Republic of Uganda

FY2022 Ex-Post Evaluation Report of Technical Cooperation Project

"Promotion of Rice Development Project"

External Evaluator: Isao Dojun, Chuo Kaihatsu Corporation

0. Summary

The project aimed to increase rice production in the target districts through promoting recommended rice cultivation techniques to the trained farmers by (i) strengthening the research and development capacity of rice-related research institutes, (ii) strengthening the extension capacity of rice-related service providers (agricultural officers[1]), and (iii) strengthening the extension capacity of stakeholders (rice millers) in the rice value chain to improve the quality of rice in the market.

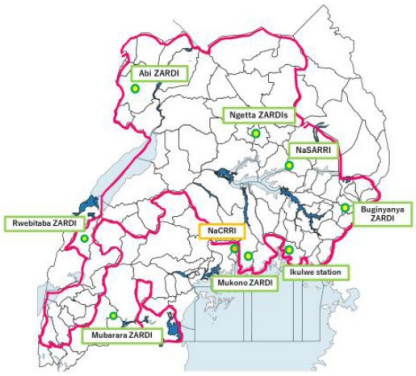
The targeted increase in rice production in the target districts in this project was consistent with Uganda's development plan and development needs both during the planning of the project and at project completion. This project was also consistent with Japan's ODA[2] policy for Uganda during the planning stages (in which one of the priority areas was "agricultural development: rice promotion, value addition of agricultural products, etc.). Further, the project was implemented in collaboration with the Office of the United Nations High Commissioner for Refugees (UNHCR) (an international organisation responsible for refugee assistance), which brought synergy effects. As the project was consistent with international initiatives in these respects, the relevance and coherence of the project were very high. The implementation of the project led to an increase in rice production through the development of recommended rice cultivation technologies, capacity-building of agricultural officers and other actors, and the adoption and expansion of rice cultivation techniques by the farmers who participated in the training in the project's target districts. The effectiveness and impact of the project were very high, as the project brought about more effects and impacts than planned, such as a greater-than-expected increase in rice production among the trained farmers after project completion, an expansion of rice production areas through the dissemination of technologies from farmer to farmer, expanded rice production among refugee and host community farmers[3], and improved roles for women within households. The project cost and period were higher than planned, but these were due to factors beyond the control of the project implementer. The outcomes and project purpose were achieved to a very high degree. The efficiency of the project was moderately low, even when accounting for the fact that the invested human resources and expenses efficiently contributed to the achievement of the project targets. Although some aspects of the project's sustainability are

[1] Persons in charge of agricultural extension works
[2] Official Development Assistance
[3] Farmers living in communities with refugee settlements

ensured by the current implementation of the successor project (Phase 2 project), there are still financial challenges, particularly in terms of the budgets for research, training, and agricultural extension. Thus, the sustainability of the project is evaluated as moderately low.

In light of the above, this project is evaluated to be satisfactory.

1. Project Description



Project Locations
(Source: *Project Completion Report*, March 2019)

Rice Cultivation in a Rainfed Lowland
(Source: Photograph taken by the external evaluator)

1.1 Background

Agriculture is a key industry in Uganda, accounting for about 20% of GDP, 48% of exports, and 73% of employment. The average farm size of farmer households is small, less than 1 ha, and subsistence farming by small-scale farmers is the main form of farming practiced. Plantain, sweet potato, cassava, maize, and sorghum are widely grown as staple food crops, while coffee, sesame, sugarcane and tea are grown as commodity crops.

Paddy rice has long been practiced in the wetland-intensive eastern region, while the spread of upland NERICA rice has been promoted in recent years in other areas through JICA assistance. Remarkable growth in NERICA production has been driven by rising demand for rice, especially in urban areas, thanks largely to the good taste of rice and the ease with which it can be prepared. Before the start of the project, however, the levels of rice produced fell significantly short of the levels consumed. Uganda was heavily dependent on rice imports from Asian countries, and increasing domestic production was a major challenge.

As rice production was just getting started in Uganda, research institutes were pressed to develop appropriate technologies for rice cultivation and disseminate them to rice farmers through agricultural officers in order to increase production. In doing so, it was important to develop and disseminate appropriate technologies for each of the three different rice-growing environments in Uganda (rainfed upland, rainfed lowland and irrigated lowland). And for farmers to continue rice cultivation, they needed to secure income from selling rice,

which required the production of high-quality, marketable rice.

This project was initiated in November 2011 with a scheduled period of five years and was implemented based on the results of three JICA-supported projects that had been carried out earlier (i.e., (1) Sustainable Irrigated Agriculture Development Project in Eastern Uganda (2008-2011), (2) NERICA Rice Promotion Project in Uganda (2008-2011), and (3) the Project for Construction of Rice Research and Training Centre (March 2009[4])). The project period was extended twice, and ended in March 2019. Subsequently, the Rice Promotion Project Phase 2 (April 2019 - March 2024) was launched as a successor project.

1.2 Project Outline

Overall Goal		Income of the participating households in training is increased.
Project Purpose		Rice production is increased in the target districts of the Project.
Output(s)	Output 1	Research and development capacity of rice-related institutes is strengthened.
	Output 2	Extension capacity of rice-related service providers is strengthened.
	Output 3	Capacity of the stakeholders involved in the rice value chain is strengthened to improve the quality of rice in the market.
Total cost (Japanese Side)		1,083 million yen
Period of Cooperation		November 2011 – March 2019 (Extended period: November 2016 – March 2019)
Target Area		About 40 districts were selected at the start of the project. (The number of districts was finally increased to 58 following the division of the local administration. The total number of districts was 136 in the year 2020.)
Implementing Agency		Responsible Agency: Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) Implementing Agencies: MAAIF, National Agricultural Research Organisation (NARO) and National Agriculture Advisory Services (NAADS)
Other Relevant Agencies/ Organisations		(None in particular)
Organisation in Japan		Ministry of Agriculture, Forestry and Fisheries
Related Projects		<Technical Cooperation> - Sustainable Irrigated Agriculture Development Project in Eastern

[4] Grant agreement date

	Uganda" (2008-2011) - NERICA Rice Promotion Project in Uganda (2008-2011) <Grant Aid> - the Project for Construction of Rice Research and Training Centre (March 2009) <Other Development Partners> -World Bank: 1) Agriculture Cluster Development Project (2015-2022), 2) Agricultural Technology and Agribusiness Advisory Services Project (ATTAS) (2010-2017), 3) Irrigation for Climate Resilience Project (2020-2026) -Netherlands: Integrated Seed Sector Development (2012-2016)

1.3 Outline of the Terminal Evaluation

1.3.1 Achievement Status of Project Purpose at the Terminal Evaluation

The report of the second terminal evaluation (conducted in September-October 2017 during the project extension period) states that two of the indicators, namely, the "rice-growing areas increase" (target value: 15,000 ha) and the "amount of rice production increases" (target value: 45,000 tons), were achieved, and that the rice cultivation technology extension activities in the pilot areas were well implemented. Therefore, the project purpose was well achieved.

