

Country Name	Improvement of Rice-based Agriculture in Nangarhar Province
Islamic Republic of Afghanistan	

**I. Project Outline**

Background	In the area of Jalalabad in Nangarhar Province with its high potentiality in abundance of water resources and temperate climate, the people had engaged in irrigated agriculture including rice cultivation. However, during over 20 years of conflict disturbances, agricultural facilities including irrigation and agricultural support system had been destroyed and rural communities were impoverished. Due to the political unrest, the technical cooperation once planned at the Rice Development Center was not materialized. There was a need in Nangarhar Province to improve productivity and quality of rice-based agriculture through rehabilitation of research and extension facilities and human resource capacity.												
Objectives of the Project	Through the enhancement of research capacity of Shisham Bagh Agriculture Experiment Station (SAES), activating the agriculture extension system and promotion of collaboration between research and extension work, the project aims at the improvement of rice cultivation techniques suitable for the climate condition in the target areas and implementing those techniques in extension works, thereby contributing to the improvement of agricultural productivity with emphasis on rice in Nangarhar Province.												
Activities of the Project	<ol style="list-style-type: none"> <li>1. Overall Goal: Productivity of agricultural produce, with an emphasis on rice, in Nangarhar Province is increased.</li> <li>2. Project Purpose: Rice cultivation techniques suitable for the climate condition in the target area are improved, and those techniques are used in extension work.</li> </ol>												
Activities of the Project	<ol style="list-style-type: none"> <li>1. Project Site: Rice-producing districts in Nangarhar Province</li> <li>2. Main Activities: <ol style="list-style-type: none"> <li>(1) Improve the facilities and fundamental research capacity of SAES, (2) Conduct training for extension workers at the demo farms and carry out activities to activate the extension system, (3) Conduct workshops and develop extension tools to be used for the extension system</li> </ol> </li> <li>3. Inputs (to carry out above activities) <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">Japanese side:</td> <td style="width: 50%;">Afghanistan side:</td> </tr> <tr> <td>1) Experts: 3 persons (Long-term), 5 persons (Short-term)</td> <td>1) Staff allocated: 39 persons</td> </tr> <tr> <td>2) Trainees received: 8 persons</td> <td>2) Facilities: Project Office</td> </tr> <tr> <td>3) Equipment: Tractor, Motorcycle, Grain counter, Harvester, Rice Polisher, Microscope and Office equipment</td> <td>3) Local expenses</td> </tr> <tr> <td>4) Local expenses</td> <td></td> </tr> </table> </li> </ol>			Japanese side:	Afghanistan side:	1) Experts: 3 persons (Long-term), 5 persons (Short-term)	1) Staff allocated: 39 persons	2) Trainees received: 8 persons	2) Facilities: Project Office	3) Equipment: Tractor, Motorcycle, Grain counter, Harvester, Rice Polisher, Microscope and Office equipment	3) Local expenses	4) Local expenses	
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Project Period	September 2007 – March 2011	Project Cost	(ex-ante) 300 million yen (actual) 318 million yen										
Implementing Agency	Directorate of Agriculture, Irrigation and Livestock (DAIL)* in Nangarhar Province under the Ministry of Agriculture, Irrigation and Livestock (MAIL) * DAIL was named as the Department of Agriculture, Irrigation and Livestock (DOA) till 2008.												
Cooperation Agency in Japan	-												

**II. Result of the Evaluation**

## &lt;Constraints on Evaluation&gt;

• It should be well noted that the outcome of the project studied under this ex-post evaluation is the combined effects of those with the subsequent JICA technical cooperation project known as “The Project for Rice-based Agriculture Development in Afghanistan (2011-2020) (RIPA)”.

## &lt; Special Perspectives Considered in the Ex-Post Evaluation &gt;

• The target year for the Overall Goal is stated not in the ex-ante evaluation report but in the terminal evaluation report as “five years after project completion”, which is March 2016.

**I Relevance**

## &lt;Consistency with the Development Policy of Afghanistan at the Time of Ex-Ante Evaluation and Project Completion&gt;

At the time of ex-ante evaluation, this project was consistent with the national development policy of Afghanistan, namely the “Interim Afghanistan National Development Strategy (2005)” which stated the agricultural development as one of the highest priority areas. At the time of project completion, the “National Agricultural Development Framework” developed in 2009 clearly noted that the improvement of agriculture production and productivity as one of the major programmes for the agricultural and rural development of the country.

