

Ex-ante evaluation paper

1. Project name

Country name: The Republic of Indonesia

Project: Rentang Irrigation Modernization Project

Loan agreement: March 30, 2017

Loan amount: 48,237 million yen

Borrower: The Republic of Indonesia

2. Background and Necessity of the Project

(1) Present State of Development and Problems of the Agriculture and Irrigation Sector in Indonesia

Agriculture is an important industry in Indonesia, accounting for 13.4% of its GDP (2014) and 33% of its workforce (2015). Rice is the staple food of the country. However, Indonesia constantly needs to import rice because its farmland area is decreasing due to the urbanization and industrialization of Java, the main production center of rice, while population is increasing at an annual average of 1.4%. In 2015, Indonesia experienced large-scale drought damage caused by the El Nino effect, which necessitated emergency imports from neighboring countries. Self-sufficiency in terms of rice is a pressing issue for Indonesia.

(2) Development Policies for the Agriculture and Irrigation Sector in Indonesia and the Priority of the Project

The National Mid Term Development Plan 2015-2019 of the government of Indonesia aims to achieve food security and higher food sufficiency with targets of increasing rice production from 71 million tons/year (2014) to 82 million tons/year (2019) (in terms of unhulled rice), while developing one million ha of new irrigated land and improving 3 million ha of the existing irrigated land.

Rentang Irrigation district, with the second largest irrigation area (approx. 87,000ha) in Indonesia, is an important rice production center for the country. The Rentang Irrigation Modernization Project (hereinafter referred to as “The Project”) covers approx. 37,000ha on the left bank of the Cimanuk River. The facilities were constructed by the Netherlands in 1916 and partly renovated in 1969, but there has been no large-scale renovation since 1981, when the World Bank constructed new head works. Most of the facilities are broken due to aging and approximately 70% of the irrigation area is facing the severe water shortage during the dry season. The government of Indonesia prioritizes the rehabilitation of facilities in the Rentang Irrigation district by constructing a multi-purpose dam for solving severe water shortage of the irrigation. The Project will renovate existing aged irrigation facilities while building Operation and Maintenance (O&M) capacity and assisting farming in demonstration farm. Indonesia sets as its policy task higher food sufficiency and sustained food security by increasing rice production, through the renovation of irrigation facilities. The Project is of great significance in that it will contribute to achieving the task.

(3) Japan and JICA’s Aid Policy/Actual Performance for the Agriculture and Irrigation Sector in Indonesia

The government of Japan considers “Assistance for correction of inequality and establishment of a safe society” as one of the priority areas in the “Country Assistance Policy for the Republic of Indonesia” (April 2012) and positions the Project in “the program for rural development and development of a hub urban district.” JICA’s Country Analysis Paper for Indonesia (March 2012) considers that “the challenges include deteriorated irrigation capacity due to delayed renovation and development of irrigation facilities and a weak O&M system.” The Project is consistent with the policy and the analysis. In addition, “overseas deployment of our efficient agricultural infrastructure systems, etc.” is a part of Japan’s infrastructure export strategy. The Project aims to modernize irrigation systems by building a water management system, and is in accordance with the policy as well. JICA has provided approx. 302.9 billion yen in total for 52 irrigation projects in Indonesia, and has implemented technical cooperation projects including “The Empowerment of Water Users Associations Project” and “Project for Supporting Implementation of irrigation Asset Management.”

(4) Other Donors’ Activities

The World Bank is assisting the Water Resources and Irrigation Sector Management Program 2 (2011–2018) and planning both the Emergency Irrigation Rehabilitation Project and the Strategic Irrigation Modernization Project. The Asia Development Bank (ADB) has completed assistance for “the Participatory Irrigation Sector Project” (2013–2015). None of the areas of these projects overlap with the area of the Project.

(5) Necessity of the Project

The Project is consistent with the assistance policy/analysis of Japan and JICA as well as the public policy of the government of Indonesia. It is believed to contribute to an increase in the production of rice and other crops and stable food supply through new construction and renovation of irrigation facilities as well as to SDG 2 “End hunger, achieve food security and improved nutrition, and promote sustainable agriculture.” Therefore, assistance for the implementation of The Project is of high necessity.

3. Project Description

(1) Project Objectives

The Project aims to increase rice and other agricultural production through the renovation of irrigation facilities and strengthening of the O&M structure in the Rentang Irrigation district in the Cimanuk River basin in West Java Province, and thereby contribute to an increase in farmer income and food security in Indonesia.

(2) Project Site / Target Area

West Java province

(3) Project Components

- 1) Civil works: renovation of head works and main canals, upgrading works of secondary canals, drainage and tertiary canals
- 2) construction of a water management system
- 3) Consulting service: bidding assistance, construction control, strengthening capacity to operate and maintain irrigation systems, farming support, etc.

(4) Estimated project cost

60.417 billion yen (Loan Amount: 48.237 billion yen)

(5) Schedule

March 2017 to April 2024 (total of 86 months) Project completion is defined as service commencement of the facilities.

(6) Project Implementation Structure

- 1) Borrower: The Government of the Republic of Indonesia
- 2) Executing agency: Directorate General of Water Resources, Ministry of Public Works and Housing (DGWR)
- 3) O&M structure: Based on the domestic laws and regulations of Indonesia, the O&M and management of the head works, primary/secondary canals and drainage canals will be handled by DGWR and the local government, while the O&M of on-farm irrigation facilities, including tertiary canals, will be handled by the water users associations (WUAs) with support by the central and local governments.