1.3.2 Achievement Status of Overall Goal at the Terminal Evaluation

The above terminal report states that it is unclear whether the overall goal will be achieved. It also states that it is necessary to collect rice production data from the beneficiary farmers in order to determine whether the targets have been achieved. As for impact, the report states that the adoption of recommended rice cultivation techniques has increased rice income.

1.3.3 Recommendations from the Terminal Evaluation

The above terminal evaluation report describes the status of responses to the recommendations made at the first terminal evaluation (April-May 2016). The following table describes the main recommendations and the status of the responses (including reactions in the Phase 2 project).

Recommendations made at the first terminal evaluation	Responses to the recommendations
【Recommendation to the project team】	
Training of Trainers (TOT) for newly	TOT training was carried out continuously during

employed agricultural officers, as well as Refresher Training.	the project extension period and has also been continuously implemented in the phase 2 project.
【Recommendations to NARO】	
Ongoing collaboration with the UNHCR and other partner organisations.	TOT training was conducted in collaboration with the UNHCR during the project extension period. TOT training and training for refugees and others has been continuously implemented in the phase 2 project.
A strengthened training function in the National Crops Resources Research Institute (NaCRRI)[5].	The Ugandan and JICA sides agreed to establish a training section at NaCRRI during the project extension period. The training section is functioning in the phase 2 project.
【Recommendations to the Ugandan implementing agencies】	
Information-sharing on counterpart funding for the project (including information on the use of funds).	The limited cost burden on the Ugandan side remained unchanged during the project extension period and has not changed in the phase 2 project.

2. Outline of the Evaluation Study

2.1 External Evaluator

Isao Dojun, Chuo Kaihatsu Corporation

2.2 Duration of Evaluation Study

This ex-post evaluation study was conducted with the following schedule.

Duration of the Study: October 2022 – March 2024

Duration of the Field Study: 5th February 2023 – 14h March 2023, 30th November 2023 – 12nd December 2023

2.3 Constraints during the Evaluation Study

The overall goal is the "income of the participating households in training is increased, " and the indicator is the "income from rice production in the target districts is increased at least by 5% by 2020, compared with the same in 2015/16." Uganda has kept no statistical data on annual rice production by district. As this precludes the collection of data on income from rice production by district, no indicator data on the overall goal can be obtained from the government's statistical data. A quantitative interview survey of around 100 training-participant farmers was conducted in this ex-post evaluation, and supplementary information

[5] One of the research institutes under NARO

on the estimated increase of income from rice production, rice sales prices, etc. was taken into account in the estimation of the increase in rice income. Data were also collected on rice production (production and sales prices) before the training course and during the previous cropping season (124 farmers interviewed in 11 districts), as the farmers may have provided somewhat inaccurate information on their rice income in the cropping season in 2015/16 and 2020. This sample size was limited relative to the total number of training-participant farmers (51,702 households).

3. Results of the Evaluation (Overall Rating: B[6])

3.1 Relevance/Coherence (Rating: ④[7])

3.1.1 Relevance (Rating: ③)

3.1.1.1 Consistency with the Development Plan of Uganda

The agricultural sector was positioned as one of the pillars of economic growth, with particular emphasis on strengthened agricultural production and productivity, in the development plans Uganda was pursuing both during the planning of the project and at project completion (*the National Development Plan 2010/11 - 2014/15* and *the third National Development Plan 2020/21 - 2024/25*). Rice was positioned as a priority Research & Development crop and a priority/strategic commodity. Mechanisation, the multiplication and distribution of quality seeds, and the provision of extension services were also needed to increase rice production. As such, the targeted increase in rice production in the project was highly consistent and well aligned with the development plan of the Government of Uganda. Uganda's development plans during the ex-post evaluation focused on improving agricultural production and productivity, emphasizing post-harvest handling, strengthening value chains, and improving coordination among the various government agencies providing related services. The objectives of the project are well aligned with the priority issues positioned in the national development policy and other policies.

3.1.1.2 Consistency with the Development Needs of Uganda

Rice production was growing robustly in Uganda during the planning of the project because of the spread of NERICA rice cultivation. Rice consumption still outpaced the production growth, however, and the country depended on rice imports to meet the shortfall. Increasing the rice production therefore posed a major challenge. At the time of project completion, rice production was still insufficient to meet the demand generated by the increased rice consumption in the country. The Government of Uganda

[6] A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory
[7] ④: Very High ③: High, ②: Moderately Low, ①: Low

continued to set targets for increased rice production and self-sufficiency in rice. The increase in rice production was therefore consistent with Uganda's development needs both during the planning of the project and at project completion.

The interviews with farmers during the ex-post evaluation confirmed that the Ugandan farmers who cultivate rice are highly motivated to do so. In some cases, farmers who can purchase or lease additional farmland using income from rice sales are increasing their rice cultivation areas. Rice farmers also need appropriate post-harvest processing in order to improve their productivity (e.g., achieve higher unit yields), ensure the quality of their rice, and gain capacity in negotiating sales prices with traders. The need to continue disseminating appropriate rice cultivation techniques, both for existing rice farmers and new rice farmers, remains high.

