

## Ex-ante evaluation paper

### 1. Project name

Country name: The Republic of Indonesia  
Project: Komerling Irrigation Project (Phase 3)  
Loan agreement: March 30, 2017  
Loan amount: 15,896 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.

Komerling Irrigation area has been developed to increase the production of rice and other crops in the upper Komerling River in the southern part of Sumatra. The irrigation area (approx. 70,000 ha) is the fourth largest in the country. Japan has continuously supported the Komerling Irrigation Project since the formulation of the master plan in 1979. The Komerling Irrigation Project (Phase 3) (hereafter referred to as “the Project”) is the final stage to supply water to farmland that is not yet irrigated, enhance operation and management (O&M) capacities, and renovate the facilities developed up to Phase 2. Indonesia sets as its policy task higher food sufficiency and sustained food security by increasing rice production, through the development and 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 to 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 Goal 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 expansion and renovation of irrigation facilities and strengthening of the O&M structure in the Komerang irrigation area across South Sumatra and Lampung provinces, and thereby contribute to an increase in farmer income and food security in Indonesia.

#### (2) Project Site / Target Area

South Sumatra and Lampung provinces

#### (3) Project Components

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

#### (4) Estimated project cost

21.283 billion yen (Loan Amount: 15.896 billion yen)

#### (5) Schedule

March 2017 to May 2023 (total of 75 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 association (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 environment assessment (AMDAL) report pertaining to the Project was approved by the Governor of South Sumatra in 2012.

###### (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 needs to acquire up to 178 ha of land that does not require residence removal. Land acquisition and compensation procedures are scheduled based on the Land Acquisition and Resettlement Action Plan (LARAP) created by the executing agency in line with the domestic laws of Indonesia, and the compensation/assistance

policy in line with the JICA Guidelines. Residents' discussions pertaining to the Project have confirmed that there was no particular opposition to the implementation of the Project. Agreement on the detailed plan on the renovation/construction 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. Water quality and other monitoring after commencing service will be conducted by DGWR. DGWR will also carry out monitoring to ensure appropriate land acquisition and compensation 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) Collaboration 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 (2014)	Target (2024) [2 years after completion of the project]
Irrigated Area (ha)	0	8,500
Rate of formulated WUAs (%)	0	100
Cropping Intensity (%)	100	250
Paddy production (tons/year)	25,500	89,250
Yield of Paddy (tons/ha/year)	3.0	5.0 (rainy season) 5.5 (dry season)
Annual average total farm income per hectare (Indonesian Rupiah)	16 million	38 million

(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 13.9% based on the following assumption. [EIRR]

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

Benefit: increase in rice and other agricultural production in the new irrigation beneficiary area

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 preceding the Project, challenges have been found concerning the reduction of the time required to produce results (buildup period) and the 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 setting up of irrigation associations and commencement of their activities in order to shorten the buildup period and produce 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) Beneficiary area (ha)
- 2) Rate of formation of Water Users associations (%)
- 3) Cropping intensity (%)
- 4) Rice production (tons/year)
- 5) Economic Internal Rate of Return (EIRR) (%)

### (2) Timing for Next Evaluation:

Two years after completion of the project