2007 October 13~Jan. 10, 2008 May 8~July 6, 2008 Oct.15 ~Jan.12, 2009	Rural Development Institute LTD.
Masafumi TAGUCHI	Irrigation water management	March 31~July 28, 2007 October 26~August 23, 2008 May26~August 23, 2008 Oct.18, 2008~Jan.15, 2009	Japan Development Service Co, LTD.
Eiji TAEMORI	Irrigation water management	May16~Aug.14, 2009 Oct.24~Dec. 25, 2009	Japan Development Service Co, LTD.
Kazuo TORII	Base line survey / Farming and livelihood survey	April 14 ~ June 26, 2007 July 18~Sep.30,2009	Rural Development Institute LTD.
Yorio IIZUKA	Rice mill operation/market ing	Nov. 3~Dec. 3, 2007 May 16~June 14, 2009	Japan Development Service Co, LTD.
Akiko OKIMURA	Coordinator	March 18~July 8, 2007 January 3~March 14, 2008 May 8~February 11, 2009 May 16~Aug.13 Dec.25, 2009~Mar.1, 2010	Rural Development Institute LTD.

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### Annex 5: Actual result of technical cooperation equipment

#### 1) A list of technical cooperation equipment

No. of equipment	Arrival time	Name of equipment	Type	Manufacture	Purchase price	Using Section	Storing place	Local purchase/purchased from Japan	Purpose	Present working and using condition
V1	2007	4WD Pickup	Nissan Hardbody	Nissan	38,500 US\$	SDAE/HICEP	SDAE	Local purchase	Farming support	Working and good condition
V2	2007	4WD Pickup	Toyota Hilux	Toyota	20,711 US\$	EAC/SDAE	SDAE	Local purchase	Farming support	Working and good condition
V3~V7	2007	Motor bike	Honda XL125	Toyota	4,830 US\$/unit	SDAE/EAC	SDAE/EAC	Local purchase	Farming support	Working and good condition
S-1,2	2007	Rice mill Spare parts	SB10D/R-230HD	Satake	1,300,556 yen	SDAE	Store of WUA	From Japan	Farming support	Working and good condition
S-3,4	2007	Awn remover	SK Clean G-2	Hokuetsu	105,000 yen	SDAE	Store of WUA	From Japan	Farming support	Working and good condition
S-5,6	2007	Transformer for awn remover	SWF-15	Hokuetsu	84,000 yen	SDAE	Store of WUA	From Japan	Farming support	Working and good condition
S-7	2007	Winower	SK Toumi Manual type TS	Hokuetsu	25,780 yen	SDAE	Store of WUA	From Japan	Farming support	Working and good condition
S-8	2007/5	UPS	DIGITAL 500 PLAS	DCC	1,440 MT	SDAE	Expert office	Local purchase	Protect PC	Working and good condition
S-9	2007/5	Stabilizer	ALPH 2000SK	DCC	10,143 MT	SDAE	Expert office	Local purchase	Stabilize PC	Working and good condition
S-10 ~ 13	2007/6	Irrigation pump	HONDA a WB 30XT	HONDA	61,600 MT	SDAE	SDAE store and EAC store	Local purchase	Irrigation	When lack of irrigation water Good condition
E-1	2007/5	UPS	DIGITAL 500 PLAS	DCC	1,440 MT	EAC	Expert office	Local purchase	Stabilizing PC voltage	Working and good condition
E-2	2007/5	Stabilizer	ALPH 2000SK	DCC	10,143 MT	EAC	Expert office	Local purchase	Stabilizing PC voltage	Working and good condition
E-3	2007/5	Refrigerator	LG 352L	LG	13,999 MT	EAC	Expert office	Local purchase	Seeds storing	Working and good condition
E-4	2007/2	Thresher	HMG 73S	Iseki	628,215 yen	EAC	IRRI store in EAC	Local purchase	Seeds storing	Harvesting time Good condition
E-5	2007/2	Thresher	SK Clean G-2	Hokuetsu	54,500 yen	EAC	IRRI store in EAC	Local purchase	Seeds storing	Harvesting time Good

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E-6	2007/2	Transformer for awn remover	SWF-15	Hokuetsu	42,000 yen	EAC	IRRI store in EAC	Local purchase	Seeds storing	condition	Harvesting time Good condition
E-7	2007/2	Winnowing	SK Toumi Manual type TS	Hokuetsu	25,780 yen	EAC	IRRI store in EAC	Local purchase	Seed selection	condition	Harvesting time Good condition
No. of equipment	Arrival time	Name of equipment	Type	Manufacture	Purchase price	Using Section	Storing place	Local purchase/purchased from Japan	Purpose	Present working and using condition	
H-1	2007/5	UPS	DIGITAL 500 PLAS	DCC	1,440 MT	HICEP	C/P office	Local purchase	Protection of PC	Good condition	
H-2	2007/5	Stabilizer	ALPH 2000SK	DCC	10,143 MT	HICEP	C/P Office	Local purchase	Protection of PC	Good condition	
H-3,4	2007/5	Level	B-21	Sokia	181,566 yen	HICEP	C/P Office	Local purchase	Leveling of the field	When necessary Good condition	
H5~10	2008/2	Bush cutter	UMK435E	HONDA	121,830 MT	HICEP	HICEP store	Local purchase	Clearing of grass	At training time	

Note) Initial S means equipment under SDAE , initial E means equipment under EAC and initial H means equipment under HICEP

2) Items that are not working at present among major technical cooperation equipment

Name	Start of operation	Durable years	Actual condition (note)	Reasons of not working and period
Irrigation pump 1 unit		10 years	Not used	Under planning
Bush cutter 6 units	2007/2	5years	Repairing impossible	Durable year completed

(Note) Indicate whether it is in a good condition but not used or possible for repairing or not

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**Annex 6: Achievement of acceptance of training in Japan**

Training participant	Training period in Japan	Cooperation area	Training contents and institutes	Position held	Present post
Aderito Mavie	October~November 2007	Agricultural extension	Agricultural Development through farmer participation JICA Tsukuba Center	SDAE Director in Chokwe District	SDAE Director
Lopez Amandio	July7~Sep.6, 2008	Agricultural extension	Extension for managers JICA Tsukuba Center	Head of Extension department, SDAE	Head of Extension department, SDAE
Jose Antonio Gaspar	August 5 ~ 14, 2008	Agricultural extension	Study visit JICA Tsukuba Center	Director of agricultural extension, MINAG	Director of agricultural extension, MINAG
Solomao Nyiama	August 5 ~ 14, 2008	International Cooperation	Study visit JICA Tsukuba Center	Head of International cooperation department, MINAG	Head of International cooperation department, MINAG
Solomao Maturu	Aug.30~Sep. 10, 2009	Study visit of agricultural development in Japan	Study visit JICA Tsukuba Center	President of HICEP	President of HICEP
Aderito Mavie	Aug.30~Sep. 10, 2009	Study visit of agricultural development in Japan	Study visit JICA Tsukuba Center	Director of SDAE	Department head of Agricultural Promotion Center, MINAG
Lopez Amandio	July 27 ~Sep.17, 2009	Rice cultivation techniques	EFTCA&EICA (Third country training in Egypt)	Head of Extension department, SDAE	Head of Extension department, SDAE

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## Annex 6 Actual results of Japanese side local cost expenses

### 1st year local cost expenses (20 Feb. 2007. ~7 Sep. 2007)

Number	Budget item	Amount(yen)
1	General local cost expenses	3,290,000
2	Technical cooperation equipment purchase cost	2,532,000
3	Technical cooperation equipment transport cost	468,000
4	Expert carrying equipment purchase cost	3,136,000
5	Expert carrying equipment transport cost	60,000
6	Construction cost	188,000
	Total	9,674,000

### 2nd year local cost expenses (28 Sep. 2007. ~28 Mar. 2008)

Number	Budget item	Amount(yen)
1	General local cost expenses	7,094,000
2	Technical cooperation equipment purchase cost	1,264,000
3	Technical cooperation equipment transport cost	525,000
4	Other equipment purchase cost	1,080,000
5	Other equipment transport cost	63,000
6	Local consultant cost	1,767,000
7	Construction cost	792,000
	Total	12,585,000

### 3rd year local cost expenses (7 May 2008~31 Mar. 2009)

Number	Budget item	Amount(yen)
1	General local cost expenses	10,709,000
2	Expert carrying equipment purchase cost	359,000
3	Other equipment purchase cost	957,000
4	Local consultant cost	6,808,000
	total	18,833,000

### 4th year local cost expenses (9 May 2009~31 Mar. 2010)

Number	Budget item	Amount(yen)
1	General local cost expenses	8,477,000
2	Technical cooperation equipment purchase cost	203,000
3	Other equipment purchase cost	0
4	Local consultant cost	0
5	Construction cost	893,000
	Total	9,573,000
	Total (1st year ~4th year)	50,665,000

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**Annex 8: List of C/P personnel assigned to the Project**

(Name, C/P professional area, Area of training, Name of expert who engaged in technical transfer )

C/P Name	C/P Professional area	Training (Allocation ) period	Name of the expert who engaged in technical transfer.	Assignment period for the organization	Remarks
Jose Antonio Gaspar	Project director	March 18, 2007~ now	-	January 1981~ up to now	
Aderito Mavie	Project manager	March 18, 2007 ~Aug.3, 2009	Masato TAMURA	January 2001~ now	Transferred to MINAG Agricultural Promotion Center
Inacio Mugabe	Project manager	Nov.1 ~now	Masato TAMURA	January 1981 ~now	Former chief of Chokwe Agriculture Research Station
Marcos Langa	Rice agronomy researcher	March 18, 2007 ~now	Teruhisa NAMBA	August 27, 1996 ~up to now	
Hirario Mulhanga	Rice, Upland crop researcher	March 18, 2007 ~now	Teruhisa NAMBA	July 6 ,2005~ now	
Alberto Banguine	Irrigation water management	March 18, 2007 ~now	Masafumi TAGUCHI/ Eiji TAKEMORI	February 2002 ~ now	
Edward Cesar Muluana	Irrigation facility maintenance		Eiji TAKEMORI	Jan. 2006~now	
Roberto Lumbero	Water user association supervisor	March 18, 2007 ~now	Masafumi TAGUCHI	March 1997 ~ now	
Lopez Amandio	Extension/ training	March 18, 2007 ~now	Masato TAMURA	September 2004 ~now	

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## Annex 8: Budget allocated by the Mozambican Side

Annex 9.1: Mozambican side actual expenses, SDAE

General cost

	Month (MT)	Year (MT)		
Electricity expense	14,000.00	168,000.00		
Water expense	9,334.00	112,008.00		
Communication expense	15,000.00	180,000.00		
Other cost	72,000.00	864,000.00	Equipment maintenance, stationery cost and others	

Above expenses are for SDAE office, Livestock service(administration's office), Seed center (Lionde)

Transport cost

	Month (MT)	year (MT)	
Vehicles	39,237.50	470,850.00	Monthly 1,075L × 36.5MT
Motor bikes	11,756.25	141,075.00	Monthly 275L × 42.75MT

Vehicle 4 units, motor bikes 10 units operational

Provided land, building, office, facility are listed below.

