

Country Name	<b>The Integrated Agricultural Development for Small Scale Farmers in Chokwe Irrigation Scheme (the Project 2007-2010)</b>
Republic of Mozambique	<b>The Project for Rice Productivity Improvement in Chokwe Irrigation Scheme (the Project 2011-2014)</b>

**I. Project Outline**

Background	<p>The Chokwe Irrigation Scheme, located in Chokwe District, Gaza Province, along with the Limpopo River, is the largest irrigation scheme in Mozambique. It had the irrigation area of 26,000 ha producing more than 10 tons of rice before the civil war in 1980's. However, the production volume decreased to one tenth of the ones in the past in 2000's.</p> <p>The Government of Mozambique prepared the Chokwe Irrigation Scheme Improvement Program in 1992 and the development partners, including JICA, supported rehabilitation of channels and enhancement of water user associations. The irrigation scheme has been divided into 30 areas and classified by two categories of farming size, small scale of less than 4 ha and middle and large scale of more than 4 ha. The small scale farmers accounted for around 90% of the total number of farmers (25,000 farmers) in the irrigation scheme and for 47% of the arable land in the irrigation scheme. However, they faced vicious cycle of low cultivation in the irrigation scheme due to limited affordability of irrigation farming to cover maintenance cost for the irrigation facilities. Under those circumstance, the Government of Mozambique requested the Government of Japan a technical cooperation project to support improvement of livelihood of the small scale farmers in the irrigation scheme.</p>				
Objectives of the Project	<p>Through development of package of farming technologies for small scale farmers, improvement of management of irrigation facilities and water use in the irrigated area and strengthening of farming support activities for small scale farmers as well as enhancement of collaboration among the relevant government institutions, the projects aimed at increase in agricultural production by small scale farmers in the target area in the Chokwe Irrigation Scheme, thereby contributing to improvement of income of small scale farmers in the Chokwe Irrigation Scheme.</p> <ol style="list-style-type: none"> <li>Overall Goal: 1) Small scale farmers' income from rice production is improved in the target areas of the Chokwe Irrigation Scheme, 2) Rice production volume is increased in the target areas of the Chokwe Irrigation Scheme.</li> <li>Project Purpose: Yield of rice production is improved in the target areas in the Chokwe Irrigation Scheme.</li> </ol>				
Activities of the Project	<ol style="list-style-type: none"> <li>Project Site: [the Project 2007-2010] D4 and D7 in the Chokwe Irrigation Scheme [the Project 2011-2014] Upper and middle rice cultivation areas in the Chokwe Irrigation Scheme (2,000 ha)</li> <li>Main Activities: <ul style="list-style-type: none"> <li>[The Project 2007-2010] <ul style="list-style-type: none"> <li>i) development of package of farming technologies for small scale farmers, ii) development of manuals for irrigation facility management and water management and trainings for water user associations, iii) promotion of the farming support activities, iv) preparation of action plan for agricultural production through collaboration among the counterpart organizations, etc.