## &lt;Consistency with the Development Needs of Afghanistan at the Time of Ex-Ante Evaluation and Project Completion &gt;

At the time of ex-ante evaluation, this project was consistent with Afghanistan’s development needs to improve the agriculture productivity and quality as described in “Background” above. At the time of project completion, there were continuing needs to improve the agriculture productivity since the average yield of rice as well as its quality in the country remained low.

## &lt;Consistency with Japan’s ODA Policy at the Time of Ex-Ante Evaluation&gt;

The Japanese Government set its assistance policy toward Afghanistan that the Integrated Rural Development with special focus

on the agriculture sector was considered as important<sup>1</sup>. Assistance toward agriculture and rural development was set with high priority under the reconstruction efforts of Afghanistan and Nangarhar Province was one of the priority areas.

<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>

By the project completion, the project achieved its purpose, "Rice cultivation techniques suitable for the climate condition in the target area are improved, and those techniques are used in extension work". Ten improved rice cultivation techniques suitable for the climate condition in the target areas were proposed and verified in SAES, achieving the target (Indicator 1). According to the survey conducted by the project, both of farmers at demonstration farms (demo farmers) and their neighboring farmers responded that almost all techniques introduced by the project were important for better rice cultivation (Indicator 2). Those techniques were used in the extension work guided by the DAIL extension staff. The terminal evaluation team confirmed that the technical level of those extension staff was improved, so that they managed to guide more than planned number of demo farmers by the project completion (Indicator 3).

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

After the project completion, the project effects have continued. It was confirmed through the field study that the ten techniques introduced by the project have still been used among demo farmers who have found the techniques useful. The technical level of extension staff has further been improved after the project completion, which has been proven by the fact that the extension staff have managed to conduct training on both theoretical and practical aspects for the demo farmers and that the number of demo farms has increased. In this way, the rice cultivation techniques proposed by the project have been expanding in Nangarhar Province.

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

It is observed that the Overall Goal, "Productivity of agricultural produce, with an emphasis on rice, in Nangarhar province is increased" has been partially achieved. Rice yield has increased by 17.8% compared with the baseline of 2010, achieving 59.3% of the target ratio of increase (Indicator 1). Since then, the approximately same levels of rice yield have been maintained up to 2018.

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

Some ripple effects were identified during the field study. An interview with a demo farmer in Kama district revealed that with the new rice cultivation techniques, the rice yield of his farm increased with good quality, so that his rice has had a demand in the market with reasonable price. In Behsud district, the story of a demo farmer who got a good yield with high quality after applying the new cultivation techniques motivated his neighboring farmer to seek for the help of extension officers. This neighboring farmer has obtained the better rice yield after he had applied the same techniques. The new rice cultivation techniques proposed by the project have also been shared by DAIL, Nangarhar with other experimental stations in Laghman and Kunar Provinces in the eastern region of Afghanistan and later further expanded to Baghlan, Kunduz, Takhar, Herat and Balkh Provinces, contributing to the increase of rice production in those provinces.

<Evaluation Result>

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

Achievement of Project Purpose and Overall Goal

Aim	Indicators	Results
(Project Purpose) Rice cultivation techniques suitable for the climate condition in the target area are improved, and those techniques are used in extension work.	Indicator 1: Number of proposed techniques to solve problems of cultivation at the project termination.	<p>Status of the Achievement: achieved (continued) (Project Completion)</p> <ul style="list-style-type: none"> <li>The improved rice cultivation techniques proposed and verified in SAES includes the following ten individual method. It was judged by the terminal evaluation team that the following ten methods fully covered the necessary techniques to solve problems of rice cultivation.(1) seed selection and pre-treatment, (2) preparation of water nursery bed and seeding, (3) preparation of the paddy field, (4) line transplanting*, (5) weeding by hand push-weeder, (6) timing of nitrogen top dressing, (7) insect and disease, (8) water management, (9) growth observation and recording and (10) yield and yield analyses.</li> </ul> <p>Note: * This is the method to plant the rice seedlings in line, so that they are planted at even intervals.</p> <p>(Ex-post Evaluation)</p> <ul style="list-style-type: none"> <li>Through the interview with farmers as well as DAIL staff, field visits and questionnaires, it was confirmed that the ten techniques introduced by the project for solving the problems of rice cultivation have still been used among farmers who found the proposed techniques useful. Some positive progresses have been identified, such that the rice yields of demo farms have increased, while the excessive use of seeds and fertilizers have decreased. Furthermore, the plant diseases caused by insects have been controlled through lining cultivation for the collapse of plant.</li> </ul>