- Expert working room ( 1)
- Store (space for the equipment )
- Car park (for 3 vehicles))
- Office desk (3)
- Chairs (3)

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Annex 9.2: Mozambican side actual expenses, EAC

General cost

	Month (MT)	Year (MT)		
Electricity expense	6,000.00	72,000.00		
Water expense	-			
Communication expense	9,000.00	108,000.00		
Other cost	550.00	6,600.00		HICEP water fee

Transport cost

	Month (MT)	year (MT)		
Vehicles	-			
Motor bikes	-			

Provided land, building, office , facility are listed below.

Expert working room (with C/P)

Store (for keeping technical cooperation equipment)

Office desk(1)

Chairs(2)

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Annex 9.3: Mozambican side actual expenses, HICEP

General cost

	Month (MT)	Year (MT)
Electricity expense	17,984.00	215,808.00
Water expense	8,340.30	100,083.60
Communication	27,973.70	335,684.40
Other cost	23,220.00	278,640.00

Transport cost

	Month (MT)	year (MT)
Vehicles	86,344.16	1,036,129.92
Motor bikes	10,500.00	126,000.00

Vehicles 9 units, motor bikes 10 units

Provided land, building, office , facility are listed below.

expert working room (1)

Store in Lionde (Keeping equipment )

office desk (1)

Chairs (2)

Shell (1)

Design desk (1)

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## Annex 10:A. Regular meeting among three partner institutions

	1 <sup>st</sup> year	2 <sup>nd</sup> year	3 <sup>rd</sup> year	4 <sup>th</sup> year
Frequency	Once a 2 months	Once a 6 months	Once a 3 months	Once a 3 months
Numbers	2 times	Once	3 times	Once
Number of participants	Average 8~10 participants	Average 8~10 participants	Average 8~10 participants	Average 8~10 participants

## B. Work shop

	1 <sup>st</sup> year	2 <sup>nd</sup> year	3 <sup>rd</sup> year	4 <sup>th</sup> year
Date	22 June, 2007	23 Nov, 2007	26 June, 2008	25 Aug, 2009
Number of participants	18	14	35	27
Agenda	Discussion of Overall plan of implementation	Presentation and discussion of base line survey report and progress report	Presentation and discussion of 2 <sup>nd</sup> year project results	Dissemination through presentation and discussion on project results and impacts to other WUAs
Date		27 Feb, 2008	29 Oct, 2008	
Number of participants		30	73	
Agenda		Presentation and discussion of 2 <sup>nd</sup> year activities, third year work plan and draft of action plan	Publication and dissemination of results of project & model WUA activities.	
Date			14 Jan, 2009	
Number of participants			30	
Agenda			Presentation of project achievements and summary of mid term evaluation team report	

## 2 (2) JCC meeting

	1 <sup>st</sup> year	2 <sup>nd</sup> year	3 <sup>rd</sup> year	4 <sup>th</sup> year
Date	27 March, 2007	4 March, 2008	12 June, 2008	11 June, 2009
Number of participants	13	20	25	13
Agenda	Appointment of C/P and approval of inception report and PDM	Presentation, discussion and approval of 2 <sup>nd</sup> year activity result & 3 <sup>rd</sup> year work plan and action plan	Presentation, discussion and approval of 3 <sup>rd</sup> year work plan and revised PDM, revised action plan and Plan of Operation	Presentation, discussion and approval of 4 <sup>th</sup> year work plan and revised plan of operation

Annex 11: Training implementation table (including meeting with partners, workshop and JCC meeting) October 2008

Fiscal Year	Implemented training	Date	Period	No. of participants	Participated organization/persons	Training place	Training contents
2006	1st JCC meeting	27-Mar-07	1 day	13	MINAG, JICA, three partner institutions	SDAE training room	Approval of inception report and PDM
	2nd JCC meeting	13-Apr-07	1 day	13	MINAG, JICA, three partner institutions	Administration office conference room	Approval of inception report and PDM
	1st three partner institutions meeting	14-Jun-07	1 day	4	Representative of SDAE, EAC, HICEP	SDAE training room	Approval on selection of model water user association
	1st steering committee meeting	20-Jun-07	1 day	9	SDAE director & experts/counterparts	SDAE training room	Coordination meeting for workshop and JCC
	1st workshop	22-Jun-07	1 day	18	NGO, Cooperative and three partner institutions	Administration office conference room	Discussion on overall work plan
	JCC extraordinary meeting	22-Jun-07	1 day	19	MINAG, JICA, three partner institutions	Administration office conference room	Approval of overall work plan
	2nd three partner institutions meeting	27-Jun-07	1 day	4	Representative of SDAE, EAC, HICEP	SDAE training room	Acceptance on supporting contents and procedure to the water user association
	3rd three partner institutions meeting	09-Oct-07	1 day	6	Three partner institutions	SDAE training room	Discussion on second year work plan
	Training for extension workers	October 17-19 & 21, 2007	4 days	8	Agricultural extension worker	SDAE training room/D7 model farm	Basic rice cultivation technique and practicals
	Training for model farmers	October 25-26, 2007	3 days	22	Model farmers in D4 & D7	SDAE training room/EAC	Basic rice cultivation technique and practicals
	Training for farming support group	November 13-16	4 days	10	Farming support group in D4 & D7	SDAE training room/D7 mill	Structure, operation and maintenance of rice mill and fund management
2007	2nd workshop	23-Nov-07	1 day	14	Representative of D4 & D7 WUAs, NGO and Cooperative	Administration office conference room	Presentation of base line study results and progress of work
	Training for animal traction promotion group	December 3-	10 days	5	Animal traction promotion group in D4	EAC animal training place	Animal health, reproduction and animal traction work
	Training for water management and irrigation facility maintenance	January 14 & 15, 2008	2 days	12	Water group leader in D7 WUA	HICEP meeting room/D7 model farm	Water management, irrigation facility maintenance
	Monitoring seminar	30-Jan-08	1 day	15	Gaza province DPA and three partner institutions	Model farm/Administrator's conference room	Monitoring of project activity through field visit
	Training for extension workers	February 5 & 6, 2008	2 days	8	Extension workers in Chokwe	Xaixai irrigation project area	Study visit to Xaixai
	Training for model farmers	23-Feb-08	1 day	17	Model farmers in D4 & D7	D4, D7 model farm	Exchange of farmers experience between D4 and D7
	2nd Steering committee meeting	26-Feb-08	1 day	5	SDAE director & experts/counterparts	SDAE training room	Coordination meeting for workshop and JCC
	3rd workshop	27-Feb-08	1 day	30	Representative of D4 & D7 WUAs, NGO and Cooperative	Administration office conference room	Discussion of 2nd year activity results, 3rd year work plan and action plan
	3rd JCC meeting	04-Mar-08	1 day	20	MINAG, JICA, three partner institutions	Hoel cardoso in Maputo	Discussion of 2nd year activity results, 4rd year work plan and action plan
2008	4th three partner institutions meeting jointly with experts and counterparts	29-May-08	1 day	10	Three partner institutions, experts and counterparts	SDAE training room	Discussion of revised PDM draft, PO and revised action plan
	4th JCC meeting	12-Jun-08	1 day	25	MINAG, JICA, three partner institutions	Hoel VIP in Maputo	Discussion and approval of revised PDM, PO and revised action plan
2008	Training for model farmers	05-Jun-08	1 day	20	Model farmers in D4 & D7	SDAE training room	Techniques on bean cultivation in dry season
	4th workshop	26-Jun-08	1 day	35	Representatives of D4 & D7 WUAs, NGO, Cooperative	Administration office conference room	Presentation and discussion on 2nd year results of 2007/08 season research and model farm
	Training for model farmers	01-Jul-08	1 day	29	Model farmers in D4 & D7	SDAE training room	1) Presentation and discussion on 2nd year results of 2007/08 season research and model farm, 2) Awarding
	Training for animal traction promotion group	July 7 ~ July 23, 2008	10 days	5	Animal traction promotion group in D7	Lionde	Animal health, reproduction and animal traction work
	Training for water management and irrigation facility maintenance	24-Jul-08	1 day	19	HICEP contracted workers/Water group leaders	Lionde	Water management, irrigation facility maintenance
	Training for water management and irrigation facility maintenance	29-Jul-08	1 day	27	HICEP contracted workers/Water group leaders	Lionde	Water management, irrigation facility maintenance
	Training for water management and irrigation facility maintenance	31-Jul-08	1 day	29	HICEP contracted workers/Water group leaders	Lionde	Water management, irrigation facility maintenance
	Training for water management and irrigation facility maintenance	02-Aug-08	1 day	5	HICEP contracted workers/Water group leaders	SDAE training room	Profitability of rice mill operation

	Training for water management and irrigation facility maintenance	12-Aug-08	1 day	24	HICEP contracted workers/Water group leaders	Lionde	Water management, irrigation facility maintenance
	Training for model farmers 2008/09 crop season	1-Oct-08	1 day (+ 2 days practical)	24	Newly selected model farmers in D4 and D7	SDAE training room and model farm in D4 and D7	Basic rice cultivation technique and practicals
	Training for D4 farmers surrounding model farm 2008/09 crop season	11-Oct-08	1 day	9	Surrounding farmers in D4	SDAE training room and model farm in D4 and D7	Basic rice cultivation technique and field visit
	5th workshop	28-Oct-08	1 day	73	Representatives of D4-D12 WUAs, NGO, Cooperative	Administrator's conference room	Presentation of model WUAs activity development and PR for project work
	6th workshop	14-Jan-09	1 day	30	Representatives of D4-D13 WUAs, NGO, Cooperative	Administration office conference room	Presentation of project achievements and report on mid term evaluation team
	5th JCC meeting	20-Jan-09	1 day	24	MINAG, JICA, three partner institutions	VIP Hotel in Mapeto	Presentation of mid term evaluation report and its approval by JCC members
	Irrigation facility maintenance training for D7 model area	27-Jan-09	1 day	41	D7 water group leader and model farmers	HICEP Lionde office	Irrigation management training for D7 water group leader
	Irrigation facility maintenance training for D4 model area	28-Jan-09	1 day	20	D4 water group leader and model farmers	D4 model farm	Irrigation management training for D4 water group leader
2008	Farming support group training	30-Jan-2009	1 day	23	5 representatives from D4 & D7 farming support group	SDAE training room	Discussion about mid term evaluation team's recommendation items among the participants
	Extension worker training	04-Feb-2009	1 day	8	All the extension workers	SDAE training room	Visit to model farm and discussion about direction of extension activities
	Model farmer training	6-Feb-2009	1 day	34	Model farmers in D4 & D7	SDAE training room	Visit to model farm and examination of respective applied technologies
2009	Farming support group training	29&30-May, 2009	2 days	12	Farming support group in D4 & D7 and extension workers	SDAE training room, milling station in D7	Improvement of rice milling operation & maintenance and practicals
	Joint study visit of farming support group & extension worker	5 & 6-June, 2009	2 days	11	D4 & D7 farming support group and extension worker	Super markets and retail shops & market in Mapeto city	Study and promotion of rice marketing in Mapeto city
	6th JCC meeting	11-June, 2009	1 day	13	MINAG, JICA, three partner institutions	VIP Hotel in Mapeto	Presentation, discussion and approval of 4th year work plan and revised PO
	Model farmer training	7-July, 2009	1 day	29	D4 & D7 model farmers	SDAE training room	Review of applied rice cultivation techniques in model farm and presentation and discussion of the model farm results
	Extension worker training	9-July, 2009	1 day	12	All the extension workers	SDAE training room	Review of applied rice cultivation techniques in model farm and presentation and discussion of future direction of dissemination
	Monitoring seminar	21-July, 2009	1 day	35	DPA Gaza, 3 partner institutions and model WUA	SDAE training room	Monitoring through visit and discussion on the project progress, results and impacts
	Water group leader training	28 & 29, July 2009	2 days	37	Representative of D4 & D7 WUAs	D4&D7 model farm	Operation & maintenance of irrigation facility and rotational irrigation
	Study visit of extension workers	6&7 -August, 2009	2 days	13	All the extension workers & 4 model farmers	Boane, Moamba and Matutuine	Study visit to other irrigation agricultural areas in Maputo province
	7th workshop	25-October, 2009	1 day	27	Representatives of model WUA and other WUAs	Administration office conference room	Enlightenment and dissemination of project results and impacts
		Model farmer training	2-November, 2009	1 day	24	D4 model farmers	SDAE training room
	Model farmer training	3-November, 2009	1 day	10	D7 model farmers	SDAE training room	Review of rice cultivation techniques
Total participant for all the training				985			
Total participant for technical training				523			