</li> </ul> </li> <li>[The Project 2011-2014] <ul style="list-style-type: none"> <li>i) Developing and verifying rice cultivation technique of transplanting, ii) Trainings for extension leaders and farmers on improved rice cultivation techniques of transplanting, iii) Trainings for extension leaders and farmers on improved rice cultivation techniques of direct sowing, iv) Organizing farming support group in each target area, v) periodic meetings and monitoring of activities of the counterpart organizations and related organizations, etc.</li> </ul> </li> </ul> </li> <li>Inputs (to carry out above activities) <table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>Japanese Side</p> <p>[The Project 2007-2010]</p> <ol style="list-style-type: none"> <li>Experts from Japan: 7 persons</li> <li>Training in Japan: 6 persons</li> <li>Training in the third country (Egypt): 1 person</li> <li>Equipment: Rice mills, irrigation pumps, threshers, winnowers, bush cutters and office equipment, etc.</li> <li>Operation cost: cost for local consultant, cost for construction of drainage and farm road, cost for repair of tertiary channels, etc.</li> </ol> <p>[The Project 2011-2014]</p> <ol style="list-style-type: none"> <li>Experts from Japan: 7 persons</li> <li>Training in Japan: 3 persons</li> <li>Equipment: Rice mills, irrigation pumps, rotary, tractors, trailers, PCs, printers, projectors, etc.</li> </ol> </td> <td style="width: 50%; vertical-align: top;"> <p>Mozambican Side</p> <p>[The Project 2007-2010]</p> <ol style="list-style-type: none"> <li>Staff Allocated: 9 persons</li> <li>Land and Facilities: 3 project offices in SDAE, EAC and HICEP, respectively</li> <li>Operation cost: Cost for utilities, cost for vehicles</li> </ol> <p>[The Project 2011-2014]</p> <ol style="list-style-type: none"> <li>Staff allocated: 16 persons</li> <li>Land and facilities: 2 project offices in SDAE, and HICEP, respectively, and trial rice farming plots</li> <li>Operation cost: cost for utilities, cost for vehicles</li> </ol> </td> </tr> </table> </li> </ol>			<p>Japanese Side</p> <p>[The Project 2007-2010]</p> <ol style="list-style-type: none"> <li>Experts from Japan: 7 persons</li> <li>Training in Japan: 6 persons</li> <li>Training in the third country (Egypt): 1 person</li> <li>Equipment: Rice mills, irrigation pumps, threshers, winnowers, bush cutters and office equipment, etc.</li> <li>Operation cost: cost for local consultant, cost for construction of drainage and farm road, cost for repair of tertiary channels, etc.</li> </ol> <p>[The Project 2011-2014]</p> <ol style="list-style-type: none"> <li>Experts from Japan: 7 persons</li> <li>Training in Japan: 3 persons</li> <li>Equipment: Rice mills, irrigation pumps, rotary, tractors, trailers, PCs, printers, projectors, etc.</li> </ol>	<p>Mozambican Side</p> <p>[The Project 2007-2010]</p> <ol style="list-style-type: none"> <li>Staff Allocated: 9 persons</li> <li>Land and Facilities: 3 project offices in SDAE, EAC and HICEP, respectively</li> <li>Operation cost: Cost for utilities, cost for vehicles</li> </ol> <p>[The Project 2011-2014]</p> <ol style="list-style-type: none"> <li>Staff allocated: 16 persons</li> <li>Land and facilities: 2 project offices in SDAE, and HICEP, respectively, and trial rice farming plots</li> <li>Operation cost: cost for utilities, cost for vehicles</li> </ol>
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Project Period	[The Project 2007-2010] March 2007 to March 2010 [The Project 2011-2014] February 2011 to November 2014	Project Cost	[The Project 2007-2010] (ex-ante) 309 million yen (actual) 328 million yen [The Project 2011-2014] (ex-ante) 450 million yen		