Self-sufficiency in rice in Uganda was not yet achieved as of the ex-post evaluation, so the country basically remains a rice importer. The patterns and levels of rice distribution vary from region to region, however, because of the large size of the country and high distribution costs. While the rice imported from Asia, Tanzania, and produced in Uganda is distributed in Kampala, the capital city, Uganda reportedly exports rice to Kenya from its Eastern Region and to South Sudan and the Democratic Republic of Congo from its Northern and Western Regions. As the demand for rice in Uganda is expected to continue rising, the demand for domestically grown rice is likewise expected to remain high.

3.1.1.3 Appropriateness of the Project Plan and Approach

The project plan was formulated in consideration of a lesson learned from a previous project: "further strengthening of the rice research and dissemination system at NaCRRI is expected to improve Uganda’s rice research and development capacity"; the capacity of NaCRRI's rice researchers and training system has been strengthened; and the linkage with agricultural-extension-related organisations was enhanced. The rice research capacity of NaCRRI and ZARDIs was enhanced through implementing rice researches with JICA experts, receiving knowledge transfer at seminars conducted by JICA experts, and participating in training in Japan, etc. On the agricultural extension side, agricultural officers have used the teaching materials developed under the project to conduct farmer training sessions after receiving TOT training on appropriate rice cultivation techniques. Each farmer who participated in the training received 1 kg of rice seed to start rice cultivation using the techniques learned and to produce rice seed for the next cropping season. If the training-participant farmers were serious about rice cultivation using their 1 kg of rice seed and adopting appropriately the rice cultivation techniques they learned, they could be expected to effectively continue rice cultivation

in the following years. This agricultural extension method was appropriate, unique, and effective in fostering the adoption of rice farming practices and a sense of ownership by new rice farmers. A farmer-to-farmer technology transfer mechanism was improved into a more functional agricultural extension approach in a later stage of the project period. This improved agricultural extension approach has been adopted continuously in the phase 2 project, and this method was evaluated as highly effective. The agricultural extension approach has been further improved. As described in the section on sustainability, it is pointed out that there are some minor issues on the sustainability of the project, such as challenges on budget for research, training, and agricultural extension. These are financial issues of the Ugandan government side and are not issues caused by the Project Plan and Approach of this project.

3.1.2 Coherence (Rating: ④)

3.1.2.1 Consistency with Japan's ODA Policy

One of the priority areas in Japan's ODA policy for Uganda at the time of planning was "agricultural development: rice promotion, value addition of agricultural products, etc." Therefore, the promotion of rice and the increase in rice production through this project were consistent with Japan's ODA policy.

3.1.2.2 Internal Coherence

This project provided training on rice cultivation techniques to Japan Overseas Cooperation Volunteers (JOCV members) dispatched to Uganda, to equip them with useful knowledge for their subsequent activities. JOCV members dispatched to neighbouring African countries were also invited to Uganda as part of the wide-area training (once a year, about 25 persons per training session), and in the process received training on rice cultivation techniques. Government officials working with the JOCV members were also invited to participate in the training in the course of the project. In addition, some of the JOCV members who were sent to Uganda were assigned to ZARDIs and carried out activities related to rice research and extension of rice cultivation techniques. These types of collaborative activities on rice promotion implemented with JOCV members have contributed to the promotion of rice cultivation.

3.1.2.3 External Coherence

Rice cultivation technology training for refugees and host community farmers has been implemented in collaboration with the UNHCR from the mid-stage of the project. A large number of refugees from South Sudan and the Democratic Republic of Congo are living in the Northern Region in Uganda. The refugee communities have needs related

to food and technical assistance (guidance on food production and post-harvest handling techniques). This project provided training on rice cultivation techniques in response to a request from the UNHCR, which was responsible for food aid and the installation of post-harvest processing facilities (rice mills and rice storage). More specifically, this project conducted TOT training for NGO staff commissioned by the UNHCR and for a part of refugees and host community farmers. Then, NGO staff, who attended the TOT training, provided farmer training to other refugees and host community farmers. As a result, refugee and host community farmers acquired rice cultivation techniques, leading to new or increased production of rice as a cash crop. The UNHCR, meanwhile, constructed rice storage and rice mills in some locations. The sale and marketing of milled rice has been facilitated in some cases, leading to further increases of income from the sale of milled rice rather than un-milled rice. This synergistic effect has contributed to the high external coherence of the project activities.

The project's objective of "Rice production is increased in the target districts of the Project" was consistent with the development plan and development needs of the Government of Uganda both during the planning of the project and at project completion. The approach to technology dissemination was also appropriate. The project was also consistent with one of the priority areas of Japan's ODA policy for Uganda, namely, "agricultural development: rice promotion, value addition of agricultural products, etc." The support for rice promotion through training and collaboration with JOCV members was consistent in terms of coordination and collaboration with other JICA projects, and good results were achieved. Synergistic effects, such as increased rice production and income, have been observed among the refugees and host community farmers who were trained under the collaboration with the UNHCR (an international organisation in charge of refugee assistance). As such, this project was highly coherent with the various other international initiatives underway. Therefore, its relevance and coherence are very high.

3.2 Effectiveness and Impacts[8] (Rating: ④)

3.2.1 Effectiveness

3.2.1.1 (Project Output)

Three outputs of the project, specifically Output 1 "Research and development capacity (selection of appropriate varieties, recommendation of appropriate water management technologies, compilation of research results, development of rice cultivation technology packages, rice seed multiplication, breeding of disease-resistant lines) of rice-related institutes (NaCRRI and ZARDIs) is strengthened," Output 2: "Extension capacity of rice-

[8] When providing the sub-rating, Effectiveness and Impacts are to be considered together.

related service providers (agricultural officers) is strengthened (development of training materials, development and training of agricultural officers, implementation of farmer training, and preparation and submission of farmer training reports)," Output 3: "Capacity of the stakeholders involved in the rice value chain is strengthened to improve quality of rice (preparation of value chain survey report, trainings to rice millers and others, and support for establishment of rice millers' council)," were deemed to have been achieved (source: *Project Completion Report* (March 2019)). The specific achievement status is summarized in the table below.