## ACTA DE REUNIÃO

### ENTRE

#### A EQUIPE DE AVALIAÇÃO DO JAPÃO E AS AUTORIDADES DO GOVERNO DA REPÚBLICA DE MOÇAMBIQUE SOBRE COOPERAÇÃO TÉCNICA JAPONESA PARA O PROJECTO DE DESENVOLVIMENTO INTEGRADO DE AGRICULTURA PARA OS AGRICULTORES DE PEQUENA ESCALA NO REGADIO DE CHÓKWÉ

A equipe de avaliação final (daqui em diante referida como “equipe japonesa”), organizado pela Agencia Japonesa de Cooperação Internacional (daqui em diante referida por “JICA”) é liderada pelo Dr. Yoshitaka SUMI, visitou a República de Moçambique (daqui em diante referida por Moçambique) de 30 de Novembro a 11 de Dezembro de 2009, com o propósito de conduzir a avaliação final do Projecto de Desenvolvimento Agrícola Integrado dos agricultores de pequena escala no regadio de Chokwe (daqui em diante referido por “Projecto”), como também discutir assuntos importantes relacionados com a implementação do Projecto.

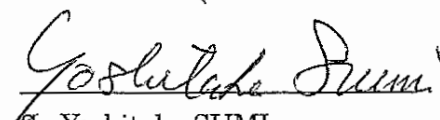
A equipe de avaliação de Moçambique (daqui em diante referida como “equipe Moçambicana”) organizada pelo Ministério da Agricultura (daqui em diante referido por “MINAG”) é liderada pelo Sr. Inácio NHANCALE, Chefe do Departamento Técnico na Direcção Nacional de Extensão Agraria, MINAG

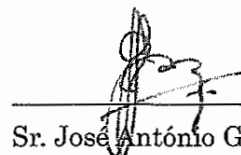
Durante este periodo em Moçambique, a equipe Japonesa e a equipe Moçambicana formaram a Equipa de Avaliação Conjunta (daqui em diante referida como “equipe de avaliação”) para conduzir a avaliação final do projecto, através de pesquisas de campo, troca de opiniões, e uma série de debates com os gestores e o pessoal do Projecto, no que respeita a medidas que se pretendem levar a cabo pelos dois governos para o sucesso da implementação do Projecto.

Como resultado da avaliação, a equipe japonesa e a Director Nacional de Extensão Agrária, MINAG concordaram em reportar aos seus respectivos governos os assuntos abordados nos documentos em anexo e o relatório de avaliação conjunta também em anexo.

Feito em duplicado em Inglês e Português, cada um dos textos é igualmente autentico. Em caso de alguma divergência na tradução, a cópia em Inglês deverá prevalecer.

Maputo, 10 de Dezembro de 2009

  
Sr. Yoshitaka SUMI  
Chefe de equipe  
Equipe de Avaliação Final  
JICA  
Japão

  
Sr. José António GASPAR  
Director Nacional de Extensão Agraria  
Ministério da Agricultura  
Republica de Moçambique



## Principais Assuntos Discutidos

1. A equipe de avaliação conjunta o relatório ao Comité Conjunto de Coordenação (de agora em em adiante designado JCC), que por sua vez aprovou o relatório
2. O JCC apreciou os notáveis marcos e esforços feitos pelos intervenientes. O JCC também reconheceu que os objectivos do projecto serao alcançados dentro do periodo estabelecido para o projecto. O JCC concordou em concluir o Projecto no final de Março de 2010 conforme planeado.
3. O JCC foi informado que MINAG tenciona recrutar mais extensionistas de forma a aumentar o numero de 693 para 1152 ate 2011. O JCC congratulou a iniciativa e espera que a SDAE em colaboração com o HICEP e EAC desempenhem um papel significativo na disseminação dos resultados do projecto (particularmente através da distribuição de manuais e panfletos desenvolvidos pelo projecto, assim como atrvés da implementação de campos de demonstração) e no fortalecimento da organização e liderança dos grupos de produção, como fora fortemente recomendado pelo relatório.
4. A equipe japonesa reiterou a importancia de maximizar os efeitos da reabilitacao do canal principal, para o qual o Governo do Japao estendeu a sua assistencia em 2002-2003. O JCC ficou a saber que as areas do cultivo foram aumentado ao longo dos anos desde entao e que irao aumentar ainda mais com a reabilitacao dos canais secundarios e tercearios cobrindo 7.000 ha (com inicio no proximo ano apoiado pelo Banco Islamico de Desenvolvimento). O JJ reconhece tambem que o regadio de Chokwe deu prioridade a expansao de terras com maior rendimento.
5. O JCC foi informado que o plano de acção das 3 entidades da contra parte moçambicana seria apresentado e finalizado no proximo encontro do JCC a ser realizado em Janeiro de 2010.
6. A contraparte moçambina pediu a contraparte japonesa mais assistencia para a disseminação dos resultados do projecto para outras areas do regadio. A contraparte japonesa afirmou que ira considerar o pedido na proxima fase do projecto que foi proposta ao Governo do Japao pelo Governo de Moçambique.

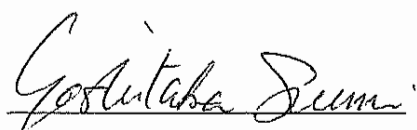
Anexo: Relatório de Avaliação Final



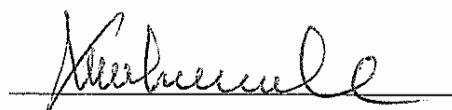
RELATORIO DE AVALIACAO CONJUNTA SOBRE  
O DESENVOLVIMENTO AGRÍCOLA INTEGRADO PARA OS  
AGRICULTORES DE PEQUENA ESCALA NO REGADIO DE CHOKWÉ  
REPÚBLICA DE MOÇAMBIQUE

Equipe de Avaliação Conjunta  
Moçambique – Japão

Maputo, 10 de Dezembro de 2009



Sr. Yoshitaka SUMI  
Chefe de equipa  
Equipe de avaliação do Japão  
Agencia Japonesa de Cooperação  
Internacional  
Japão



Sr. Inácio NHANCALE  
Chefe de equipa  
Equipe de avaliação de Moçambique  
Chefe do Departamento Técnico da  
Direcção Nacional de Extensão Agrária,  
Ministério da Agricultura,  
Republica de Moçambique

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## **1. Objectivos e Métodos de Avaliação**

### **1-1 Objectivos da avaliação final**

- (1) Conduzir uma avaliação conjunta e encontros com as entidades competentes do governo Moçambicano de forma a 1) recolher informação necessária de forma a verificar os resultados dos investimentos feitos durante o período do projecto 2) avaliar o nível de realização dos objectivos do projecto, o efeito geral das estratégias tendo em conta os cinco critérios de avaliação (relevância, efectividade, eficiência, impacto e sustentabilidade)
- (2) Fazer uma análise dos conhecimentos adquiridos no processo de avaliação de forma a melhorar a qualidade de novos projectos ou dos que estão em curso

### **1-2 Métodos usados na avaliação final**

#### **1-2-1 Procedimento de avaliação (avaliação conjunta)**

O projecto foi avaliado pelas equipas de avaliação moçambicana e japonesa (daqui em diante referidas como “equipe de avaliação conjunta”) de acordo com o registo das discussões (R/D). A avaliação incluiu a análise documental, a pesquisa de campo, e entrevista com os intervenientes do projecto como é o caso dos peritos da JICA, pessoal da Estação Agrária de Chokwé (EAC), dos Serviços Distritais de Actividades Económicas (SDAE), da Hidráulica do Chokwé Empresa Pública (HICEP), e alguns agricultores nas áreas modelo.

#### **1-2-2 Critério de avaliação (Cinco critérios de avaliação)**

A avaliação foi conduzida com base nos seguintes critérios:

##### **(1) Relevância**

A relevância refere-se a validade dos propósitos do projecto e do objectivo em geral que se pretende alcançar em conexão com a política de desenvolvimento do Governo de Moçambique bem como com as necessidades dos beneficiários.

##### **(2) Efectividade**

O objectivo da efectividade é saber até que ponto os benefícios esperados do projecto foram de facto alcançados. Examina ainda se estes benefícios teriam de facto surgido como resultado do projecto.

### (3) Eficiência

A eficiência refere-se a produtividade do processo de implementação. Examina se o investimentos do projecto terão sido eficientemente convertidos nos resultados esperados.

### (4) Impacto

É todo e qualquer impacto causado pela implementação do projecto quer seja directo ou indirecto, positivo ou negativo, incluindo a extensão dos objectivos do projecto, i.e. até que ponto estes foram alcançados.

### (5) Sustentabilidade

Com a sustentabilidade procura-se saber até que ponto o projecto pode ser desenvolvido pelo governo de Moçambique e seus beneficiários e até que ponto os benefícios gerados pelo projecto podem ser sustentados de acordo com as políticas nacionais, as tecnologias, os sistemas e as condições financeiras.

## 1-3 Membros da Equipe de Avaliação Conjunta

### (1) Equipe de avaliação do Japão

Sr. Yoshita SUMI	Chefe de equipa	Vice Director Geral, Departamento de Desenvolvimento rural - RDD, JICA
Sr. Motonori TOMITAKA	Irrigação na Cultura de Arroz	Conselheiro senior/Conselheiro Chefe Técnico – JICA, Cooperação para o apoio de Serviços e Sistemas de Irrigação – TANRICE – em Tanzania
Mr. Kazuyuki FUJIWARA	Planificação e Gestão	Especialista Adjunto, Africa Austral e do Este (JICA)
Dr. Junichi WATANABE	Avaliação e análise	Consultor Senior/ Pesquisador (JICA)

### (2) Equipe de avaliação de Moçambique

Sr. Inácio NHANCALE	Chefe de equipa	Chefe de Departamento técnico, Direcção Nacional Extensão Agrária (DNEA)
Sr. Eugénio COME	Formador de agricultores	Agrónomo, DNEA, MINAG

## 1-4 Calendário da avaliação final

O calendário da avaliação encontra-se no anexo 1.

### **1.5 Lista das pessoas entrevistadas**

Veja o anexo 2.

