

Ex-Ante Evaluation (for Japanese ODA Loan)

Africa Division 4, Africa Department,
Japan International Cooperation Agency (JICA)

1. Basic Information

Country: Republic of Senegal (hereinafter, Senegal)

Project: Project for Irrigated Rice Production in the Senegal River Valley

Loan Agreement: January 10, 2021

2. Background and Necessity of the Project

(1) Current Status and Issues in the Irrigated Rice Cultivation Sector in Senegal

In Senegal, rice is a staple diet along with African millet and Japanese millet. The demand for rice has been rising due to increase in the population and changes in the diet. The annual rice consumption per person doubled from approximately 50 kg in 1960 to approximately 100kg in 2019 (United States Department of Agriculture Foreign Agricultural Service (USDA FAS)). In addition, the total rice consumption quadrupled from 400,000 tons in 1995 (Senegalese Ministry of Agriculture, February 2009) to 1,600,000 tons in 2016 (USDA FAS, April 2017). Senegal is included in countries that consume rice most in West Africa.

The Senegalese government determined national development plan "Plan Sénégal Emergent (PSE)" in 2014 and selected "Economic growth and structural reform" as one of three main objectives. In the economic growth and structural reform, the Senegalese government regards agriculture as a driving force of economic growth, aiming at enhancing the food security and reducing the trade deficit by increasing the self-sufficiency rate. In addition, in Programme d'Accélération de la Cadence de l'Agriculture Sénégalaise (PRACAS) that was formed based on the PSE, rice, which was a staple diet in Senegal, was regarded as a strategically important crop for the economic growth. In the PRACAS, the Senegalese government aimed at increasing the production of rice (unhulled rice basis) to 1,600,000 tons by 2017. In PRACAS2 that was started in 2019, the government aims at increasing the production to 2,100,000 tons by 2022.

Meanwhile, although the rice production in Senegal increased from approximately 400,000 tons in 2008 to approximately 710,000 tons in 2017, Senegal still imports approximately 1,180,000 tons of rice (polished rice) (FAOSTAT, 2017). Therefore, the Senegalese government needs to work harder

to increase the production and reduce the trade deficit.

To increase the rice production, the Senegalese government determined in the PRACAS to cultivate rice of approximately 60% of the target rice (unhulled rice) production in the Senegal River valley that had high potential for crop production. Under such circumstances, Société Nationale d'Aménagement et d'Exploitation des Terres du Delta du fleuve Sénégal et des vallées du fleuve Sénégal et de la Falémé (SAED) that develops irrigation in the valley and that maintains and manages facilities has developed 63% of the land that is suitable for irrigated rice cultivation in the entire valley mainly with small and medium levels of irrigation. However, in downstream Dagana and Podor Departments, irrigation facilities in many areas have aged because 30 years or more have passed since the development. Part of the farmland has been abandoned and is no longer cultivated due to various reasons: Lack of maintenance and management technologies, malfunctions and problems with pumps originating in such lack, salinity problems because of undeveloped drains, access roads and farm roads in cultivated lands and lack of agricultural machinery. Therefore, the production remains low. In the areas, increasing the rice production by developing related agricultural infrastructure is urgent task.

The Project for Irrigated Rice Production in the Senegal River Valley (hereinafter, this project) contributes to increasing the rice production by expanding and rehabilitating irrigation facilities and related facilities in the Senegal River valley and procuring agricultural machinery and to reducing the trade deficit by reducing the import. This project contributes to achieving the objectives of the PSE and PRACAS.

(2) Japan's and JICA's Policy and Operation for the Irrigated Rice Cultivation Sector

In Japan's Country Assistance Policy for Senegal (April 2014), "Support for sustainable economic growth" has been selected as one key sector and importance is attached to the primary industry to the promotion of rice farming, in particular. In JICA Country Analysis Paper for Republic of Senegal (May 2012), agricultural and rural development has been selected as a key issue and various tasks are listed: Increasing the productivity of rice, developing the agricultural infrastructure, promoting the distribution and improving the farming with the aim of increasing the food self-sufficiency rate and promoting domestically produced rice. In addition, in Coalition for African Rice Development 2 (CARD2) that JICA has been promoting with other donors, JICA has been working to further

increase the rice production in the target countries including Senegal. This project is consistent with these policies and analysis. Furthermore, this project aims at increasing the rice production through appropriate expansion and rehabilitation of the irrigation infrastructure and thereby it contributes to SDGs' Goal 2 "Food security."