		(actual) 407 million yen
Implementing Agency	[The Project 2007-2010] Ministry of Agriculture (Ministério da Agricultura: MINAG), National Directorate for Agricultural Extension (Direção Nacional de Extensão Agrária: DNEA) District Services for Economic Activities in Chokwe (Serviço Distrital de Atividades Economicas: SDAE) Chokwe Agricultural Research Station (Estação Agrária do Chokwe: EAC) Chokwe Hydraulic Public Corporation (Hidraulicas de Chokwe Empresa Pública: HICEP)	
	[The Project 2011-2014] DNEA, Provincial Directorate of Agriculture (Direção Provincial da Agricultura Gaza: DPA Gaza, MINAG), SDAE, EAC, HICEP	
Cooperation Agency in Japan	[The Project 2007-2010] Ministry of Agriculture, Forestry and Fisheries, Rural Development Institute Co., Ltd., Japan Development Service Co. Inc. [The Project 2011-2014] Rural Development Institute Co., Ltd.	

## II. Result of the Evaluation

< Special Perspectives Considered in the Ex-Post Evaluation >

[Evaluation of the Project Purpose and the Overall Goal and the envisaged logic for achieving and sustaining the project effects]

- After the Project 2007-2010), the Project 2011-2014) was implemented. In the ex-post evaluation, the two projects are interpreted as one intervention, and the Project Purpose and Overall Goal were restructured to verify achievement levels and continuation of the effects.

### 1 Relevance

<Consistency with the Development Policy of Mozambique at the Time of Ex-Ante Evaluation and Project Completion>

The project was consistent with Mozambique's development policies of the "National Programme for Agricultural Development (original schedule: PROAGRI I 1998-2004, PROAGRI II 2006-2010)" and the "Food Production Action Plan" (Plano de Acção para a Produção Alimentos) (2008-2011) as well as the "Strategic Plan for Agricultural Development (Plano Estratégico para o Desenvolvimento do Sector Agrário: PEDSA)" (2011-2020) prioritizing enhancement of agricultural production including support for small scale farmers.

<Consistency with the Development Needs of Mozambique at the Time of Ex-Ante Evaluation and Project Completion >

The project was consistent with Mozambique's development needs for rehabilitation of the Chokwe Irrigation Scheme and dissemination of the improved cultivation techniques for small scale and micro farmers for increasing their productions since they had inappropriate crop production techniques, lack of agricultural machinery, lack of irrigation water and limited finance for farming.

<Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation>

The project was consistent with the Japan's ODA policy toward Mozambique supporting agricultural development and rural development as one of three priority areas since "the Action Plan for Absolute Poverty II (Plano de Acção para a Redução da Pobreza Absoluta: PARPA II)" (2006-2009) had been approved by the Cabinet in May, 2006<sup>1</sup>. In the third policy dialogue between Mozambique and Japan in March 2007<sup>2</sup>, agricultural development for improvement of livelihood and living conditions of small scale farmers through expansion of rice production was the most prioritized.

<Evaluation Result>

In light of the above, the relevance of the project is high.

### 2 Effectiveness/Impact

<Status of Achievement of the Project Purpose at the time of Project Completion>

The Project Purpose was achieved by the time of project completion of the two projects. The average yield of rice production in the most target areas of each project increased from the baseline at the beginning of the project to the end-line at the final year of the project.

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project effects have been continued since the project completion. The average yield of rice production in the target areas sustained since 2014 though no cultivation was done in any target areas in 2017 due to the severe drought. According to HICEP, more than 60% of small scale farmers (out of 21 farmers per target site) have been practicing the transplanting technique improved by the project though the total number of farmers practicing it in the target sites decreased from 92 in 2010 to 78 in 2018 at the time of ex-post evaluation. Although the advantages of the improved transplanting techniques such as higher yield and reduction of labor cost and herbicide cost have been recognized among the small scale farmers, limited availability of seeds<sup>3</sup> decreased the number of farmers using the improved technique. The number of small scale farmers practicing direct sowing improved by the project has been very limited to around 10 since 2010 because of the lower yield than the transplanting. In terms of the techniques for irrigation facility maintenance and water use improved by the project, any of farmers in the target sites have not practiced because HICEP is mainly responsible for management and maintenance of the irrigation scheme. However, the Water Users Associations (WUAs) do some maintenance works on the secondary channels and is going to conduct maintenance works on the tertiary channels and water management at the tertiary level. The Farmer Support Group (FSG) established by the project in each target site has been continuously operating rice mill machines except FSG in D7<sup>4</sup>.

<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

The Overall Goal 1 has been partially achieved and the Overall Goal 2 has not been achieved by the time of ex-post evaluation. For the Overall Goal 1, the average annual income from rice sales of small farmers increased by more than the target value in D4 and D7 for the period from 2010 to 2016 and achieved more than 80% of the target value in D12 from the period from 2014 to 2016 (Overall Goal 1). The factor to increase the income from rice sales was the improvement of the sales price of rice from 8 metical (MTZ)/kg in 2014 to 15.5

<sup>1</sup> Ministry of Foreign Affairs, "ODA Country Databook 2006"

<sup>2</sup> Ministry of Foreign Affairs, "ODA Country Data book 2010"

<sup>3</sup> The main reasons of the limited seed availability in the Chokwe Irrigation Scheme are the bankrupt of the major seed production company of the MIA Company and the lack of finance capacity of APPROSEL, an association of seed production.