## **2 Esboço do projecto**

### **2-1 Antecedentes**

Moçambique é um país com 800.000km<sup>2</sup> de área (180.000km<sup>2</sup> terras aráveis) e possui uma população de 20.37 milhões de habitantes. A agricultura é a principal industria, abarcando cerca de 81% da força de trabalho e 33 % do seu PIB. As potenciais áreas para o cultivo de arroz são estimadas em cerca de volta de 900.000ha, dos quais apenas 200.000 estão sendo aproveitados (segundo o PAPA – Plano de Acção para a Produção de Alimentos). Em 2007, Moçambique produziu 196,000 toneladas (o rendimento médio é de 0.98 ton/ha). Com o incremento da procura do arroz, a taxa de auto-suficiência do arroz é baixa (38.3%), portanto, cerca de 316,000 toneladas de arroz ainda é importada. O arroz é a segundo alimento mais consumido depois do milho. Do ponto de vista de segurança alimentar, a melhoria da auto-suficiência alimentar deve ser atingida imediatamente.

O Regadio de Chokwé, no distrito de Chokwé, província de Gaza é o maior sistema de irrigação do país. A área irrigação é de 23.000 ha e nos tempos passados a mesma chegou a produzir 100.000 toneladas de arroz. Entretanto, as funções do regadio ficaram estagnadas e a produção do arroz caiu para 1/10 da produção devido a guerra civil nos anos 80, a mudança do sistema económico depois da independência e as cheias do rio Limpopo no ano 2000.

Moçambique instalou o programa de melhoramento do regadio em 1992. O Japão apoiou este programa em 2002 e 2003, reparando os canais principais numa extensão de 14km. Entre 1998 e 2004, canais secundários e terciários foram reparados parcialmente e as associações de usuários das águas foram capacitadas pela Agência Francesa de Desenvolvimento - AFD.

A HICEP faz a gestão do regadio através da 1) gestão dos canais principais para assegurar fornecimento e distribuição de água, 2) colecta e gestão de taxas de água, 3) operação e manutenção das infraestructuras de irrigação.

As associações dos usuários de água tem o seu papel na gestão e manutenção dos canais secundários e terciários, porem faltam-lhes capacidades para a gestão e manutenção apropriada das infraestructuras de rega. Desta feita, as infra-estructuras de irrigação tem sido mal geridas.

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Na mesma área, situa-se o SDAE (Serviços Distritais de Actividades Economicas) e a EAC (Estação Agraria De Chokwé). Chokwé é um dos poucos distritos que beneficia de uma estação agraria. No entanto, escritorios dos SDAE podem ser encontrados em todos distritos do Pais. Estas instituições estão encarregadas de providenciar serviços técnicos agrários e desenvolvimento de técnicas agrárias de maneira a prestar serviços de extensão agrária aos agricultores. Porém, devido a falta de pessoal, as suas habilidades, a colaboração mútua de organizações envolvidas, o sistema de apoio aos agricultores tais como assistencia técnica, microfinanças, e introdução de máquinas de descasque de arroz, nao esta funcionando como esperado.

Cerca de 90% dos agricultores do regadio de Chokwé são pequenos agricultores. Devido a falta de tecnicas apropriadas e dificuldades no uso eficiente de água, falta de insumos agrícolas e acesso ao mercado, a área cultivada do regadio é de apenas 7. 000 ha. Por causa da baixa produtividade na agricultura, a media da colecta das taxas de água é baixa, o que originou a uma gestão deficiente das infra-estruturas do regadio pelas associações dos usuários da água.

O governo de Moçambique solicitou uma cooperação técnica ao governo de Japão para melhorar as condições de vida dos agricultores de pequena escala do regadio de Chokwé.

Baseando-se nos resultados dos estudos preliminares e nos registos das discussões (R/D), o projecto foi assinado pelos governos de Japão e Moçambique a 4 de Dezembro de 2006. A implementação do projecto teve inicio no dia 17 de Março de 2007 para um período de cooperação de cerca de 3 anos (até finais de Março de 2010).

## **2-2 Resumo do projecto**

A estrutura do projecto é ilustrada na Matriz de Desenho do Projecto revista (MDP) versão 3 que foi modificada pela Equipa Conjunta de Avaliação na Avaliação de Medio-Termo realizda no principio deste ano (vide anexo 3).

### **(1) Objectivo Geral**

Aumentar o rendimento dos agricultores de pequena escala no Regadio de Chokwé.

### **(2) Objectivo do Projecto**

Aumentar a produção agrícola dos agricultores de pequena escala na área alvo do Regadio de Chokwé.



### **(3) Resultados esperados:**

- Resultado 1: Melhoria das técnicas para os agricultores de pequena escala na área alvo.
- Resultado 2: Melhoria da gestão das infra-estruturas do regadio e uso de água na área alvo.
- Resultado 3: Fortalecimento das actividades de apoio agrícola providenciadas pelos extensionistas aos agricultores de pequena escala na área alvo.
- Resultado 4: Fortalecimento da colaboração entre o SDAE, EAC, e HICEP.

### **3.4. Realização do projecto.**

#### **1. Investimentos:**

##### **1.1 Por parte do governo Japonês**

##### **(1) Envio de peritos Japoneses**

Foram enviados peritos japoneses nas seguintes áreas: 1) Conselheiro chefe, Extensão/ Treinamento 2) Agronomia, 3) Gestão de água e irrigação, 4) Pesquisa de base, 5) Processamento de arroz/marketing, e 6) Coordenador. Vide detalhes no anexo 4.

##### **(2) Provisão de equipamento**

Foram disponibilizadas máquinas de descasque de arroz, bombas de irrigação, debulhadoras, cortadoras de capim, e equipamento de escritório. As despesas para estes equipamentos foram de 232.178,00 Mt e 2.447,393 JPY (Yen) e USD 128,082. Vide detalhes no anexo 5.

##### **(3) Formação no Japão**

Seis representantes da contraparte Moçambicana participaram numa formação no Japão nas áreas de “Desenvolvimento agrícola através da participação de agricultores” e “Visitas de estudo”. Um representante da contraparte moçambicana participou numa formação em “Técnicas de Cultivo de Arroz” realizada no Egipto. Veja detalhes em anexo 6.

##### **(4) Custos locais alocados pelo lado japonês**

Os custos locais alocados pela JICA para implementação das actividades do projecto são 50.665.000 JPY (Yen) no total. Veja detalhes em anexo 7.

#### **4-1-2 Investimento do lado Moçambicano**

### **(1) Alocação de pessoal**

Actualmente, o director do projecto e o coordenador do projecto, e 6 contrapartes do EAC e HICEP, totalizando 7, estão alocados para o projecto. Uma das contrapartes que desempenhava a função de gestor de projecto no EAC foi transferido para o MINAG. Veja detalhes em anexo 8.

### **(2) Alocação de orçamento do lado de Moçambique**

MINAG responsabilizar-se-á pelas despesas de água e energia etc. para os escritórios dos peritos japoneses. Para além disto, a SDAE, a EAC e a HICEP fizeram algumas contribuições para o projecto. Veja o anexo 9 para mais detalhes.

## **4-2 Resultados esperados**

### **4-2-1 Resultado 1: Melhoria das técnicas para agricultores de pequena escala.**

As actividades de desenvolvimento de técnicas apropriadas de cultivo de arroz; preparação de manuais sobre o cultivo do arroz, desenvolvimento das capacidades dos extensionistas e agricultores modelos, etc. estão em progresso quase como planeado. No entanto, ainda é necessário que durante o período que resta do projecto se desenvolvam as capacidades dos extensionistas e dos agricultores das machambas modelo e outras áreas, no futuro.

Indicador 1-1: Número de agricultores de pequena escala que adoptou as técnicas agrícolas apropriadas (33 agricultores no D4 e 26 no D7, no total 59 agricultores).

Indicador 1-1: Numero de agricultores de pequena escala que adoptou tecnicas agricolas apropriadas (33 no D4 e no D7, no total 59 farmers)

Este indicador mostra que todos os agricultores das machambas modelo (33 agricultores no D4 e 26 agricultores no D7, no total 59) adoptaram técnicas de cultivo de arroz apropriadas e recomendadas, tais como: preparação de viveiros, métodos apropriados de transplante, técnicas de sementeira e métodos de fertilização que estão a ser postos em prática na presente campanha de cultivo de arroz.

Para além disto, o desenvolvimento do uso da tracção animal para o nivelamento da terra, lavoura assim como o controle de capim, sugeridas pela avaliação de médio termo,

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sao tambem considerads como tecnicas de cultivo de arroz.

De acordo com as entrevistas feitas aos agricultores das machambas modelo (D4 e D7) em Agosto de 2009, as tecnicas mais usadas e que se mostraram mais uteis no aumento do rendimento da producao do arroz foi o aumento do numero de sementes usadas em cada covacho, assim como outros metodos mais apropriados da aplicaco de fertilizantes em conjunto com uma boa preparcao de terra de forma a fazer-se o transplante na hora apropriada, assim como adisponibilidade de agua para irrigacao. Os Servicos Distritais de Actividades Economicas e a Estacao Agraria identificaram as tecnicas de viveiros com 4-5 sementes por covacho para futuro transplante como sendo de grande importancia para o aumento da produtividade, de tal forma que com a colaboracao do MINAG, pretendem estender estas tecnicas para outras localidades em Chokwé, assim como para outros Distritos e Provincias

Como ja havia sido mencionado na avaliacao de Medio Termo, relativamente ao tamanho dos campos de cultivo e utilizacao de traccao animal para lavoura, sao necessarios algumas ajustes técnicos. Os agricultores fazem pequenos canteiros (ex. 300m<sup>2</sup> por machamba) divididos por marachas e o transplante é feito por trabalhadores contratados cujo pagamento é feito por canteiro. Do ponto de vista da eficiencia, seriam necessarios campos maiores de forma a fazer-se uma gradagem eficiente usando a traccao animal. Todavia, os agricultores estão a enfrentar dificuldades no que concerne ao cultivo em grandes áreas pois isto acarreta despesas tais como o pagamento dos trabalhadores contratados. A gestão de água nos campos é crucial para o cultivo do arroz uma vez que os terrenos não são planos. Parece que alguns ajustes técnicos tem de ser feitos relativamente ao tamanho e o método de marachas, isto de acordo com as opiniões dos agricultores.

Em relação ao controle de capim, tem se vindo a observar que existe muito capim nos campos de cultivo e tal se verifica nao apenas nas machambas dos agricultores de pequena escala assim como nos de grande escala incluindo agricultores comerciais. O crescimento do capim com masi rapidez e vigorosidade do que o arroz. O crescimento do capim tem uma influencia considerável na produtividade do arroz. De entre as varias formas de controle de capim, encontram-se a preparacao apropriada do solo, o nivelamento e controle do nível de água nos campos (pela manutencao de uma certa profundidade de água). No entanto, é sabido que os agricultores modelo precisam de mais instrucao nos seus campos de cultivo.

Como forma de responder a estas dificuldades, foi desenvolvido, em Agosto de 2009 o uso experimental da traccao animal. Os campos de tamanho apropriado onde fora usada a da traccao animal retem agua suficiente para anular o capim.

Espera-se que a tecnica de tracção animal seja difundida pelas machambas modelos através dos extensionistas.