<sup>1</sup> Source: ODA Databook in 2007

	<p>Indicator 2: Percentage of farmers who are satisfied with extension services among those who are provided with the services at the project termination.</p>	<p>Status of the Achievement: achieved (continued) (Project Completion) Percentage of farmers who thought the introduced techniques important for better rice cultivation</p> <table border="1" data-bbox="502 134 1516 560"> <thead> <tr> <th>#</th> <th>Techniques introduced by the project</th> <th>Respondents: 10 demo farmers</th> <th>Respondents: 11 neighboring farmers</th> </tr> </thead> <tbody> <tr><td>1</td><td>Seed Treatment</td><td>90.0%</td><td>100.0%</td></tr> <tr><td>2</td><td>Seeding / Sowing</td><td>100.0%</td><td>81.8%</td></tr> <tr><td>3</td><td>Levelling/ Paddling</td><td>100.0%</td><td>90.9%</td></tr> <tr><td>4</td><td>Base Fertilizer Application *</td><td>100.0%</td><td>100.0%</td></tr> <tr><td>5</td><td>Trans-Planting (lining cultivation)</td><td>100.0%</td><td>90.9%</td></tr> <tr><td>6</td><td>Weeding</td><td>100.0%</td><td>100.0%</td></tr> <tr><td>7</td><td>Growth Observation</td><td>80.0%</td><td>72.7%</td></tr> <tr><td>8</td><td>Top-Dressing **</td><td>90.0%</td><td>100.0%</td></tr> <tr><td>9</td><td>Yield Survey</td><td>60.0%</td><td>27.3%</td></tr> <tr><td>10</td><td>Harvesting</td><td>80.0%</td><td>90.9%</td></tr> </tbody> </table> <p>Note: * Fertilizer given to the soil before rice seedling ** Fertilizer given after seeding or transplanting</p> <p>(Ex-post Evaluation)</p> <ul style="list-style-type: none"> <li>According to the interview with approximately ten farmers during the field study, it was revealed that farmers have still been satisfied with the extension services and found them useful, though the corresponding percentages for the above table at the time of ex-post evaluation are not available. No comments of unsatisfaction on the extension services were received from those farmers.</li> <li>During the field visit to examine the demo farm activities in Kama, Behsud, Surkhrud districts and SAES, it was observed by the study team that the demo farmers were satisfied with extension services provided by DAIL. They are now able to use several new techniques. Specifically, with the effective fertilizer application technique, they know how to effectively apply fertilizers, such as its proper quantity in specific times. With seed treatment and sowing technique, they know the proper amount of specific seeds per hectare of land, etc. With the lining cultivation, the disease caused by the insects have been better controlled. Weeding by push-weeder is controlled which finally produced clean paddy production and etc.</li> </ul>	#	Techniques introduced by the project	Respondents: 10 demo farmers	Respondents: 11 neighboring farmers	1	Seed Treatment	90.0%	100.0%	2	Seeding / Sowing	100.0%	81.8%	3	Levelling/ Paddling	100.0%	90.9%	4	Base Fertilizer Application *	100.0%	100.0%	5	Trans-Planting (lining cultivation)	100.0%	90.9%	6	Weeding	100.0%	100.0%	7	Growth Observation	80.0%	72.7%	8	Top-Dressing **	90.0%	100.0%	9	Yield Survey	60.0%	27.3%	10	Harvesting	80.0%	90.9%
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	<p>Indicator 3: Technical level of extension staff is improved at the project termination.</p>	<p>Status of the Achievement: achieved (continued) (Project Completion)</p> <ul style="list-style-type: none"> <li>It was judged by the terminal evaluation team based on the evaluation by the Japanese experts that the technical level of DAIL extension staff was improved. Almost all techniques were introduced at the demo farm level. The improvement of technical capacity of those extension staff was proven by the fact that they managed to guide twenty-five demo farms, which was more than planned, by the project completion.</li> </ul> <p>(Ex-post Evaluation)</p> <ul style="list-style-type: none"> <li>The technical level of extension staff has been improved after the project completion. They have participated in the training courses and workshops organized by DAIL, such as on transplanting, prevention of unwanted plants, use of push weeder, water management, use of fertilizers, and prevention of insect and disease, etc. The extension staff of DAIL can now monitor the demo farms in the districts and guide the farmers at demo farms on new rice cultivation techniques. They can also conduct training on both theoretical and practical aspects for the demo farmers. The number of demo farms has increased and the rice cultivation techniques proposed by the project have been expanding in Nangarhar.</li> </ul>																																												
<p>(Overall Goal) Productivity of agricultural produce, with an emphasis on rice, in Nangarhar Province is increased.</p>	<p>Indicator 1: Rice yield is increased by 30% in Nangarhar Province within five years after the project termination.</p>	<p>(Ex-post Evaluation) partially achieved.</p> <ul style="list-style-type: none"> <li>Rice yield of 4.5 ton per hectare in the Province as the baseline became 5.3 tons per hectare in the target year of 2016. This means that the rice yield increased by 17.8% compared with the baseline, achieving 59.3% of the target ratio of increase. Since then, the same levels of rice yield have been maintained up to 2018.</li> </ul> <table border="1" data-bbox="502 1702 1516 1971"> <thead> <tr> <th></th> <th>Baseline 2010</th> <th>Project completion 2011</th> <th>2012</th> <th>2013</th> <th>2014</th> <th>2015</th> <th>Target year 2016</th> <th>2017</th> <th>2018</th> </tr> </thead> <tbody> <tr> <td>Rice yield (ton per hectare) in Nangarhar Province</td> <td>4.5</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> <td>5.3</td> <td>5.3</td> <td>5.3</td> </tr> <tr> <td>increase against baseline (%)</td> <td>-</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> <td>17.8</td> <td>17.8</td> <td>17.8</td> </tr> </tbody> </table>		Baseline 2010	Project completion 2011	2012	2013	2014	2015	Target year 2016	2017	2018	Rice yield (ton per hectare) in Nangarhar Province	4.5	N/A	N/A	N/A	N/A	N/A	5.3	5.3	5.3	increase against baseline (%)	-	N/A	N/A	N/A	N/A	N/A	17.8	17.8	17.8														
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Source: Terminal Evaluation Report, Interviews with DAIL officers, extension officers and farmers