<sup>4</sup> In D7, the rice mill machine broke down. In addition, after the manager of FSG passed away, the FSG members have individually working due to the lack of leadership.

MTZ/kg in 2018. The improved sales price of rice has been partly attributed to improvement of quality of rice milled by the machine provided by the project while quality of rice itself has been improved by increases in inputs such as quality seeds, water and pesticides as well as land preparation. In addition, the macro-economic conditions, such as inflation, raised the commodity prices including rice for the period from 2015 to 2017. On the other hand, the annual average of rice production volume of small scale farmers (Overall Goal 2) have decreased since the completion of each project because the damages on the irrigation facilities and soils by the floods and the droughts have required rehabilitation of the irrigation facilities and works on desalination of soils and the cultivation areas by the irrigation were not able to be expanded as expected although HICEP conducted rehabilitation of 14,000 ha until 2014. After 2014, HICEP has conducted no rehabilitation work and there are still 10,000ha affected by salinity<sup>5</sup>. In addition, the lack of seeds of higher varieties and utilization of the old varieties of seeds with lower yield have led the stagnant rice production.

<Other Impacts at the time of Ex-post Evaluation>

Some positive impacts by the project were confirmed at the time of ex-post evaluation. Since most of the FSG members have been women and they have been very active in all the process of FSG operation, it can be considered that the project has contributed to enhancement of women's activities in the target sites. According to the observation through the field visits for this ex-post evaluation, 80-90% of the members were female. In addition, the project contributed to the increase in the exploitation of the irrigated areas through the FSG trainings which have brought more farmers in the areas.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is fair.