Table 1: Achievement of the Outputs

Output (target)	Achievement (Results)
Output 1: Research and development capacity of rice-related institutes (NaCRRI and ZARDIs) is strengthened.	(1) Three varieties for the rainfed uplands were recommended and two varieties for the rainfed lowlands and irrigated lowlands were registered by the government organisation[9]. (2) The following techniques were recommended: (i) techniques to flatten the land and enclose it with ridges in order to increase the rainfall collection and retention capacity (for rainfed uplands), (ii) techniques to create ditches within fields to improve the water drainage capacity (for rainfed lowlands) and (iii) techniques to manage the water depth within fields (for irrigated lowlands). (3) A document entitled "*Tractor Hiring Service Models for Agricultural Mechanisation in Uganda*" was elaborated. (4) A report summarizing the project's research findings was produced (and shared within NaCRRI). (5) "Technology packages" for different rice cultivation environments were developed. (6) The target of multiplying at least 10 tons of rice seed each year was achieved. (7) Promising rice lines resistant to the Rice Yellow Mottle Virus (RYMV) were identified, and further selection was underway. Work on the purification[10] of recommended rice varieties (e.g., NERICA varieties, WITA 9, Supa, and others) is being maintained. (8) A rice seed production plan was prepared each year.
Output 2: Extension capacity of rice-related service providers (agricultural officers) is strengthened (development of training materials, training of agricultural officers, farmer training, preparation and submission of reports on farmer training).	(1) A rice cultivation poster, a rice cultivation handbook, and teaching materials on rice disease and pest and water management were developed and distributed to agricultural officers during the TOT training. A separate rice cultivation handbook for farmers was prepared and distributed to the farmers participating in the training. (2) Every agricultural officer who attended the TOT training conducted at least one farmer training session. (3) The total number of training-participant farmers reached 51,702. (4) The average adoption rates of upland rice cultivation techniques in Luweero and Soroti districts were 71% and 66%, respectively. The technology adoption rate for lowland rice cultivation was very high in the Namutumba district, at 93%. (5) A total of 227 agricultural officers attended the TOT training, and a total of 31 researchers from ZARDIs in four locations attended technical training / workshops / internal training. The total number of training participants was 258.

[9] Reviewed and registered by the National Variety Release Committee within the MAAIF.
[10] Work to ensure that there is no mixing of different varieties.

	(6) The agricultural officers in charge created the demonstration plots for farmers in all seven of the target pilot sites (seven districts). (7) The neighbouring farmers were invited to the farmer field training on the demonstration plots along with the target farmer groups, in order to realise effective extension methods (farmer-to-farmer technology transfer). (8) All agricultural officers in charge of the pilot sites submitted farmer training reports after the implementation of the farmer training.
Output 3: Capacity of the stakeholders involved in the rice value chain is strengthened to improve the quality of rice in the market.	(1) A document entitled "*Rice in Uganda*" was prepared and distributed to relevant organisations after the implementation of a rice value chain survey. (2) Training sessions were organised for rice millers and rice traders in 2013. The direction of this activity was subsequently changed to establish a rice millers' association. The Rice Millers Council of Uganda was established in 2015 and officially registered at the Ministry of Trade Industry and Cooperatives. Activities to encourage the removal of stones during the rice milling process were subsequently implemented.

3.2.1.2 Achievement of Project Purpose

The project purpose was "Rice production is increased in the target district of the project," and three indicators were set. The degree to which each indicator was achieved is shown in the table below, based on the Project Completion Report.

Table 2 Achievement of the Project Purpose

Project Purpose	Indicator	Actual
Rice production is increased in the target district of the project	Indicator 1: Rice growing areas increase more than 15,000 ha.	The increase in the area of rice cultivation at the end of the project was estimated at 19,210 ha. The 15,000 ha target was surpassed (achieved).
	Indicator 2: Amount of rice production increases more than 45,000 tons (10 % of the rice production at the commencement of the Project) on the basis of paddy (un-milled) at household level.	As of the end of the project, the increase in rice production (estimated value) among the farmers who received training was 51,122 tons, exceeding the 45,000 tons target (achieved).
	Indicator 3: Rice technologies are disseminated in all pilot areas through NARO and district government collaboration.	The agricultural officers in charge at all of the pilot sites conducted the farmer training using the demonstration farms (9 sites) and training materials (achieved).

TOT training for agricultural officers has been conducted under the project, and the agricultural officers who acquired knowledge on recommended rice cultivation techniques instructed the farmers on the techniques through training in the field. As a result, the rice cultivation area was increased by an estimated 19,210 ha and rice production was increased by an estimated 52,122 tons, compared with the figures before the start of the project. The results of the project surpassed the achievements planned.

The project achieved its purpose more than planned.

3.2.2 Impacts

3.2.2.1 Achievement of Overall Goal

The overall goal, the indicators, and the degrees to which the indicators were achieved (actual) are shown in the following table.

Table 3 Achievement of the Overall Goal

Overall Goal	Indicator	Actual
Income of the participating households in training is increased.	The income from rice production in the target districts is increased at least by 5% by 2020, compared with the same in 2015/16.	In Uganda, data on rice production income by district is not available in annual statistical yearbooks and other sources. Therefore, it was decided to estimate the level of achievement of this indicator based on the results of the farmer survey (interviews) conducted in this study. Interviews were conducted with 124 training-participant farmers in 11 districts[11] (quantitative survey). Table 4 shows the change in income from rice production (mean value) of the training-participant farmers (including both new and existing rice farmers) at the time of training (note 1) and at the last cropping season (year 2022). Income from rice production increased by 1.46 times (46% increase) on average, which was well above the 5% target.

Note 1: The training participation timing varied from farmer to farmer and ranged between the years 2012 and 2018.