De acordo com o resultado das experiencias conduzidas em 2008 em relacao a quantidade de fertilizante a ser aplicada, verificou-se que o uso de 200kgs de ureaia numa aplicacão tripla, produz maior rendimento.. No entanto, tendo em conta os baixos recursos financeiros dos argricultores e outros factores de risco tais como a subida dos preços de fertilizantes e arroz no mercado, o projecto sugeriu o uso de 100 kgs de ureia, tambem numa aplicacao tripla (50% na primeira e 25% nas duas ultima).

A experiencia em Chokwé mostra que P e K nao constituem factores limitantes.

Na ultima campanha haviam 15 agricultores na machamba modelo do D4, dos quais 5 conseguiram um rendimento de mais de 4.5 tons/ha, e 23 no D7 dos quais 7 conseguiram um rendimento de 4,5ton p/ha totalizando 13. Aparentemente, estes 13 agricultores conseguiram adoptar apropriadamente as tecnicas ensinadas. Um dos motivos pelos quais os restantes agricultores nao conseguiram atingir este rendimento, foi a demora do transplante.

O rendimento medio destes agricultores nas machambas modelo aumentou de 4,798kg/ha (2007/8) no D4 para 5,131 kg/ha (2008/2009) e de 4,455kg/ha para 5,325kg/ha no mesmo periodo no D7. Desta feita pode se concluir que grande parte dos agricultores adoptaram as tecnicas apropriadas para o cultivo do arroz.

Indicador 1-2: Número de extensionistas que adoptou as técnicas agrícolas apropriadas para os agricultores de pequena escala (8 extensionistas).
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Todos os nove extensionistas (1 supervisor e 8 extensionista s de campo) participaram em formacoes sobre tecnicas basicas de cultivos de arroz.

Como sugestao da avaliacao a Medio Termo foram conduzidas mais formacoes para os extensionistas. Desta feita, todos os 9 extensionistas responsaveis pelas machambas modelo do D4 e D7 adquiriram conhecimento tanto praticos como teoricos na area de cultivo de arroz e outros 6 extensionistas fora do perimetro do D4 e D7 Adquiriram conhecimentos, principalmente teoricos.

Tres extensionistas encarregues pelo D4 e D7 tem, por vezes, levado a cabo instruções técnicas a agricultores modelo nos proprios campos. Os outros 6 extensionistas estão encarregues de outras áreas no distrito de Chokwé daí eles não terem tido oportunidade de por em pratica os conhecimentos e habilidades adquiridos nas formações devido a

falta de recursos para o estabelecimento de campos de demonstração. Torna-se difícil adquirir competência prática suficiente para transmitir conhecimentos aos agricultores através de uma aprendizagem teórica.

De forma a melhorar a capacidade dos extensionistas, foi formulado um plano anual. Nove machambas de demonstração estão sendo desenvolvidas onde insumos como sementes, fertilizantes, e despesas do trator serão suportadas pelo projecto. Estas machambas foram desenvolvidas por agricultores competentes e cada uma delas tem a supervisão de um extensionista. Espera-se com estas demonstrações desenvolver as capacidades práticas de instrução dos extensionistas

Indicador 1-3: Número de técnicas agrícolas desenvolvidas e melhoradas (11 tipos).

A seguir se descrevem os 11 tipos de técnicas alvo de desenvolvimento e melhoramento.

- 1) Preparação de viveiros (protecção de viveiros de arroz semi-irrigados, área para os viveiros, período dos viveiros).
- 2) Variedade de semente (a variedade Limpopo tem boa qualidade, uso de semente certificada)
- 3) Preparação da semente: quantidade de semente apropriada, 60 kg/ha (selecção básica da semente, selecção com água, encharcamento e germinação)
- 4) Sementeira (densidade de sementeira, cobertura de solo e gestão de água)
- 5) Preparação de campos de arroz (estrutura dos campos e lavoura [tracção animal] usando dois bois)
- 6) Métodos de transplante (densidade de transplante e número de planta por canteiro)
- 7) Métodos de fertilização (aplicação de ureia por 3 vezes, 100kg/ha de ureia no total)
- 8) Gestão de campos de arroz (gestão de água, controle de capim e controle de pestes).
- 9) Colheita (tempo adequado para colheita)
- 10) Pós colheita (humidade do arroz)
- 11) Selecção de sementes pelos agricultores para seu próprio uso.

(Observações: as técnicas sublinhadas são técnicas que estão em desenvolvimento e melhoramento)

A técnica nr. 5 está em fase de desenvolvimento e melhoramento. As outras 10 técnicas já foram desenvolvidas ou melhoradas. A nr 5 será desenvolvida até o final do projecto. Desta feita este indicador só será alcançado no final do projecto.

Estas técnicas estão descritas nos manuais que são de grande serventia tanto para os extensionistas assim como para os agricultores.

O método de selecção de sementes pelos agricultores é explicado no manual de produção de semente. No entanto, é uma boa iniciativa fazer folhetos a serem utilizados nas formações dos agricultores ou para a sua distribuição aos agricultores nas áreas alvo. É esperado que os agricultores modelo possam fazer a selecção de sementes nos seus campos durante o período de colheita do arroz (a partir de Março)

Em relação a técnica de lavoura com recurso a tracção animal, é necessário que sejam feitos ajustes de acordo com as opiniões dos agricultores como já foi mencionado (indicador 1.1).

Indicador 1-4: Número de técnicas de produção de sementes melhoradas (2 tipos).

Os 2 tipos de técnicas de produção de semente abaixo, foram melhoradas na AEC (Estação Agrária de Chokwé).

- 1) Melhoramento de exactidão de trabalho (trabalhadores do EAC podem levar a cabo produção de sementes de acordo com procedimentos descritos no manual de técnicas de produção de sementes, a taxa de mistura de sementes de outras variedades foi reduzida)
- 2) Melhoramento da qualidade de semente a partir de melhoramento de infraestruturais e equipamento de processamento de semente (melhoramento da secagem, introdução de máquina de debulha, máquina de selecção por asas, máquina de remoção de arestas).

Indicador 1-5: Diferentes tipos de manuais preparados (5 tipos).

Cinco tipos de manuais foram preparados em Português e Inglês, assim como os manuais de produção de semente, de cultivo de arroz, de extensão agrária e do uso de tracção animal está a ser preparado. A versão final destas manuais será feita até finais de Dezembro de 2009. O manual de cultivo (Milho, Feijão, Repolho e Cebola, etc.) em terras altas também será concluído até Dezembro de 2009.

#### **4-2-2 Resultado 2: Melhoria da gestão dos sistemas de regadio e uso de água na área alvo**



O desenvolvimento de capacidades na gestão de água e manutenção de infra-estruturas de irrigação assim como a preparação de manuais foram quase que na totalidade implementados. Em relação a taxa colecta de água, são ainda necessárias algumas medidas para a sua melhoria principalmente no D4 e D7.

Indicador 2-1: Número de membros das associações de regantes (AUA) que aprendeu métodos de gestão de infraestruturas de irrigação (38 agricultores no D4 e 4 no D7)

A A.U.A do D4 possui 175 membros e a do D7 possui 176 membros. O alvo principal dos cursos de formação na gestão de infra-estrutura de irrigação e de nivelamento de água nos campos são os líderes de grupos (encarregues da gestão de água de canais terciários) no D4 e D7, e os agricultores modelo do projecto.

O número de participantes nas formações ainda não atingiu o alvo desejado. É necessária uma maior participação, especialmente na área de gestão do nível de água nos campos, sendo esta uma importante técnica no cultivo do arroz. Planeia-se levar a cabo uma formação em Fevereiro de 2009. Grande parte dos agricultores irá participar na formação sobre a gestão de água.

É preciso uma maior instrução para os agricultores modelo no que concerne a gestão do nível de água nos campos, por forma a que eles não adquiram apenas conhecimentos teóricos, mas também habilidades práticas na gestão de água.

Segue-se o número dos participantes nos cursos de formação em 2009 :

**Tabela 2: Numero de participantes nas formacoes**

Data	Local e Tipo de Treino	Objectivo da Actividades	Numero de Participantes
27 de Maio	Agricultores Modelo do D4 - Métodos de Manutenção das drenagens nos arrozais	Manutenção dos canais de drenagem na machamba modelo do D4 (de 1 a 7 de Julho de 2009)	3 representantes da HICEP e 8 agricultores Total: 102
12 de Junho	Agricultores Modelo do D4 - Guia operacional das tomadas de água dos canais terciários	Obras de manutenção das tomadas de água – R11 e R 13 (de 3 a 15 de Julho de 2009)	2 representantes da HICEP e 32 agricultores Total: 5
19 de Junho	Agricultores Modelo do D7 - Guia operacional das	1 dia	1 representante da HICEP e 7 agricultores

	tomadas de agua dos canais terceiros		
28 de Junho	Agricultores Modelo do D4 - Formacao no metodo de irrigacao rotativa	Funcionamento e funcionalidade da irrigação de rotação – 1 dia	1 representante da HICEP e 27 agricultores
29 de Junho	Agricultores Modelo do D7 - Formacao no metodo de irrigacao rotativa	Funcionamento e funcionalidade da irrigação de rotação – 1 dia	1 representante da HICEP e 32 agricultores
26 de Out.	Agricultores Modelo do D4 - Revestimento dos canais terceiros, trabalhos de manutenção em tijolos e betao	Manutencao do canal terceiro no D4 (de 27 de Outubro a 30 de Novembro)	24 representates da HICEP e 136 agricultores

Fonte: Relatório do Projecto JICA

Indicador 2-2: Taxa média de colecta da taxa de agua dos agricultores modelo (80%).

A taxa media de colecta de taxa de água no regadio de Chokwé de 2003/04 até 2006/07 (antes do projecto) era de 56.6%. Uma vez que a produtividade do arroz aumenta também devido ao abastecimento adequado de agua suportado pelo projecto de implementacao, assume-se tambem um aumento na colecta de taxa de água. Dai ter-se fixado o alvo em 80%.

Segundo o relatório da HICEP, a taxa media de colecta de taxa de água no regadio de Chokwé na campanha agrícola de 2002/03- 2005/6 foi de 79.5% na machamba modelo do D4 e 68.2% na área modelo D7.

Por outro lado as infra-estruturas de irrigação no D4 e D7 tem sido melhoradas pelo projecto. Como consequencia, a taxa de colecta de agua subiu para 81.8% (27 dos 33 pagam) no D4 e 92.3% (24 dos 26) no D7.

Indicador 2-4: Tipos de manuais preparados (3 tipos).

Tem sido preparados esboços do manual de gestão de água e de manutenção de regadio,



as versões finais (manual pratico) em Português e Inglês serão produzidos até Dezembro de 2009.

Existe um esboço do manual de gestão de construção e a versão final (manual pratico) em Português e Inglês será produzida até no final de Março de 2010. De acordo com a HICEP, o manual de gestão de construção será consultado na preparação do de concurso.

#### **4-2-3 Resultado 3: Fortificação das actividades de suporte da agricultura providas pelos extensionistas para agricultores de pequena escala na área alvo**

Estão em progresso actividades de apoio ao agricultor que trarão grandes benefícios para estes. No entanto, ainda é importante um fortalecimento em termos de perspectivas, mercado, gestão, regulamento, etc.