### 3 Efficiency

The project period was within the plan, but the project cost exceeded the plan (ratio against plan: 100% and 106%, respectively). The Outputs of the project were produced as planned. Therefore, the efficiency of the project is fair.

#### 4 Sustainability

##### <Policy Aspect>

The Government of Afghanistan has been supporting the improvement of rice-based agriculture through its various programs, based on the “National Rice Promotion Strategy (2018-2021)” which aims to increase the annual rice production to one million tons by 2021 and enhances the competitiveness of local rice against the imported varieties.

##### <Institutional Aspect>

The number of staff of DAIL in Nangarhar Province increased from 29 at the project completion (in 2011) to 64 at the time of ex-post evaluation (in 2019) to cope with the increase of extension activities. According to the interview with DAIL, the number of extension and research staff has been sufficient, but there are some shortages of labors to work on the demo farm in SAES. The number of SAES staff increased from 15 to 17 during the same period. Among them, seven full time staff in both the cereal crop department and the agronomy department combined must cover all kinds of experiments. According to the cereal crop improvement specialist of SAES, the numbers of extension and research staff are sufficient to disseminate the rice cultivation techniques to the farmers through extension workers and to carry out research activities. But the problem is the shortage of labor to work on the demo farm in SAES, causing problems on the delays of transplanting, weeding, harvesting, etc. SAES has now been requesting DAIL to allocate some staff, but no action has been taken yet.