(3) Other Donor's Activities

Agence Française de Développement (AFD) has been carrying out multiple programs in Dagana and Podor Departments in the Senegal River valley to expand and rehabilitate small-scale irrigation facilities, develop farm roads and enhance the capability of the producer organizations. The World Bank carried out a program (PDIDAS) for developing cultivated lands and enhancing the capability of the farmer's organizations and has been supporting the upgrade of irrigation facilities. The Brazilian government provided various agricultural machines, such as 400 tractors and 80 cultivators, to promote the use of agricultural machinery. The Belgian and Indian governments also provided tractors and combine harvesters. For this project, in selecting target areas of irrigation development programs, areas that overlap with target areas in other institutions' projects are avoided while trainings to enhance the capability, possibility of cooperation with other support institutions is conducted.

3. Project Description

(1) Project Objective

This project aims at improving the productivity of rice by expanding and rehabilitating irrigation facilities, procuring agricultural machinery, improving the system for maintaining and managing irrigation facilities and supporting the farming in Dagana and Podor Departments in the Senegal River valley, which in turn contributes to enhancing the country's food security.

(2) Project Site/Target Area

Dagana and Podor Departments, Saint-Louis Region (population: 620,000)

(3) Project Component

- 1) Expansion and rehabilitation of irrigation and drainage facilities (assumed total target area is approximately 9,000 ha) and construction and upgrade of related agricultural infrastructure (e.g., farm roads and warehouses)
- 2) Procurement and allocation of agricultural machinery (e.g., medium sized combine harvesters, reapers and threshers)
- 3) Renovation of the offices of the Product Management Unit (PMU) and

Project Implementation Unit (PIU), procurement of vehicles, etc.

4) Consulting services (e.g., Formulation of operation and maintenance manuals, enhancement of the project monitoring capability of the PMU and PIU and technical support to the farmer's organizations and improvement of their systems, etc.)

(4) Estimated Project Cost: 8,615 million yen (Loan Amount: 7,169 million yen)

(5) Project Schedule

From August 2020 to July 2028 (96 months in total). This project shall be complete when the Irrigation facilities' operation starts (October 2026).

(6) Project Implementation Structure

1) Borrower: Government of Republic of Senegal

2) Guarantor: None

3) Executing Agency: Société Nationale d'Aménagement et d'Exploitation des Terres du Delta du fleuve Sénégal et des vallées du fleuve Sénégal et de la Falémé (SAED)

4) Operation and Maintenance Agency: Farmer's organizations conduct the operation and maintenance activities under the supervision of SAED.

(7) Cooperation and Sharing of Roles with Other Projects and Donors

1) Japanese's Assistance Activities

This project is carried out according to a master plan for Senegal River valley irrigated rice cultivation formulated in the Project for Improvement of Irrigated Rice Productivity in the Senegal River Valley (PAPRIZ2) (2016 to 2021). In addition, in technical cooperation projects, PAPRIZ and PAPRIZ2, the monitoring capability of the implementation organization of this project was enhanced and the farmer's organizations' capability for promoting distribution, improving the farming and managing operation and maintenance was also enhanced.

2) Other Donor's Assistance Activities

Agence Française de Développement (AFD) is expanding and rehabilitating small-scale irrigation facilities in the target areas of this project, enhancing the capability of the farmer's organizations. In selecting target areas of this project, areas overlap with target areas of other donors shall be avoided while collaboration possibility in trainings to enhance the capability is to be considered.

(8) Environmental and Social Considerations/Cross-cutting Issue/Gender Classification

1) Environmental and Social Considerations

(i) Category: B

(ii) Reason for Categorization: This project is not applicable to large-scale projects in the agricultural sector specified in “the JICA Guidelines for Environmental and Social Considerations” (published in April 2010). This project also does not have characteristics that are liable to cause adverse impacts and is not located in/near sensitive areas, as specified in the above mentioned the JICA Guidelines.

(iii) Environmental Permit: The Initial Environmental Examination (IEE) of this project targets all sub-projects and IEE report is formulated according to the environmental social framework that was created for this project. The Environment Bureau of Senegal approves the IEE.

(iv) Anti-pollution Measures: During the construction work, air pollution, noise and vibration will be generated. As countermeasures, construction vehicles and heavy machines will be maintained, water will be sprinkled, and other necessary measures will be taken. Waste from the work will be reused, separated and discarded according to the waste management plan. Excavated soil will be reused at cultivated lands in the project site and the rest will be transported to existing soil dumping sites. After the irrigation facilities' operation starts, the water quality may be affected due to increase in the use of agricultural chemicals and fertilizers. An agricultural chemical and fertilizer management plan will be formulated and SAED and the farmer's organizations will provide training and technical guidance to reduce the influence. After sub-projects have been determined mitigation measures will be implemented according to the environmental management plan formulated based on the environmental social framework of the project.

(v) Natural Environments: Although the project site is not in or near sensitive areas (e.g., national parks), the use of agricultural chemicals and fertilizers may affect the quality of the water in the surrounding environment. Therefore, an agricultural chemical and fertilizer management plan will be formulated to reduce the influence.