Table 4 Change in income from rice production during the training and during the last cropping season

Category of farmer	Number of surveyed farmers (households)	Average value of rice production (UGX) per farmer during the training	Average value of rice production per farmer (UGX) during the 2022 cropping season	Change in income from rice production
New rice farmer	38	1,040,969	1,616,300	575,331 UGX increase **(increased by 1.55 times)**
	(value in yen)	(36,954 JPY)	(57,379 JPY)	(20,424 JPY increase)
Existing rice farmer	86	1,890,712	2,719,611	828,899 UGX increase (**increased by 1.43 times**)
	(value in yen)	(67,120 JPY)	(96,546 JPY)	(29,426 JPY increase)

[11] Adjumani, Arua, Butaleja, Kaliro, Kanungu, Kikuube, Luwero, Mayuge, Mukono, Nebbi, and Sironko districts

Average (Number of surveyed farmers is the total)	(124)	1,630,306	2,381,500	751,194 UGX increase (**increased by 1.46 times**)
	(value in yen)	(57,876 JPY)	(84,543 JPY)	(increased by 26,667 JPY)

Note: 1 UGX (Ugandan Shilling) = 0.0355 JPY (Japanese Yen) (February 2023, when the quantitative survey was conducted)

As shown in Table 4, the interviews with training-participant farmers revealed that their income from rice production in the 2022 cropping season increased by an estimated 46% compared with their income from rice production before the training, thanks mainly to the increase in unit yields achieved through the adoption of appropriate rice cultivation techniques, the increase in the areas of rice cultivation for some of the farmers, etc. The increase of income from rice production (46%) exceeded the 5% target. As rice is a cash crop, the 46% increase in income from rice production has contributed significantly to improving the livelihoods of the training-participant farmers.

It can therefore be inferred that the results of the project surpassed the overall goal targeted. Even though the data on income from rice production is not verifiable at the district level, the project can be assumed to have achieved its overall goal.

3.2.2.2 Other Positive and Negative Impacts

1) Impacts on the Environment

This project was judged to have minimal undesirable effects on the environment based on the JICA Guideline for Environmental and Social Considerations (formulated in April 2010), and was classified as Category C. In addition, the project had no direct negative impacts on the environment.

2) Resettlement and Land Acquisition

No resettlement or land acquisition occurred in this project.

3) Gender Equality, Marginalized People, Social Systems and Norms, Human Well-being and Human Rights, etc.

Rice farming operations (from ploughing the land to selling the harvested products) are oftentimes carried out by both men and women, either in cooperation with each other or, for some types of farm work, on a shared basis (this information is based on farmer survey results). Rice is a cash crop, and positive gender effects accompanying the increase in income from rice sales have been observed: (i) husbands and wives make household decisions in consultation with each other (including decisions on the expenditure of the rice income); (ii) conflict and violence in the household has decreased (because of the

increased income); and (iii) women feel more independent in the household (information based on the farmer survey results).

4) Unintended Positive/Negative Impacts

a) Impacts on ordinary Ugandan farmers and others

Disposable income has increased to households through the production and sale of rice as a cash crop, which in turn has brought about the following effects/impacts (information from the interviews with the farmers who received the training).

* They can use the money to pay for their children's school fees and other educational expenses. They attach great importance to their children's education and try to send their children to private schools with better educational environments if they afford to the money (private tuitions are higher than public tuitions).
* The money can be used for medical, clothing, and food expenses.
* Rice became one of the staple crops, and its production improved household food security. Many rice-producing households are eating rice two to three times a week, more often than before. In particular, more children are coming to prefer rice at mealtimes.
* Rice income is used to purchase or lease farmland, which leads to further increases in rice production and/or growing of other crops (cassava, maize, etc.), which in turn increases the availability of staple foods.
* Some farmers have been able to use their rice income to purchase cattle, goats, chickens and other livestock to generate income through livestock fattening and milk production.
* In many cases, the knowledge and skills learned in rice farming training are taught to neighbouring farmers, which contributes to the spread and expansion of appropriate rice cultivation techniques and increased rice production (progress in disseminating rice cultivation techniques among farmers).
* The use of improved technologies for rice cultivation on low marshlands, land which was previously unused, has brought higher incomes.

b) Impact of the training provided to refugees and others

The project conducted rice cultivation training for refugees and farmers in the communities where refugees reside (host community farmers), in collaboration with the UNHCR. Specifically, 266 refugees and host community farmers received TOT training and another 798 refugees and 519 host community farmers received regular farmer training. Interviews with 11 refugees and 14 host community farmers who received the training revealed the following impacts, in addition to the impacts enumerated above.

* The refugees' rice production for their own households improved their household food security and reduced their dependence on food supplied through the UN World Food Programme (WFP).
* After the refugees and host community farmers attended the training, they began to carry out rice cultivation works (weeding, harvesting, etc.) in cooperation with each other, which in turn improved their relationships. The men and women also began to work together (men began to do some of the weeding work, which was something previously considered a chore for women). Refugees have been borrowing land from host communities to cultivate rice, which has benefited both the refugees and host community farmers by securing labour for rice cultivation and for the cultivation of the land as farmland. The refugees and host community farmers also provided mutual support for funerals and weddings (e.g., by providing rice and other foodstuffs to households holding funerals), which again brought them closer together[12].
* The refugees became more involved in community activities (community meetings, road repair works, etc.).
* The refugees were able to use their rice income to pay for school fees, medical expenses, and leasing costs for agricultural land, which increased their independence and greatly improved and reinforced their self-esteem.
* Rice cultivation techniques were disseminated to neighbouring farmers.
* Rice cultivation techniques were shared with other refugees and host community farmers during joint working activities (through oral explanations and practice). Specifically, each trained refugee shared his/her rice farming knowledge with 3-10 neighbouring farmers.
* Income increase: The estimated change in rice production and income in the households of the interviewed refugees (11 people) immediately after the training and during the final cropping season showed that the rice production per refugee (rice producer) fell from 850 kg to 636 kg. As none of the refugees interviewed had produced rice before taking part in the training, however, the amount of rice produced in the final cropping season represented an increase in rice production comparing the situation before the training. The income from rice production in the final cropping season was approximately 1,738,000 Ugandan Shillings (approximately 61,700 Japanese Yen) for 636 kg of rice.

[12] The interviewees were refugees from South Sudan living in refugee settlements in the Adjumani district and spoke the same local language as the Ugandans in the area. The common language made communication easier, which may have contributed to the smooth development of cooperation and collaboration between the refugees and host community farmers (note that the refugees mainly from the Democratic Republic of the Congo live in western Uganda, where the situation is reportedly different).

c) Other impacts

* The introduction of rice cultivation in many new areas (such as Buvuma Island in Lake Victoria) and the increase in rice production have led to an increase in small-scale rice millers.
* This project provided technical training on rice cultivation to JOCV members. Some of the members have since become JICA experts, while others have found employment in consultant companies involved in Japan's Official Development Assistance. In this way, the project has contributed to human resource development in the rice farming sector.