(7) Environmental and Social Consideration/Poverty Reduction/Social Development

1) Environmental and Social Consideration

- (i) Category: B
- (ii) Reason for categorization

The Project does not fall under a large-scale project in the agricultural sector as specified in the JICA Guidelines for Environmental and Social Considerations (issued April 2010; hereinafter referred to as “the JICA Guidelines”) and its impact is judged not to be significant. In addition, the Project does not include any characteristics likely to cause an impact or areas susceptible to impact as specified by the JICA Guidelines.

(iii) Environmental permission and authorization:

The preparation of an environmental assessment report (AMDAL) is not mandatory for the Project based on the domestic laws of Indonesia, because this is a project for upgrading works. However, AMDAL for the entire area of the Rentang Irrigation district, including the right bank, is currently in the process of preparation and is scheduled for approval in June 2017.

(iv) Anti-Pollution Measures:

In order to meet the domestic standards of Indonesia on air and water pollution, noise and other impacts during the construction work, measures such as water sprinkling, use of low emission vehicles/equipment, regular maintenance and prevention of muddy water due to soil runoff will be taken. These negative impacts are expected to be minimized by these measures. After service commencement, we expect that the domestic standards will be met by preventing water quality deterioration by providing the farmers thorough instruction on maintenance/cleaning of water channels and appropriate use of fertilizers/chemicals.

(v) Natural environmental consideration:

The project does not include any national parks or other areas susceptible to impact, and is expected to have the minimum undesired impact on the natural environment.

(vi) Socio-environmental consideration:

The Project is a upgrading works of existing irrigation facilities in land owned by the government and therefore does not require land acquisition, but it does require resettlement of temporary illegal structures. Relocation support and compensation for crops are scheduled in line with the domestic laws and regulations of Indonesia and the JICA Guidelines. Residents' discussions pertaining to the Project have confirmed that there is no particular opposition to the implementation of the Project. Agreement on the detailed plan on the upgrading works of water channels is expected to be made through residents' discussions after starting the project.

(vii) Other/monitoring:

In the Project, the contractors and DGWR will monitor the air and water quality, and noise/vibration during the construction work, while water quality and other monitoring after commencing service will be conducted by DGWR. DGWR will also conduct monitoring to secure appropriate compensation for land acquisition, support for project affected people and other issues before and during the construction work.

2) Promotion of Poverty Reduction

The Project aims at an increase of rice production and sustained food security in Indonesia, which is expected to be also effective for increasing the income levels of local residents and reducing poverty.

3) Climate change

Fluctuation of the rainfall pattern is anticipated in the project area due to the influence of climate change in the future, with a possible negative impact on agricultural production. Because improvement in irrigation facilities will lead to stable agricultural production, the Project can be positioned as contributing to adaptation to climate change.

4) Promotion of Social Development

The Project plans to provide an assistance program on asset management and farming in addition to the support for formation of irrigation associations through a consulting service in order to realize an approach of farmer participation where the associations consisting of farmers are responsible for O&M and cleaning of tertiary water channels. In this support, the participation of women will be promoted by formulating plans based on the needs of both men and women.

(8) Cooperation with other schemes and donors

ADB plans to support the strengthening of facilities management and O&M incorporating an asset management method in "the irrigation development and management program with integrated participation." We will ensure cooperation with ADB in data management pertaining to the strengthening of irrigation O&M capacity and facilities management of the Project.

4. Target Outcomes

(1) Quantitative Effects

1) Performance Indicators

Indicator	Baseline (2011)	Target (2025) [2 years after completion of the project]
Cultivated Area (ha)	(Rice)43,229/(catch crop)114	(Rice)73,088/(Catch crop)29,236
Cropping Intensity (%)	120	280
Paddy Production (tons/year)	244,220	475,072
Yield of Rice (tons/ha/year)	5.6	6.5

(2) Qualitative effects

Improvement of the living environment accompanying stable farm income in the project area and stable food supply in Indonesia.

(3) Internal Rate of Return (IRR)

Economic Internal Rate of Return (EIRR) of the Project is 13.7% based on the following assumption.

[EIRR]

Cost: cost of project (tax excluded) and O&M cost

Benefit: Production increase in rice and other crops in the Rentang Irrigation district

Project Life: 30 years

5. External Risk Factors and Risk Control

N/A

6. Evaluation of Similar Projects and Lessons Learned from Past Projects

(1) Evaluation of Similar Projects

The ex-post evaluation, etc. (2009) of the Way Sekampung Irrigation Project in Indonesia (I to III) suggested that education for water users associations to cultivate a business mind had the effect of improving the motivation to engage in agricultural production and O&M of the irrigation facilities. At the stage of implementation of Phases 1 and 2 of the Komering Irrigation Project in Indonesia, challenges have been found concerning the reduction of the period until producing results (buildup period) and improvement of operations and capacity building for O&M.

(2) Lessons Learned from Past Projects:

The Project plans to raise awareness of agricultural production and of efficient water and facilities management through the strengthening of water users associations, water distribution using a water management system, and capacity building for O&M of irrigation facilities, while at the same time providing farming support through consulting services. It is also planned to build a sustainable framework through consulting services, which will cover: 1) appropriate strengthening of irrigation associations in order to shorten the buildup period and produce project effects at an early date; 2) improvement of O&M practice including daily activities, budgeting and facility monitoring in an asset management program; and 3) strengthening of cultivation of irrigated land by farmers and improvement of O&M skills for tertiary water canals.

7. Plan for Future Evaluation

(1) Indicators to be Used in Future Evaluations:

- 1) Planted area (ha)
- 2) Cropping intensity (%)
- 3) Rice production (tons/year)
- 4) Rice yield (tons/ha/year)
- 5) Economic Internal Rate of Return (EIRR) (%)

(2) Timing for Next Evaluation: Two years after completion of the project