Indicador 3-1: Número de agricultores treinados em operações de micro

Um grupo de apoio às machambas foi organizado em cada uma das AUA no D4 e D7. Cada grupo de apoio é composto por 5 membros. A formação de 10 membros do grupo de suporte das machambas foi levada a cabo duas vezes. A duração total das formações foi de 6 semanas e os principais conteúdos das mesmas foram a estrutura da máquina de processamento do arroz, manutenção e operação da máquina, gestão financeira, e rentabilidade da máquina de processamento do arroz.

A seguinte conformação foi obtida a partir de entrevistas aos membros do grupo de apoio:

- Eles entendem facilmente os conteúdos do treinamento tais como operações e manutenção da processadora de arroz porque existem membros que já usaram maquinarias similares anteriormente.
- Eles entendem de contabilidade facilmente. Todavia, eles querem fortalecer ainda mais os conhecimentos nesta área.
- A máquina de processamento de arroz está em boas condições.
- Os dois grupos fazem gestão financeira usando contas bancárias. Parte do lucro da máquina de processamento é utilizada para empréstimos agrícolas aos agricultores modelo. Contudo, é necessário que se estabeleça um regulamento no uso dos lucros da descascadeira de arroz de forma a assegurar a sustentabilidade.

Em resposta ao pedido de formações mais aprofundadas na área de contabilidade, foi levada a cabo uma formação de agricultor para agricultor nesta área a 24 de Junho de

2009. Um contabilista do D7 condiziu uma formacao de 1 dia no D4.

Mais adiante, uma regulamentacao relativamente a gestao dos lucros, particularmente o proveniente do processamento de arroz, foi formulada pela HICEP e SDAE em Setembro de 2009. Após a entrada em vigor desta, os grupos de apoio aos agricultores passaram a ser designdos grupos de agricultores.

Indicador 3-2: Taxa de operações do processador de arroz (esteve operacional durante o ano todo e mais de 90.000kg de arroz foram processados).

Os grupos de apoia a producao deram inicio as actividades de processamento de arroz em Junho 2008. A média mensal de processamento de arroz durante 5 meses apos o inicio da actividade foi de 7.880kg e 5.864kg respectivamente. Assumindo que a maquina opera 25 dias num mes, a media diária e de 315 kg (D4) e 235kg (D7). No caso de D4 em media a producao diaria é de mais de 300 kgs (90 toneladas anualmente), No caso de D7 as quantidades ainda não são suficientes.

De acordo com o relatorio da JICA, o custo de processameto do arroz (por kg) no D4 desceu de 2.64 em 2008 para 1.64. A mesma melhoria registou-se no D7 passando de 3.69 em 2008 para 2.3 em 2009. Dois motivos explicam esta diferenca de custos do D4 e D7, sendo o primeiro o custo de arrendamento do armazem no D7 (MTN 1.500/mes) e o segundo as diferencas no volume anual, sendo de 6.926kg no D4 e 5.113kg no D7.

Como ja fora dito, a quantidade de arroz processado no D7 ainda nao é rentável. Sugere-se reducao de custos pessoais mas por outro lado epera-se que o volume do arroz aumente de Dezembro a Março uma vez que este periodo antecede a nova cultura de arroz. No entanto, nao sera facil melhorar esta situacao a curto prazo, uma vez que existe uma empresa que opera uma maquina de processamento de arroz mesmo ao lado do D4.

Indicador 3-3: Conteúdo e tamanho da venda conjunta do produto

Parte do arroz processado (arroz polido) é vendido em forma experimental pelas AUA do D4 e D7 em Maputo. A tabela abaixo ilustra a quantidade de arroz vendido e o preço de venda em Maputo.

**Tabela 3: Venda experimental de arroz processado em Maputo 2008/9**

AUA	Quantidade	Preço de venda por kg	Compradores
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	(Arroz polido)		
D4	2.5 tons	30 MTN	Maputo
D7	3 tons	30 MTN	Maputo

O preço do arroz polido em Maputo é 2.76 vezes maior que o preço do arroz com casca. O preço do Arroz Australia usado para sushi é de 100MTN/kg em Maputo e o arroz Limpopo é um forte concorrente para este arroz no mercado.

Espera-se que certo numero do grupo de agricultores do D4 e D7 com apoio da SDAE evidenciem esforços para venderem o arroz no mercado de Maputo

#### 4-2-4 Resultado 4: Fortificação da colaboração entre SDAE, EAC, e HICEP.

A colaboração entre as três instituições está em constante fortificação através do planeamento e implementação de actividades no regadio.

Indicador 4-1: Realização de actividades de colaboração entre o SDAE, EAC, e HICEP (o número das reuniões efectuadas, número de oficiais do projecto, número de workshops e participantes).

Reuniões com a participação dos três parceiros (SDAE, EAC, e HICEP) foram realizadas 8 vezes, assim como 7 workshops envolvendo líderes das machambas modelos até Novembro de 2009. Cerca de 50 representantes das 3 instituições incluindo extensionistas e funcionários de gestão de água estiveram empenhados nas actividades do projecto. Através da colaboração entre estas 3 instituições, foi preparado o plano de promoção de do arroz no regadio de Chokwé e ainda através destas actividades, a colaboração entre estas 3 instituições esta a ser fortificada.

Indicador 4-2: Preparação do plano de acção

A SDAE, EAC, HICEP prepararam em conjunto, um esboço do plano de acção durante 3 encontros realizados de Novembro a Dezembro de 2009. O plano sera validado no encontro da equipe de avaliacao conjunta a ser realizado em Março de 2010. Foi observada a necessidade das tres entidades dar seguimento aos resultados do projecto. Espera-se tambem a a implementação de um plano de gestao financeira para a implementação do plano de accao.

*ES*

*Nick*

Indicador 4-3: Situação de implementação do plano de acção

De acordo com o que fora mencionado acima

#### 4-2-5 Outros (Formações)

Várias formações para extensionistas, agricultores modelo, membros das AUA, membros de grupos de suporte e membros da promoção da tracção animal etc. tem sido levadas a cabo pelo projecto. Tipos de treinos, horários de treinos, participantes e conteúdos dos treinos podem ser observados na tabela abaixo. (detalhes no anexo 8)

O numero total de participantes nas formacoes realizadas ate Novembro 2009 é de 985 e a participacao apenas nas formações tecnicas é de 523.

A seguir encontram-se algumas das opiniões relativamente as formações e ao seu uso prático.

Importantes opinioes dos participantes relativamente as foramações e ao seu uso pratico foram descritas no relatorio da avaliacao de médio-termo.

No geral os conteudos das formacoes e metodologia de ensino foram boas para os extensionistas, para os agricultores modelo, para os grupos de agricultores e para os grupos de promoção da tracção animal, embora alguns participantes nao tenham percebidos alguns conteudos que consideram dificeis.

#### 4-3 Perspectivas da realização objectivo do projecto

(Objectivo do projecto: Aumentar a produção agrícola dos pequenos agricultores na área alvo no regadio de Chokwé).

Indicador. A produtividade de arroz nos agricultores modelo (59) na área alvo do projecto aumentou dos actuais 3.0 t/ha para 5.0t/ha.

A produtividade media de arroz no D4 e D7 é apresentada na tabela abaixo

**Tabela 7: Dados de rendimento do arroz**

Área	Resultados do inquérito	Produtividade media de alguns	Produtividade media de
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S.O

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	de base (t/ha)	agricultores modelo / campanha agrícola de 2007/08 (t/ha)	alguns agricultores modelo /campanha agrícola de 2008/09 (t/ha)
D4	3.83	4.71	5.1
D7	3.24	4.32	5.3

A produtividade média de arroz dos agricultores modelo (parte dos agricultores) na campanha agrícola 2007/08 nas áreas D4 e D7 foi de cerca de 4.71 ton/ha e de 4.32 ton/ha respectivamente. A média da produtividade de 11 pequenos agricultores no D4, D5, D6 e D7 foi de 3.38ton/há de acordo com resultados de inquéritos experimentais levados a cabo em Abril 2007 pelo projecto. Apesar de na campanha de 2007/8, a produtividade média dos agricultores modelo não ter atingido 5.0ton/ha, a mesma aumentou por volta de 1ton/ha.

A produtividade media do arroz dos agricultores modelo na campanha agrícola de 2008/9 ton/ha foi de cerca de 5.1 ton/ha no D4 e de 5.3 ton/ha no D7.

Desta feita a produtividade atingiu a meta estabelecida que era de 5.1 ton/ha.

## 5. Resultado da Avaliação

### 5-1 Relevância

Este projecto é de grande relevancia.

Foi levado a cabo um inquérito as familias, como estudo de base no decurso do projecto para 202 pequenos agricultores no D4, D5, D6, D7, e D12 do regadio. De acordo com os resultados deste estudo, a porção do rendimento agrícola relativamente ao rendimento total é de 20%, e a principal razao deste cenário, é o uso de tecnicas inapropriadas no cultivo, falta de maquinas agrícolas, falta de água para irrigação, falta de financiamento para agricultura,, fraco marketing, mercado pobre, etc.

Em media, a área de cultivo (registadas) dos pequenos agricultores e de 1ha. Todavia, devido aos constrangimentos acima mencionados, a área do cultivo actual de cerca meio hectar. Desta feita, existe uma grande necessidade de tomar medidas apropriadas para ultrapassar os problemas mencionados acima e promover o aumento do rendimento e produtividade agrícola.

O principal objectivos do Programa do Governo de 2005 á 2009 e da redução

da pobreza absoluta através da promoção do desenvolvimento socio-económico. Neste programa, 7 sectores chave são apontados sendo um deles o sector agrícola.

O objectivo do Plano de Acção para Redução da Pobreza Absoluta 2006-2009 (PARPA II) é de reduzir o índice de pobreza de 54% em 2003 para 45% em 2009.

No sector agrário, o aumento da produção, o melhoramento da produtividade, a segurança alimentar, o aumento dos rendimentos e fortalecimento do sentido de competitividade dos agricultores constituem factores muito importantes..

Os objectivos do Programa Nacional para o Desenvolvimento Agrícola II são, a redução da pobreza e segurança alimentar e, o principio geral deste programa toma em consideração as necessidades dos pequenos agricultores.

O objectivo do Plano de Acção de Produção de Alimentos (PAPA) 2008-2011, que foi preparado ano passado, é para atingir um aumento sustentável de produção agrícola e auto-suficiência de alimentos a nível nacional. Principais objectivos deste programa e de alcançar um aumento sustentável na produção agrícola e a auto-suficiência alimentar a nível nacional. O principal objectivo deste programa é alcançar a auto-suficiência das culturas principais nos próximos 3 anos e de reduzir a dependência na importação de alimentos. O arroz é uma das culturas mais importantes. Este projecto é de extrema relevância para o plano do governo de Moçambique.

Na política da Assistência Oficial Japonesa (ODA) no Japão, a assistência ao sector agrícola para a produção de alimentos e para o desenvolvimento rural, desempenham um papel importante na redução da pobreza e no desenvolvimento sustentável.

Um dos sectores importantes da política do ODA para Moçambique é o “Desenvolvimento Rural e Desenvolvimento Económico”. Na Conferência Internacional Para Desenvolvimento de Africa em Tokyo IV (TICAD), foi decidido priorizar a assistência de forma a duplicar produção de arroz na Africa Sub-Sahariana através DO CARD (Colisão para Desenvolvimento de Arroz na Africa), a partir da promoção auto-ajuda a países de africa sub-sahariana.