##### <Technical Aspect>

Currently, the half of the counterpart personnel of the project has still been working at SAES for the subsequent JICA project, known as RIPA project working in demo farms. The number of demo farms has increased every year since the project completion. Once a demo farmer acquired the sufficient knowledge of new techniques in rice cultivation, DAIL has let them work by himself, while DAIL has invited new demo farmers and disseminated the techniques to them. In this way, there are 205 demo farms in Nangarhar Province at the time of ex-post evaluation. There are training courses available for both researchers and extension workers in the form of two days workshops on each of five topics, such as (1) seed selection, (2) plantation, (3) use of fertilizers, weeding by push weeder and irrigation, (4) harvesting, and (5) yield analysis and post harvesting. The workshop is carried out in the process from seed selection to harvesting for the period of April through October. The facilities and equipment procured under the project have still been used by SAES and equipment have been stored at the SAES training center warehouse.

##### <Financial Aspect>

There is no regular budget available for rice cultivation at DAIL, Nangarhar Province. When required only, some funds from those of the general agriculture services under the development budget of MAIL are allocated to DAIL. No regular budget for rice cultivation is available to SAES, either. Therefore, whenever the equipment and necessary tools are needed for SAES, they have had to request through DAIL to obtain the funds from the development budget of MAIL. SAES has faced the problems of financing activities as the research activities have increased along with various experiments on different rice varieties.

##### Budget of DAIL on rice sector including rice cultivation

(Unit of Currency: Afghani in million)

Source	Project Completion 2011	2016	2017	2018	Ex-post Evaluation 2019
Regular budget from government	0.0	0.0	0.0	0.0	0.0
Development budget from MAIL	0.7	1.2	1.2	1.6	3.3
<i>Change from previous year (%)</i>			<i>0%</i>	<i>33.3%</i>	<i>106.3%</i>

##### <Evaluation Result>

In light of the above, some problems have been observed in terms of the institutional and financial aspects. Therefore, the sustainability of the effects through the project is fair.

#### 5 Summary of the Evaluation

The project achieved the Project Purpose of “Rice cultivation techniques suitable for the climate condition in the target area are improved, and those techniques are used in extension work”. The effects of the project have continued after the project completion, and the Overall Goal to increase the productivity of rice in Nangarhar Province has been partially achieved. As for the sustainability, some problems have been observed in terms of the institutional and financial aspects, but no problems were identified in the policy and technical aspects. As for the efficiency, the project cost exceeded the plan.

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

### III. Recommendations & Lessons Learned

#### Recommendations for Implementing Agency: MAIL

1. A regular budget that can be used for rice sector should be allocated to DAIL in Nangarhar Province.

Because there is no regular budget available for rice cultivation at DAIL, they have had to request to MAIL to obtain the funds from the development budget whenever required. With the increase of research activities as well as various experiments on different rice varieties, along with the increase of the number of demo farms, it is necessary to allocate the budget that can be used solely for rice crop on regular basis.

2. More labors are needed to work on the demo farm at SAES to disseminate the improved rice cultivation techniques to farmers.

In order to practice and expand the new rice cultivation techniques, more extension activities are required to disseminate the techniques to

all other districts in Nangarhar Province. However, it was identified by the study that the shortage of laborers to work on the demo farm in SAES has hindered the progress.

Lessons Learned for JICA:

1. The establishment of demo farms to apply the new techniques is a good way to disseminate the rice cultivation techniques among farmers.

The establishment of the demo farms as an experiment in SAES serves to verify the effectiveness of the technique and that in the districts of Nangarhar Province to ensure its practicability through the actual practices by demo farmers. Furthermore, by observing the practices at demo farms in the districts, the surrounding farmers have been motivated to apply the new techniques to cultivate rice. Through these processes, the new techniques introduced by the project have been further expanded in the province.

2. Active engagement of Japanese experts in “on-the-job training (OJT) program” at the field level contributed to the promotion of rice crop in the Nangarhar Province.

Japanese experts closely worked together with project counterparts especially at the field level. Specifically, they trained their counterparts through “OJT program” at demo-farms, so that they could provide particular instructions on how to use the locally made push-weeder for controlling weeds in rice field. This practice could serve as one of contributing factors to increase rice production. So, direct guidance by the JICA experts through OJT should be considered in the future cooperation. Furthermore, in case of countries affected by security issues such as Afghanistan, it is recommended that such OJT program be conducted in third countries.