(vi) Social Environment: This project does not include involuntary resettlement and land acquisition.

(vii) Others/Monitoring: During the construction work, the contractor will

monitor the air quality, noise levels, vibration, water quality, waste, etc. under the responsibility of SAED. SAED will monitor the water quality and soil condition after the irrigation facilities have put into service.

2) Cross-cutting Issues

(i) Project for Climate Change Mitigation: This project aims at coping with the influence of climate changes through the stabilization of agricultural water supply by developing irrigation facilities and thereby it contributes to the adaptation to climate changes.

(ii) Measures against HIV/AIDS and Other Infection Diseases: In this project an infectious disease may spread due to construction workers coming from various areas. Before starting the construction work the contractor will provide workers with measures against HIV/AIDS.

(iii) Participatory Development: This project takes into account participatory development approach. In selecting sub-projects all the farmer's organizations shall agree on the irrigation facility development project plan.

3) Gender Classification: [Gender Project] ■GI(S) (Gender Activity Integrated Project)

<Reasons for Classification>

This project puts extra scores to the sub-projects that include gender activities as project selection criteria based on the gender mainstreaming policies. After the selection, the project requires to discuss gender activities in each farmer's organization, for example, regarding setting up a gender committee and including a certain number of females in the board of directors. Therefore, this project is classified as Gender Activity Integrated Project.

(9) Other Important Issues

This project will provide training courses on nutrition to improve the life quality of farmers as part of technical support to the farmer's organizations, so that this project contributes to the Initiative for Food and Nutrition Security in Africa (IFNA). In addition, in the training courses activities for rising an awareness of COVID-19 and other infectious diseases will be carried out. Furthermore, not only to increase the rice production but also to improve the rice quality, related technologies of Japanese companies will be introduced.

4. Targeted Outcomes

(1) Quantitative effects

1) Performance Indicators (Operation and Effect Indicators)

Indicator	Baseline (Actual value in 2019)	Target Value (2028) (2 years after the project completion)
<Operation Indicators>		
Project beneficiary area (ha)	0	X
Annual crop intensity (%/year)	X	X
Seasonal cultivation area of rice (ha/season)	X	X
Annual operation hour of pump (hours/year)	X	X
Volume of storage in the warehouse (kg/year)	X	X
Annual agricultural machinery operating time (hours/year)	X	X
<Effect Indicators>		
Unit yield of rice (tons/ha)	X	X
Annual production volume of rice (tons/year)	X	X
Increase in the rice production by this project (tons/year)	0	X

Note: The baseline and target values will be determined through conducting a baseline survey after sub-projects' selection. Since the number of sub-projects is large, pre-selected sub-projects are used to determine the baseline and target values considering the project areas and details.

(2) Qualitative Effects

Contribution to the food security, stimulation of the economy and industries in rural areas and increase in farmer's livelihood and income

(3) Internal Rate of Return

Sub-projects with the Economical Internal Rate of Return (EIRR) of 10% or more are selected. In selecting sub-projects the EIRR is calculated to understand the project outcome. Financial internal rate of return (FIRR) is not calculated in this project because there is no income through this project.

5. Preconditions and External Factors

- (1) Preconditions: None in particular
- (2) External Factors: None in particular

6. Lessons Learned from Past Projects

The post-project evaluations of the grant assistance, "Project for the Rehabilitation of the Bwanje Valley Irrigation System" for Republic of Malawi (evaluated in FY2012) shows a lesson below. In addition to rehabilitating irrigation facilities, improved transparency through project explanation to beneficiaries and increased involvement of the implementing agency through the training, continuous advice and technical support allowed to combine the hardware and software supports effectively. This caused the achievement of the target values for the irrigation area and the increase in the agricultural productivity.

In this project, partnership with beneficiaries will be established through the following efforts. In addition to rehabilitation of irrigation and drainage facilities, the project details will be thoroughly explained to the farmer's organizations in the target irrigation areas and division of roles for reaching an agreement on the project and maintaining and managing the irrigation will also be clearly confirmed. In addition, as support for the software, this project provides consulting services to enhance the monitoring capability of the implementing agency.

7. Evaluation Results

This project is consistent with the development issues and policies of the government of Senegal as well as Japan's and JICA's cooperation policies and analysis. In addition, this project contributes to increasing the rice production and enhancing the food security through appropriate expansion and rehabilitation of the irrigation farming infrastructure in the Senegal River valley and thereby this project contributes to SDGs' Goal 2 "Food security." Therefore, the need to support the implementation of the project is high.

8. Plan for Future Evaluation

- (1) Indicators to be Used
As provided in section 4.

(2) Future Evaluation Schedule

Ex-post evaluation: 2 years after the project completion.

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