A República de Moçambique foi escolhida como primeiro país alvo na conferência CARD que teve lugar em Nairobi em Outubro de 2008. Este projecto está em conformidade com os objectivos do governo do Japão.

A pesquisa de base foi levada a cabo de modo a seleccionar grupos alvo e áreas alvo do projecto. Os critérios de selecção de áreas inquiridas foram 1) Existencia de associação de utentes de água 2) uma grande percentagem de agricultores de pequena escala 3) onde a reabilitação de infra-estruturas de irrigação estivesse maioritariamente concluída, 4) onde podia ser esperado resultados positivos das

actividades de demonstram. Desta feita foram seleccionadas as associações de utentes água do D4, D5, D6, D7, e D12 . O D4 e o D7 foram depois seleccionadas como areas alvo com base na analise collecta e analise de dados e tendo em conta factores como, publicidade, estabilidade no fornecimento de agua para irrigacao, rodovias de acesso na epoca chuvosa, actual situacao de reabilitacao das infraestructuras de irrigacao, sistemas de drenagem, etc.

### **5-2 Efectividade**

O projecto atingiu um nivel satisfatorio

Como fora anteriormente mencionado, o rendimento medio dos agricultores modelos na campanha agricola de 2008/9 foi de 5.1 ton/ha no D4 e 5.3 ton/ha no D7, itso porque os agricultores modelo adoptaram as novas tecnicas de agricultura desenvolvidas pelo projecto e com um bom uso da agua disponivel.

### **5-3 Eficiência**

Em relacao a eficiencia, o projecto esta a um nível moderadamente satisfatório

Dando seguimento ao relatorio de avaliacao a medio-termo, os investimentos tanto do lado de Moçambique como Japão foram, no geral, apropriados em termos de quantidade, qualidade e tempo e tem se sido positivamente utilizados nas actividades do projecto. Esta informacao é confirmada pela presente avaliacao. Entretanto, a contraparte Moçambicana, voltou a mencionar que o período de permanência dos especialistas japonese é curto e que seria necessário que permaneçam toda campanha de produção de arroz especialmente no primeiro ano do Projecto. Sugerem que o Governo Moçambicano designem especialistas japoneses que irao trabalhar em Chokwe a tempo inteiro, assegurando deste modo a transferencia tecnica.

### **5-4 Impacto**

Ainda é cedo para julgar se o objectivo global será ou nao alcançado. Contudo outros efeitos colaterais ou inesperados foram observados.

#### **5-4-1 Perspectivas de alcançar objectivo geral**

**Objectivo geral:** Aumentar o rendimento de agricultores de pequena escala no regadio do Chokwé.

Indicador: Rendimento de agricultores de pequena escala pela produção de arroz nos D4e D7 e áreas circunvizinhas de produção de arroz aumentou em 30%.

O estudo de base foi levado a cabo durante o período de 2007 a 2009 nas áreas D4, D5, D6, D7, e D12 do regadio de Chokwé em 2007 e 2009. No âmbito doméstico, os resultados mostram que a média da produção de arroz aumentou de 1,28kg/a para 1.670/ha. O que constitui um aumento de (1.3 vezes). Da mesma maneira a média de rendimento médio, proveniente da venda do arroz aumentou de 5.835 MT para 11,085.5 MT (1.9 vezes). Este aumento é significativo para os agricultores de pequena escala.

Por forma a atingir este tipo de rendimento, as seguintes condições devem ser observadas:

- 1) Os agricultores de pequena escala devem poder obter financiamento para produtos agrícolas tais como fertilizantes e preparação da terra, etc
- 2) A gestão de água para irrigação assim como a gestão de infra-estruturas de irrigação deve ser devidamente feita pelas Associações dos Usuários de Água
- 3) Os agricultores de pequena escala devem adoptar as técnicas de cultivo que este projecto recomenda
- 4) Os canais secundários e terciários assim como os canais de drenagem devem ser reabilitados e mantidos.
- 5) Os serviços de extensão devem ser providenciados de forma apropriada para aos agricultores
- 6) O preço de arroz, como parte de uma condição externa, não deverá ser reduzido
- 7) A liderança dos grupos de produção agrícola e das associações de regantes de água devem ser melhorada
- 8) Os canais principais de irrigação e drenagem devem ser mantidos
- 9) É necessário uma mecanização apropriada especialmente para lavoura e nívelamento do solo.

Quando estas condições são satisfeitas, espera-se que os agricultores de pequena escala no D4, D7 e áreas circunvizinhas possam alcançar um aumento significativo de rendimento através da produção de arroz.





#### 5-4-2 Efeitos paralelos e inesperados

Os seguintes efeitos positivos do projecto foram observados

(1) Disseminação de técnicas de cultivo de arroz do trazidas pelo projecto para agricultores das áreas circunvizinhas.

Vários agricultores no D8 e D9 estavam interessados nas técnicas de cultivo de arroz do Projecto e aprenderam com os agricultores modelo do D7. Eles estão a fazer o cultivo do arroz usando o conhecimento adquirido.

(2) Redução do trabalho e tempo das mulheres no descasque do arroz

Tradicionalmente as mulheres descascavam o arroz manualmente para o seu consumo, o que era trabalhoso e ocupava grande parte do seu tempo. Com a introdução das máquinas de descasque de arroz, não apenas os agricultores do D4 e D7, assim como outros agricultores de áreas vizinhas também se beneficiam destes serviços que são monitorados pelos grupos de produção agrícola.

Os agricultores não só vendem o arroz processado, assim como o usam para consumo próprio.

Estas máquinas, vieram diminuir a carga de trabalho das mulheres.

(3) Aumento de oportunidades de emprego para as pessoas nesta área de trabalho

Com a introdução de novas técnicas de cultivo para os agricultores modelo e aumento da área de cultivo, tornaram-se necessários mais trabalhadores para levar cabo actividades como transplante, controle de capim e colheita, pós-colheita, etc...

(4) Aumento das Áreas de Cultivo de Arroz

De acordo com a apresentação do HICEP feita no dia 2 de Dezembro de 2009, a área de cultivo de arroz em Chokwe aumentou consideravelmente como podemos observar: de 1,998 ha em 2004/05 para 156 ha in 2005/06, 2,713ha em 2006/07, 2,981ha em 2007/08, and 5,834ha em 2008/09. Espera-se cobrir 7,000ha em 2009/10

(5) Os rendimentos provenientes do processamento do arroz contribuíram para a extensão do crédito para os agricultores vizinhos, crédito este que serviu para a compra de fertilizantes e para a preparação de chokwe.

Grupos de agricultores do D4 e D7 utilizaram o lucro proveniente do processamento do arroz para crédito, principalmente para o pagamento de crédito usado principalmente para a preparação da terra e para a compra de fertilizantes que é depois retribuído em forma de arroz descascado. A taxa de reembolso no D4 é de 84.5% e 65.1 no D7. É

necessario melhorar a taxa de reembolso de credito no D7.

(6) A rotacao de culturas tambem contribuiu para o aumento do rendimento

É necessario introduzir o cultivo de duas culturas por ano ou a mesma cultura duas vezes por ano como forma de, por uma lado umentar o rendimento anual, e por outro lado aliviar alguns problemas causados pela repetição de culturas.

### **5-5 Sustentabilidade**

A sustentabilidade das politicas será garantida. Porém , é necessario tomar algumas medidas para asseegurar a sustentabilidade institucional e organizacional, assim como alguns aspectos financeiros e tecnicos.

#### **5-5-1 No ambito das politicas**

O distrito de Chokwé é um dos alvos no Plano de Acção de Produção de Alimentos 2008-2011 e os alimentos de destaque são arroz, milho, e trigo. Chokwé é uma das zonas de produção de arroz e o aumento de produção de arroz é uma questao importante para o governo de Moçambique. As actividades para aumento de produção de arroz são vistas como importantes. Desta feita, a estabilidade da politica será assegurada.

#### **5-5-2 Aspectos institucionais e organizacionais**

O número de funcionários do SDAE, EAC, e HICEP não é ainda suficiente. Existem 9 extensionistas em Chokwe, o que comparando com outros distritos é um numero consideravel. No entanto, o Governo de Moçambique através da PRONEA (Programa Nacional de Extensao Agricola) esté a evidenciar esforços para aumentar o numero de extensionistas no pais.

Está sendo promovida a coordenação e colaboracao entre as 3 instituicoes (SDAE, HICEP e EAC) e pode se dizer que a mesma melhorou.

No entanto, de forma a expandir e disseminar as novas técnicas de cultivo de arroz e outras tecnicas afins trazidas pelo projecto, é necessaria a preparação de um plano de acção. Neste plano devera constar para alem das actividades a se desenvolver como tambem o papel de cada uma das instituicoes envolvidas.

O Ministerio de Agricultura planeia recrutar extensionistas no proximo ano,e pretende duplicar este numero ate 2011.

#### **5-5-3 Aspectos financeiros**

O MINAG leva a cabo varias actividades baseadas no orçamento e plano anual. Existem alguns constrangimentos orçamentais para implementação de projectos novos usando orçamentos do governo no geral. De maneira a disseminar os beneficios do projecto para áreas vizinhas do regadio de Chokwé, será necessaria a utilização do orçamento do Fundo de Investimento para iniciativas Locais, ou de outros doadores. Existe um plano de rehabilitacao dos canais no regadio, com o objectivo de expandir o cultivo de arroz atraves do investimento local e externo como é o caso do Banco Islamico de Desenvolvimento.

O apoio do governo e as taxas de uso da agua sao essenciai para a manutencao das infraestructuras de rega.

As actividades do plano de accao devem ser incorporadas no Plano Anual de Actividades e Orçamento (PAAO) das respectivas instituições.

#### **5-5-4 Aspectos técnicos**

A contraparte Moçambicana do projecto, que inclui o pessoal do SDAE, EAC e HICEP tem boas capacidade como instrutores para cursos de formacao lconduzidos pelo projecto. No caso de extensionistas, 2 extensionistas estao envolvidos em actividades de extensão para os agricultores modelo. Porem, é necessario mais empenho e prática com agricultores. No caso dos outros 6 extensionistas, eles participaram nos cursos de formação duas vezes mas aprenderam basicamente aspectos teóricos, faltando oportunidades para praticar com agricultores no terreno. É necessário fortificar a capacidade prática destes 6 extensionistas.

De um modo geral e de forma a se assegurar a sustentabilidade tecnica do projecto é necessario que se aumente o numero de extensionistas e de pesquisadores na area e se desenvolver ainda mais as suas capacidades.

#### **6 Conclusões**

As actividades do projecto tem decorrido na sua maioria de acordo com o que foi planificado e o desempenho do projecto esta a um nível satisfatório.

Apesar dos objectivos do projecto terem sido quase que atingidos na sua tota, deixamos algumas recomendações para o periodo em falta ssim como para futuros projectos:

#### **7 Recomendações**

- As actividades do Plano De Accao (elaborado pelas 3 entidades) que visam a

promocao das tecnologias do projecto, devem ser incorporados nos seus respectivos PAAOs e implementados

- Devem ser distribuidos para os extensionistas e agricultores de pequena escala manuais e panfletos de disseminacao das tecnologias elaborados no ambito do projecto. Estes manuais deverao tambem ser actualizados
- Deverá ser fortalecida a estrutura organizacional e lideranca dos grupos de producao agricola
- É crucial uma melhor gestao dos regadios para um uso eficiente da agua
- De entre as condicoes necessarias para alcançar o objectivo geral do projecto, mencionadas em 5.4.1 especial atencao se deve dar para a promocao da mecanização em especial para a lavoura e para o nivelamento de terra.