This project has achieved the project purpose of "Rice production is increased in the target districts of the Project" and the overall goal of "Income of the participating households in training is increased" more than planned. Therefore, effectiveness and impacts of the project are very high.

3.3 Efficiency (Rating: ②)

3.3.1 Inputs

Inputs	Plan	Actual
(1) Experts	6 Long-term More than 3 Short-term	12 Long-term (405.3 MM*) 15 Short-term (65.1 MM)
(2) Trainees received	About 8 persons/year	35 persons in total
(3) Equipment	---	Vehicles and research equipment
(4) (Others)	---	266.5 million yen
Japanese Side Total Project Cost	About 900 million yen in total	1,083 million yen in total (Reference: The total project cost for the first five years was 845 million yen.)
Ugandan Side Total Project Cost	Recurrent expenses (e.g., project activity costs, utilities, etc.)	About 140 million yen in total

* MM stands for man month.

3.3.1.1 Elements of Inputs

As the project period increased from the originally planned five years to seven years and five months, the resulting increases in activity costs and dispatch of experts drove the total project costs on the Japanese side far above the costs initially planned. The number of

trainees received, on the other hand, was less than planned[13].

3.3.1.2 Project Cost

The project cost was slightly exceeded the plan (120% of the plan), with actual costs of 1,083 million JPY compared with the plan of approximately 900 million JPY. The increase in the project cost mainly stemmed from the ongoing need to pay for local project activities (activities related to research, and the training and dissemination of rice cultivation techniques), although efforts were made to reduce the number of experts dispatched when the project period was extended. The cost for the initial project period (November 2011 - October 2016) was lower than the planned cost of approximately 900 million JPY [14]. The achievement of the project objectives and results, on the other hand, was very high and commensurate with the outputs. Although additional project costs were required, they were an appropriate input in light of these factors.

3.3.1.3 Project Period

The project period was 89 months (November 2011 - March 2019), which exceeded the plan (60 months: November 2011 - October 2016) by 148% of the plan.

The project period was extended twice, first from November 2016 to March 2018 (17 months) and next from April 2018 to March 2019 (12 months). One of reasons for the first extension was the National Agricultural Advisory Service (NAADS), one of the implementing agencies in charge of agricultural extension, shed its agricultural extension function under a reorganisation taking place in 2014. The dismissal of the agricultural officers from NAADS who had attended TOT training made it necessary to strengthen the capacity of agricultural officers from the district administration. In addition, the reason for setting the extension period at 17 months was due to the need to ensure two cropping seasons during the extension period, taking into account the local rice growing season in order to strengthen the capacity of agricultural officers. The reason for the second extension was the need to increase self-sustainability of the basic research capacity, extension system and seed production of the Ugandan side in order to ensure the sustainability of the successor Phase 2 project before initiating it.

Therefore, efficiency of the project is moderately low.

[13] Mainly because the counterparts were sent to “Group and Region-Focused Training” in Japan at JICA’s invitation, which resulted in the dispatch of fewer people to training in Japan than planned.

[14] The actual project cost for the five years and five months from November 2011 to March 2017 amounted to approximately 845 million JPY (source: *the Terminal Evaluation Report* (October 2017)), which was within the originally planned project cost.

3.4 Sustainability (Rating: ②)

The ultimate goal of the project was to increase rice production and increase the income of the farmers who had received training through the practice of the recommended rice cultivation techniques in the project target districts. Therefore, this section on sustainability looks at sustainability in terms of techniques, i.e., whether the farmers have continued to practice the recommended rice cultivation techniques since the completion of the project, and also in terms of institutions and policies, organisation and systems, and finance, i.e., whether technical training on rice cultivation has been implemented since the completion of the project and whether the rice promotion area has expanded.

3.4.1 Policy and System

The objectives of *the Third National Development Plan (2020/21 - 2024/25)* at the time of the ex-post evaluation were to "increase household income and improve the quality of life of the population," and encompassed 18 programmes. One of the programmes, the "Agro-industrialisation Programme," focuses on increasing the growth rate of the agricultural sector, increasing the labour productivity of the agro-industrial value chain, creating jobs in the agricultural sector, increasing the proportion of food-secure households, and increasing the export value of selected agricultural products. The Agro-industrialisation Programme presents six objectives: (i) increasing production and productivity; (ii) improving post-harvest handling and storage; (iii) increasing agro-processing and value-added creation; (iv) improving market access and increasing the competitiveness of agro-products in and outside the country; (v) mobilising the equitable access and use of agricultural finance; and (vi) strengthening coordination among relevant institutions to improve service delivery. Note that one of the agricultural products covered by the programme is rice.

Although there are concerns that the unpublished Second National Rice Development Strategy (NRDS2) (as of November 2023) and the President's statement banning rice cultivation in wetlands in 2022 may slightly attenuate the policy priority of rice production, rice has been identified as a priority crop in the above national development plan, which ensures its sustainability in policy terms.

3.4.2 Institutional/Organizational Aspect

Each of the implementing agencies (MAAIF, NARO, NaCRRI, ZARDIs and district administration) has its own role in promoting the agricultural sector (central government administration, rice research, rice cultivation technology dissemination, etc.) and promotes agriculture through collaboration and coordination among them. The establishment of a training section in NaCRRI was recommended during the project period, and a staffed training section established during the ex-post evaluation is presently functioning within

NaCRRI. Though no seed production section has been established within NaCRRI, note that the organisation develops a seed production plan each year to produce pre-basic and basic rice seeds for distribution to the training-participant farmers and for sale to general farmers.

Around two to three rice-related researchers/technicians from each ZARDI participated in the project. As of the ex-post evaluation, a number of rice researchers/technicians were either studying abroad or had been reassigned to other ZARDIs. ZARDIs are NARO-affiliated research institutions in which personnel changes periodically occur. While newly assigned researchers/technicians who lack sufficient knowledge and experience in rice cultivation may sometimes need to receive the same through technology transfers, NARO basically retains personnel with strengthened capacity in rice cultivation technology. As such, there should be no major problems in terms of the organisational structure. According to MAAIF, a total of 4,000 agricultural officers are dispatched throughout the country. Though no data were obtained on the fixed number of agricultural officers or their overall coverage rate, interviews conducted at 10 district agricultural offices indicated a coverage rate of 61.3%. The number of new employees in the 10 districts after the end of the project (from April 2019 onwards) averaged 3.8 per district, which means that the employment of new agricultural officers is proceeding and the agricultural extension system is improving. Based on the above, the sustainability of the organisation and system is evaluated as moderately high.