#### Achievement of Project Purpose and Overall Goal

Aim	Indicators	Results																																																																										
(Project Purpose) Agricultural Production by small scale farmers in the target area in the Chokwe irrigation Scheme is increased.	Average yield of rice production in the target areas of the Chokwe Irrigation Scheme is increased. 1) For micro scale farmers (0.5-1 ha land size) in D4 and D7: increases from 3 ton/ha to 5 ton/ha 2) For small scale farmers (1-5ha land size in D5, D6, D11 and D12: increases by 1.1ton/ha.	Status of the Achievement: Mostly achieved. (Mostly continued) (Project Completion) [The average yield in D4 and D7 (Project 2007-2011): ton/ha] <table border="1"> <thead> <tr> <th>Area</th> <th>Baseline 2006/2007</th> <th>2007/2008</th> <th>2008/2009</th> </tr> </thead> <tbody> <tr> <td>D4</td> <td>3.83</td> <td>4.71</td> <td>5.1</td> </tr> <tr> <td>D7</td> <td>3.24</td> <td>4.32</td> <td>5.3</td> </tr> </tbody> </table> [The average yield in D5, D6, D11 and D12: ton/ha] <table border="1"> <thead> <tr> <th>Area</th> <th>Baseline 2009/2010</th> <th>2013/2014*</th> <th>Change</th> </tr> </thead> <tbody> <tr> <td>D5</td> <td>3.73</td> <td>3.51</td> <td>-0.22</td> </tr> <tr> <td>D6</td> <td>2.57</td> <td>-</td> <td>-</td> </tr> <tr> <td>D11</td> <td>2.96</td> <td>4.10</td> <td>+1.14</td> </tr> <tr> <td>D12</td> <td>2.58</td> <td>4.00</td> <td>+1.42</td> </tr> </tbody> </table> Source: HICEP *The flood in January 2013 damaged farm lands in the Chokwe Irrigation Scheme and rice paddy were totally destroyed in D5 and D6 and the rice yields were limited. In the year of 2013/14All the farmers decided not to cultivate rice, but the farmers in D5 made late cultivation. (Ex-post Evaluation) [The average yield of rice production of small scale farmers: ton/ha] <table border="1"> <thead> <tr> <th>Area</th> <th>2014</th> <th>2015</th> <th>2016</th> <th>2017**</th> <th>2018</th> </tr> </thead> <tbody> <tr> <td>D4</td> <td>4</td> <td>4</td> <td>4</td> <td>-</td> <td>4.5</td> </tr> <tr> <td>D7</td> <td>4</td> <td>4</td> <td>4</td> <td>-</td> <td>4</td> </tr> <tr> <td>D5</td> <td>4</td> <td>4</td> <td>4</td> <td>-</td> <td>3.5</td> </tr> <tr> <td>D6</td> <td>4</td> <td>4</td> <td>4</td> <td>-</td> <td>3.5</td> </tr> <tr> <td>D11</td> <td>4</td> <td>4</td> <td>4</td> <td>-</td> <td>4.5</td> </tr> <tr> <td>D12</td> <td>4</td> <td>4</td> <td>4</td> <td>-</td> <td>3.5</td> </tr> </tbody> </table> **In 2017, no cultivation was done in any area of the Chokwe Irrigation Scheme because no irrigation water was available due to drought.	Area	Baseline 2006/2007	2007/2008	2008/2009	D4	3.83	4.71	5.1	D7	3.24	4.32	5.3	Area	Baseline 2009/2010	2013/2014*	Change	D5	3.73	3.51	-0.22	D6	2.57	-	-	D11	2.96	4.10	+1.14	D12	2.58	4.00	+1.42	Area	2014	2015	2016	2017**	2018	D4	4	4	4	-	4.5	D7	4	4	4	-	4	D5	4	4	4	-	3.5	D6	4	4	4	-	3.5	D11	4	4	4	-	4.5	D12	4	4	4	-	3.5
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<sup>5</sup> Among the area with salinity of 10,000ha, 6,000ha isn't appropriate for agriculture activities but with high potential for fishy farming activity and 4,000ha are moderate and somehow can be recovered for agriculture activities.

(Overall Goal 2) Rice Production volume is increased in the target areas of the Chokwe irrigation Scheme.	The average rice production volume of small scale farmers is increased by 80% in the target areas of the Chokwe Irrigation Scheme (D4, D5, D6, D7, D11 and D12)	(Ex-post Evaluation) Not achieved [The average annual rice production volume of small scale farmers in the target areas : ton]						
		Area	2010	2014	2015	2016	2017*	Changes**
		D4	94.5	72	72	72	0	-24%
		D7	64	52	56	52	0	-19%
		D5	68	60	60	52	0	-24%
		D6	44	44	44	44	0	0%
		D11	63	56	56	56	0	-11%
		D12	52	52	52	52	0	0%
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Source : Terminal Evaluation Reports, Data provided by HICEP and SDAE

### 3 Efficiency

The project period for the both projects were within the plan (ratio against the plan: 100%) and the project cost was below the plan (ratio against the plan: 97%). The outputs of the both projects were produced as planned. Therefore, the efficiency of the project is high.

### 4 Sustainability

#### <Policy Aspect>

Investments in the Chokwe Irrigation Scheme, including support for the family farming have been prioritized by the following programs and strategy of the Ministry of Agriculture: “the National Rice Development Program” (2017-2027), “the Operational Plan for Agriculture Development” (2015-2019), “the Irrigation Strategy” (2010-2020) and the “Fertilizers National Program” (2013-2017, to be extended).