## 8. Licoes Obtidas

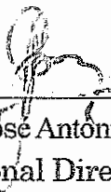
- A colaboracao entre as instituicoes relevantes (SDAE, HICEP e EAC) produz um maior e melhor impacto que quando estes trabalham separadamente.
- É tambem importante envolver autoridades a nivel ldistrictal, provincial e nacional de forma a escalar e expandir os resultados do projecto para outras regioes. Particularmente o envolvimento da DPA (Direccao Provincial de Agricultura) para uma maior disseminacao em areas fora do projecto.
- É importante que se façam alguns ajustes e adaptaçoes das tecnologias para a realidade cultural local e ambiente socio-economico –alguns agricultores adoptaram o uso da traccao animal o que contribue para a preparacao da terra mas ainda ha alguma hesitação por parte de outros agricultores que receam a doenca do pé e reducao e destruicao das marachas, que constitui a base de medicao para o pagamento dos trabalhadores nas machambas
- Devem ser avaliados os constantes pedidos dos agricultores de maquinas intermediarias entre os, tractores e a traccao animal
- A abordagem do projecto de uma cadia de valores completa – desde a producao, processamento, venda, marketing, com base no credito/financas e fundos rotativos traz uma maior impacto no aumento da producao agricola e e do rendimento dos agricultores
- Foi recordado que as demonstracoes nas formacoes surtem mais efeito aquando a traducao da teoria para a pratica, uma vez que existe uma diferenca entre a compreensao teorica e as habilidades praticas no terreno.
- O envolvimento dos extensionistas ‘e crucial na transferencia de conhecimentos agricolas para os agricultores. No entanto, deveria se consoderar uma abordagem

- pragmatica dependendo das circunstancias sosio-economicas do pais.
- Inicialmente, o projecto considerava apenas a producao de arroz, na epoca fresca/ baixa outras culturas podem ser consideradas de forma melhorar o rendimento dos agricultores e a fertilidade dos solos
  - O desenvolvimento das capacidades dos grupos de producao leva o seu tempo sendo necessaria uma cooperacao a longo termo



Minutes of the meeting  
On  
Joint final evaluation mission report  
For  
The Integrated Agricultural Development Project  
For the Small Scale Farmers  
In the Chokwe Irrigation Scheme  
Republic of Mozambique

Maputo  
December 10, 2009



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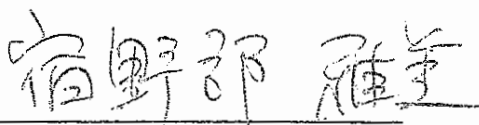
Mr. José António Gaspar  
National Director of  
Directorate of Agricultural extension  
Ministry of Agriculture  
The Republic of Mozambique



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Mr. Masato TAMURA  
Chief Advisor of the Project team  
Japan International Cooperation  
Agency Japan

Witnessed by



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Mr. Masami Shukunobe  
Resident Representative  
Japan International Cooperation  
Agency (JICA) Mozambique Office

Joint Coordination Committee meeting(JCC) between members of the Ministry of Agriculture (hereinafter referred to as "MINAG") and the Project Team organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA") headed by Mr. Masato TAMURA was held on 10<sup>th</sup> of December, 2009 at Hotel VIP in Maputo to discuss the contents of joint final evaluation report of the Integrated Agricultural Development Project for Small Scale Farmers in Chokwe Irrigation Scheme in the Republic of Mozambique (hereinafter referred to as the "Project"). The list of participants is attached in Annex 1.

Joint final evaluation report was presented by the evaluation mission members with several recommendations for the rest of project period.

After intensive discussions, JCC approved the joint final evaluation report and agreed that necessary measures for the recommendations should be taken by those who are attached to the project.

Recommendations made by the joint evaluation team were summarized in the followings.

- Action Plan of the three institutions, SDAE, EAC and HICEP, should be developed as planned and endorsed by the JCC to be held in January.
- Organization and leadership of farmers' associations need to be strengthened.
- Sufficient copies of manuals and leaflet developed by the Project should be produced and distributed to extension officers and small-scale farmers.
- Nine demonstration plots set by nine extension officers should be monitored.

## List of Participants

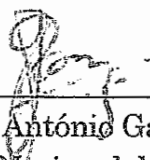
10/12/2009,  
de 10:30 a 12:30  
Sala de conferências, Hotel VIP

No	Nome	Cargo
1	Mr. José António Gaspar	National Director of Agricultural Extension(DNEA) , Ministry of Agriculture
2	Jose Libombo Junior	National Director of Veterinárý Services
3	Mr. Octavio Muhate	Provincial Directorate of Agriculture, Gaza Province
4	Mr. Simao Nyaima	Head of Department of International Cooperation, Ministry of Agriculture
5	Mr. Yoshitaka Sumi	Evaluation Team leader /JICA
6	Dr. Junichi Watanabe	Evaluation Team member /JICA
7	Mr. Kazuyuki Fujiwara	Final Evaluation Team Member /JICA
8	Mr. Inacio Nhancale	Evaluation team member (leader of Mozambican team ), Head of Technical Department of DNEA, Ministry of Agriculture
9	Mr. Eugenio Come	Evaluation team member, Directorate of agricultural extension
10	Mr. Masami Shukunobe	Resident Representative of Japan International Cooperation Agency (JICA) in Mozambique
11	Mr. Jun Hirashima	Project Formulation advisor , Mozambique JICA Office
12	Mr. Inácio Mugabe	Director of SDAE, Chokwe District
13	Mr. Salomão Matsule	Presidente of HICEP
14	Mr. Samuel Camilo	Acting chief of Chokwe Agricultural Research Station ,IAM
15	Mr. José Amandio Lopes	Counterpart to Extension/Training expert, Supervisor of Extension Department, SDAE
16	Mr. Eduardo Cesar Muuana	Counterpart to Irrigation water management
17	Mr. Marcos Langa	Counterpart to Agronomy expert, Researcher of rice section, EAC
18	Ms. Kinuka Shibamura	3rd Secretary, Embassy of Japan in Mozambique
19	Mr. Teruhisa Namba	Agronomist, PDAI/JICA
20	Mr. Eiji Takemori	Irrigation engineer PDAI/JICA
21	Mr. Masato TAMURA	Chief advisor, Extension / Training, PDAI /JICA



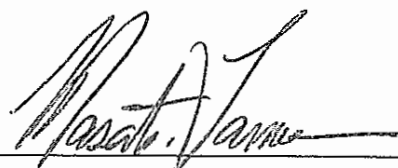
Acta da reunião  
sobre  
Relatório de Avaliação Final Conjunta para  
O Projecto de Desenvolvimento Agrícola integrado  
Para os Agricultores de Pequena Escala  
no Sistema de Regadio de Chokwé,  
República de Moçambique.

Maputo,  
10 de Dezembro de 2009



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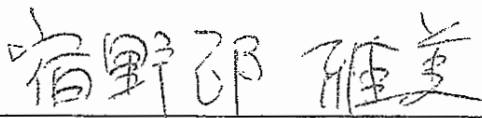
Sr. José António Gaspar  
Director Nacional de Extensão  
Agrária  
Ministério da Agricultura  
República de Moçambique



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Sr. Masato TAMURA  
Conselheiro chefe  
da equipe do projecto JICA

Testemunhado por



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Sr. Masami SHUKUNOBE  
Representante Residente  
Agência de Cooperação Internacional (JICA)  
Escritório de Moçambique

Reunião do Comité de Cordenação Conjunta (JCC), entre membros do Ministério da Agricultura (daqui em diante referido como MINAG) e a equipa do projecto organizado pela Agencia Internacional de Cooperação Japonesa (daqui em diante referido como JICA), liderada por Sr. Masato Tamura foi realizada em 10 de Dezembro de 2009 no Hotel VIP Maputo para discutir o conteúdo do relatório da avaliação final conjunta do Projecto de Desenvolvimento Agrícola Integrado para os Agricultores de Pequena Escala no Sistema de Regadio do Chokwe na Republica de Moçambique (daqui em diante designado como PROJECTO). A lista dos participantes no Anexo 1.

O relatório da avaliação final foi apresentados pelos membros da missão de avaliação conjunta com algumas recomendações para o restante periodo do PROJECTO.

Depois de intensa discussão, JCC aprovou o relatório da avaliação final conjunta e concordou que medidas necessárias para as recomendações devem ser tomadas por aqueles que estão ligados ao PROJECTO.

Recomendações feitas pela equipa da avaliacao final conjunta foram resumidas no seguinte:

- O plano de acção das tres entidades, SDAE, HICEP e EAC deverá ser elaborado de acordo com o planeado e aprovado pelo Comité de Coordenacao Conjunta (JCC) a ter lugar em Janeiro.
- Deverá ser fortalecida a estrutura organizacional e liderança dos grupos de produção agricola.
- Um numero suficiente de manuais e panfletos elaborados no ambito do projecto deverao ser produzidos e distribuidos aos extensionistas e agricultores de pequena escala.
- Os nove campos de demonstração planejados pelos nove extensionistas deverao ser monitorados.



## Lista de Participantes

10/12/2009,  
de 10:30 a 12:30  
Sala de conferências, Hotel VIP

No	Nome	Cargo
1	Sr. José António Gaspar	Director Nacional de Extensão Agrária Ministério da Agricultura
2	Sr. Jose Libombo Junior	Director National dos Servicos de Veterinária
3	Sr. Octavio Muhate	Director Provincial de Agriculture de Gaza-Substituto
4	Sr. Simao Nyaima	Chefe do Departamento de Coopereção International
5	Sr. Yoshitaka Sumi	Lider da equipe de avaliação /JICA
6	Dr. Junichi Watanabe	Membro da Equipe de Avaliação
7	Sr. Kazuyuki Fujiwara	Membro da equipe de avaliação /JICA Agronomista PADI/JICA
8	Sr. Inacio Nhancale	Lider da equipe de avaliação /Ministerio da Agricultura
9	Sr. Eugenio Come	Membro da equipe de avaliação /Ministerio da Agricultura
10	Sr. Masami Shukunobe	Representante de Escritórios de JICA em Moçambique
11	Sr. Jun Hirashima	Conselheiro de formulação de Projectos, Escritórios de JICA em Moçambique
12	Sr. Inácio Mugabe	Director do SDAE, Chokwe
13	Sr. Salomão Matsule	PCA, HICEP
14	Sr. Samuel Camilo	Chefe ajunto da Estação Agraria do Chokwe( EAC)
15	Sr. José Amandio Lopes	Contraparte a Extensao e treinamento, SDAE
16	Sr. Eduardo Cesar Muluana	Contraparte a Gestão de instala ção e água /HICEP
17	Sr. Marcos Langa	Contraparte a agronomia, Estação Agraria do Chokwe( EAC)
18	Sra. Kinuka Shibamura	Terceiro Secretaria da Embaixada do Japão
19	Sr. Teruhisa Namba	Especialista de agronomia PDAI/JICA
20	Sr. Eiji Takemori	Especialista de Irrigação e gestao de agua PDAI/JICA
21	Sr. Masato Tamura	Chefe Acessor e Extensão/ Treinamento PDAI/ JICA