3.4.3 Technical Aspect

1) Researchers

A total of 39 researchers and technicians from NaCRRI and ZARDIs were assigned in the Phase 2 project, the successor to this project. Some of these rice-related researchers and technicians have been involved in breeding (breeding disease-resistant varieties), cultivation technology experiments, and training activities. Their involvement in these activities has strengthened their knowledge and skills in conducting research and training. There will be a challenge, however, in ensuring the continuity of knowledge and skills of a number of project-employed researchers and technicians who work alongside the Japanese experts, as the experts will be leaving when JICA's technical cooperation comes to an end. Overall, NARO will need to continue strengthening the capacity of the rice-related researchers.

2) Agricultural officers

The Phase 2 project has also conducted training of trainers (TOT training) for agricultural officers in charge of sub-counties[15] in high-priority rice production districts. Refresher TOT training (follow-up training) has also been conducted for the agricultural officers who

[15] Administrative unit under district

attended the TOT training. The agricultural officers report that rice cultivation technology has been continuously disseminated in response to the farmers' needs, and a certain degree of sustainability in maintaining and strengthening the rice farming knowledge of the agricultural officers has been achieved.

3) Farmers

The adoption rate of rice cultivation techniques for paddy rice among farmers was as high as more than 90% according to the assessments in the first terminal evaluation of the project. Although this rate was about 20 points lower in the ex-post-evaluation, it remained above 70% on average (above the 50% target). The adoption rate of the sowing and drying techniques for the cultivation of upland rice has improved, and currently stands at just above 70% on average. The sustainability and retention of the recommended techniques at the level of the trained farmers has been ensured.

Each trained farmer transfers the rice cultivation techniques learnt at the training to about three to four surrounding farmers, as well as to his/her own family members. While these farmers may be limited in number, the farmer-to-farmer technology dissemination is taking place. The adoption rate of appropriate rice cultivation techniques in Phase 2 projects, where the new extension methods have been fully applied, is high (e.g., the adoption rate of techniques for lowland rice cultivation, such as young seedling transplanting, field levelling, the use of modern rice varieties, and row planting, has increased from 3%-39% before the training to 73%-99%). The farmer-to-farmer technical transfer has also been good (technical transfer from one trained farmer to an average of 9.8 surrounding farmers in total, and the adoption rate of appropriate rice cultivation techniques by surrounding farmers increased from 0%-30% to 57%-97%)[16].

The technology adoption and retention among trained rice farmers has been good, and further farmer-to-farmer technical dissemination has also been observed. While NaCRRI assigns full-time staff to rice research, training, and seed multiplication, the employment of a number of project staff in research, training, and seed multiplication at JICA's expense may incur some minor issues with technical sustainability.

3.4.4 Financial Aspect

The Ugandan counterpart budget for the Phase 2 project was very limited. There continues to be a shortage of budgetary resources for rice research. Another factor is the lack of a properly workable mechanism to ensure that the funds obtained by MAAIF from the Ministry of Finance are properly transferred to research institutes under NARO such as NaCRRI and others. Rice seed production is carried out in NaCRRI and the ZARDIs, and some of the

[16] Source: *Midterm Review, Musomesa Field School, Survey Report,* December 2021

seed produced is either used for distribution during farmer training or sold to general farmers and others. A mechanism currently being put in place at NARO is to use the income from seed sales as wages for the workers involved in the seed production. The financial sustainability of the seed production is improving. The extension activities largely depend on the available agricultural extension budget at the district administration level. According to interviews at the district agricultural offices, the budget for agricultural extension activities is completely insufficient[17]. The table below shows the agricultural extension-related budgets at the 10 district agricultural offices interviewed.

Table 5: Agricultural Extension Budgets of the District Agricultural Offices and Number of Sub-Counties

	District	Ugandan Shillings (UGX)	Yen equivalent (JPY)	Number of Sub-Counties
1	Adjumani	20,000,000	710,000	10
2	Arua	15,000,000	532,500	30
3	Sironko	82,000,000	2,911,000	21
4	Mayuge	28,000,000	994,000	14
5	Nebbi	28,100,000	997,550	12
6	Mukono	512,588,000	18,196,874	16
7	Kaliro	62,400,000	2,215,200	12
8	Luwero	(data not obtained)	---	(13)
9	Kikuube	(data not obtained)	---	(7)
10	Kanungu	317,235,333	11,261,854	17
Average		133,165,417	4,727,372	16.5

Note 1: The conversion rate from Ugandan Shillings to Japanese Yen is 1 Ugandan Shilling = 0.0355 Japanese Yen.
Note 2: The average number of Sub-Counties is the average of the eight districts where information was received.

The average annual extension budget of a district agricultural office is about 4.73 million Japanese Yen. As there are 16.5 sub-counties in a district on average, the annual extension budget per sub-county is about 290,000 Japanese Yen, or only about 24,000 Japanese Yen per month.

Though the above mechanisms to cover the costs of seed production are being put in place, the financial sustainability is low because the budgets are lacking both for rice research and training and for rice technology extension activities at the district administrative level, the

[17] Most district administrations have little or no independent financial resources such as tax revenues and rely heavily on financial resources from the central government, which limits the allocation of agricultural extension-related budgets.

level responsible for extension activities.

3.4.5 Environmental and Social Aspect

None in particular

3.4.6 Preventative Measures to Risks

None in particular

Some minor issues have been observed in terms of the technical and the financial aspects. They are not expected to be improved. Therefore, sustainability of the project effects is moderately low.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The project aimed to increase rice production in the target districts through promoting recommended rice cultivation techniques to the trained farmers by (i) strengthening the research and development capacity of rice-related research institutes, (ii) strengthening the extension capacity of rice-related service providers (agricultural officers), and (iii) strengthening the extension capacity of stakeholders (rice millers) in the rice value chain to improve the quality of rice in the market.