#### <Institutional Aspect>

There has been no change in responsibilities of the implementing agencies of the project. Also, the staff of each responsible organization, SDAE, EAC and HICEP, has been sufficient. SDAE conducts technical transfer in agricultural production through extension activities by their 13 extension officers in total and have assigned 6 extension officers for the Chokwe Irrigation Scheme since 2015. The mission of EAC is research on high yield varieties and their adaptability to the Chokwe Irrigation Scheme as well as production of basic and pre-basic seeds for extension. EAC has 24 researchers and 2 researchers and 1 extension officer for the Chokwe Irrigation Scheme. HICEP is responsible for water supply, maintenance of irrigation facilities, and land use management and assigns 7 technicians and 42 channel maintenance staff for the Chokwe Irrigation Scheme. The staff of each implementing agency has been sufficient to conduct their activities in the target sites since the small scale farmers have been organized as association or group. The network of SDAE, EAC and HICEP for supporting the small scale farmers in the Chokwe Irrigation Scheme has been sustaining.

#### <Technical Aspect>

The each of key players to support the small scale farmers in the Chokwe Irrigation Scheme has sustained necessary skills and knowledge. The extension officers of SDEA regularly have trainings organized at district and provincial level and have been conducted extension activities including extension of the improved techniques provided by the project. They have continued to use the manuals developed by the project. The EAC staff has sustained necessary technical capacity to disseminate production techniques and new varieties for farmers through field days. The HICEP staff have continuously used the manuals developed by the project for management and maintenance of the irrigation scheme as well as the technology transfer. For operation of rice mills, the SFG members in each target site, except D7, has kept necessary skills and knowledge.

#### <Financial Aspect>

For SDAE and EAC, no budget data was available. Although SDAE has been managing to keep the same number of staffs to cover the Chokwe Irrigation Scheme, the budget limitation has constrained to cover costs of fuel and motorcycles for their extension activities. EAC has also budget constraints to limit their research activities though they continue the seed production activities. The budget for HICEP has decreased from 10 million MZN in 2015 to 4.6 million in 2017 and decreases further to 0.32 million in 2018. The tight budget of HICEP limited the maintenance activities for the irrigation schemes though they intensified activities of seed production and rice production and processing.

#### <Evaluation Result>

Therefore, there are some problems in the financial aspect of the implementing agencies, and the sustainability of the project effects the project is fair.

### 5 Summary of the Evaluation

The project achieved the Project Purpose and partially achieved the Overall Goal through improvement of rice yield by the improved farming technique and improvement of income from the rice sales by the small scale farmers in the target sites. As for sustainability, SDAE, ECA and HICEP have sustained their activities to support for the small scale farmers in the Chokwe Irrigation Scheme with the sufficient number of staffs and the sufficient technical capacities but they have budget constraints to limit their activities due to the fiscal problems of the central level.

Considering all of the above points, this project is evaluated to be satisfactory.

### III. Recommendations & Lessons Learned

#### Recommendations for Implementing Agency:

[For EAC, SDAE and HICEP]

It is recommended that EAC will guarantee basic seed for multiplication through improved varieties released as a research center in coordination with the Unit of Basic Seed (Unité de Sementes Base: USEBA), the Mozambique Institute of Agricultural Research (Instituto de Investigação Agrário de Moçambique: IIAM) in order to disseminate varieties of seeds with higher yield. Also, EAC is expected to be involved in training for private companies and associations in seed multiplication in order to increase quality seed production. Then, SDAE

is required to conduct extension activities to disseminate quality seeds to small scale farmers for increases in their rice production. In addition, HICEP is needed to guarantee water availability for small scale farmers in the Chokwe Irrigation Scheme to continue their rice production.

**Lessons Learned for JICA:**

Most of FSG have continued operation of rice mill machines and the ones in D4 have kept running the machine provided by the project without replacement. Since the FSG activities are essential to improve income of small scale farmers, sustainable operation of the machines is a key factor for it. Therefore, it is necessary to consider suitable selection of equipment for achieving the Project Purpose as well as to provide necessary information and contacts for procurement of spare parts of equipment for FSGs in order to ensure sustainable operation.



HICEP Equipment for land preparation on Chokwe Irrigation Scheme



New Milling Machine for D4 association provided under Follow up activity. – Chokwe City