The targeted increase in rice production in the target districts in this project was consistent with Uganda's development plan and development needs both during the planning of the project and at project completion. This project was also consistent with Japan's ODA policy for Uganda during the planning stages (in which one of the priority areas was "agricultural development: rice promotion, value addition of agricultural products, etc.). Further, the project was implemented in collaboration with the Office of the UNHCR) (an international organisation responsible for refugee assistance), which brought synergy effects. As the project was consistent with international initiatives in these respects, the relevance and coherence of the project were very high. The implementation of the project led to an increase in rice production through the development of recommended rice cultivation technologies, capacity-building of agricultural officers and other actors, and the adoption and expansion of rice cultivation techniques by the farmers who participated in the training in the project's target districts. The effectiveness and impact of the project were very high, as the project brought about more effects and impacts than planned, such as a greater-than-expected increase in rice production among the trained farmers after project completion, an expansion of rice production areas through the dissemination of technologies from farmer to farmer, expanded rice production among refugee and host community farmers, and improved roles

for women within households. The project cost and period were higher than planned, but these were due to factors beyond the control of the project implementer. The outcomes and project purpose were achieved to a very high degree. The efficiency of the project was moderately low, even when accounting for the fact that the invested human resources and expenses efficiently contributed to the achievement of the project targets. Although some aspects of the project's sustainability are ensured by the current implementation of the successor project (Phase 2 project), there are still financial challenges, particularly in terms of the budgets for research, training, and agricultural extension. Thus, the sustainability of the project is evaluated as moderately low.

In light of the above, this project is evaluated to be satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Implementing Agency

(1) Allocation of Ugandan counterpart funds for technical cooperation project activities (recommendations to MAAIF and NARO)

Some Ugandan counterpart funds were disbursed under the project, but only to a limited extent. Counterpart funds were disbursed in the first year of the ongoing Phase 2 project, but no disbursements are expected from the second year onward. MAAIF and NARO need to improve their funding and disbursements to ensure that counterpart funds are available for use in technical cooperation project activities.

(2) Improved employment opportunities for project-employed staff as permanent staff (recommendation to NARO).

A number of staff employed by the project (with JICA funds) have been working at NaCRRI under this project and Phase 2 project. Among them are researchers and technicians who have garnered knowledge and experience in rice farming through their work in technical cooperation projects. It is important that these personnel be taken in as permanent employees of NARO, chiefly in order to enhance the sustainability of the technical aspects of research, training, and seed production. Their recruitment by NARO will require some navigation of the government regulations set on the employment of permanent staff. It is desirable that information is shared with the staff employed by the project to help them move into permanent staff positions in the future.

4.2.2 Recommendations to JICA

Compilation of JICA's cooperation achievements and results in the field of rice promotion in Uganda, the promotion of further understanding among senior officials at MAAIF (Ministry of Agriculture, Animal Industry and Fisheries) and NARO (National Agricultural

Research Organisation), and others

JICA's cooperation in rice promotion in Uganda started in 2004 with the dispatch of an individual expert and has been carried out through a grant aid project and a number of technical cooperation projects in the 20 years since. JICA cooperation has contributed to increased rice production and improved incomes for rice farmers in Uganda. While MAAIF and NARO are well aware of the extent to which JICA assistance has contributed to increased rice production through information-sharing at various meetings, some of the officials in these organisations have no detailed knowledge on the specific achievements, results, and impacts of JICA assistance. One way to further promote understanding among the senior officials is to have the JICA experts working on the ongoing Phase 2 project or planned Phase 3 project in cooperation with MAAIF provide the officials with a document of a few pages outlining the achievements, results, and impacts of JICA assistance to date. Such a document would facilitate the implementation of technical cooperation projects related to rice promotion. Given the growing importance of food security today, it will also be very important to engage in dialogue with counterpart government agencies to increase government budget disbursements for the agricultural sector in general, including rice production, beyond the counterpart budget disbursements for technical cooperation projects.

4.3 Lessons Learned

The importance of extension methods that allow farmer-to-farmer technical transfers to function.

The method of farmer training was improved in the second half of the project. Before the improvement, the TOT-trained agricultural officers (including some farmers) trained general farmers in sessions lasting about half a day. After the improvement, TOT-trained agricultural officers (some of whom were farmers) trained lead farmers (using demonstration plots) who then went on to train the surrounding general farmers (farmer-to-farmer technical transfer). Many African countries share the common challenges of limited budgets for agricultural extension activities, limited numbers of agricultural extension workers, and limited motorbikes and fuel due to government budget shortfalls. During the implementation of a technical cooperation project, farmer training and post-training farmer monitoring activities can be carried out using the budget from the Japanese side. A lack of budget, however, hinders the effective implementation of farmer training and other activities after a project ends. If functioning mechanisms for farmer-to-farmer technical transfer are set in place, techniques can be transferred to farmers who lack knowledge of proper rice cultivation techniques, which in turn can reduce a project's heavy reliance on agricultural extension budget. It is therefore important to experiment with an agricultural extension system that allows the farmer-to-farmer technical transfer to function.

Setting of the indicator for the overall goal

The indicator for the overall goal of this project is: “The income from rice production in the target districts is increased at least by 5% by 2020, compared with the same in 2015/16.” Uganda keeps no annual statistical data on rice production by district. As this precludes the collection of data on income from rice production at the district level, no indicator data on the overall goal can be obtained from the government’s statistical data. The targets of the overall goal of a project are generally set to be achieved three years after the end of the project. When no successor project takes places, changes in income can be used as an indicator if the information available from the government statistics can be used to determine those changes (the indicators are preferably set using government statistics published annually). When the government data cannot be used for that determination, an indicator other than income should be considered. If a successor project is foreseen, a possible method for collecting data on the indicator for the overall goal is generally included in the project costs of the successor project. Alternatively, the cost of a sample survey for the indicator data collection could be included in the cost of the ex-post evaluation survey (e.g., through re-commissioning to a local consultant or the use of a local survey assistant).

5. Non-Score Criteria

5.1. Performance

5.1.1 Objective Perspective

None in particular

5.2. Additionality

None in particular