

Ex-Ante Evaluation

1. Name of the Project

Country: The Republic of the Union of Myanmar

Project: Irrigation Development Project in Western Bago Region

Loan Agreement: September 5, 2014

Loan Amount: 14,870 million yen

Borrower: The Government of the Republic of the Union of Myanmar

2. Background and Necessity of the Project

(1) Current State and Issues of the Irrigation Sector in Myanmar

In Myanmar, the agricultural sector plays an important role in the production, supply and export of food, as well as related employment, accounting for 27.5% of GDP and 17.5% of export profits, and serves as a major means of livelihood for about 70% of the citizens living in rural areas. In August 2011, the new government (inaugurated in March 2011) formulated the “Rural Development and Poverty Alleviation Action Plan” and places importance on development of the agricultural sector. The government aims at improving farming productivity and has constructed 235 dam irrigation facilities since the late 1980s, thereby expanding irrigated areas to 1,190,000 ha. The national irrigation rate remains at 10%, however, which is lower than that of other ASEAN countries (with a mean of 22%). The deterioration of irrigation facilities is one of the reasons for the low irrigation rate. Although the new administration has promoted renovation and increased the budget for maintenance and management, it cannot cover full-scale renovation and improvement, thereby falling short of drastic measures. The western Bago region has low annual precipitation of approx. 1,100 mm, but the irrigation rate remains at about 6%, which is the lowest level in Myanmar (with average annual precipitation ranging from 1,000 to 5,000 mm nationwide, and a national average irrigation rate of about 10%), where supplementary irrigation during the rainy season and expansion of irrigation during the dry season have become an issue.

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

“Transferring from rain-fed agriculture to irrigated agriculture” is listed as one of 11 policy/action plans under the “National Comprehensive Development Plan” (2011/12 - 2030/31) formulated in 2012. The “Fifth Five-Year Plan” (2011/12—2015/16) currently being developed also includes the “expansion of irrigated area” as one of programs. The target areas of this project are included in the list of proposals for foreign aid in 2012, for which the Myanmar government recognizes as irrigation areas where urgent renovation and improvement are required.

(3) Japan and JICA’s Policy and Operations in the Irrigation Sector

Support for the agricultural sector is positioned as an “assistance for improvement of people’s livelihoods”—one of the three pillars of Japan’s economic cooperation policy to Myanmar enacted in April 2012. Under this policy, JICA offers: [1] support for intensive farming mainly in the delta area, [2] support for diversified farming mainly in the central dry area, [3] support for the development of rural areas and improvement of livelihoods mainly in northern Shan State, and [4] support for policy making and human resource development in Nay Pyi Taw and Yezin. Support for the irrigation sector is positioned as [1]. JICA’s assistance for the sector in the past includes the following projects. “South Nawin Irrigation Project” (L/A signed in 1984) along with three relevant projects were implemented as loan projects and “construction of an irrigation technology center” (1986) and three other projects were implemented as grant projects. “Irrigation technology center plan” (Phase I and II) (1988~2004) was implemented as technical cooperation to foster human resources with expertise in irrigation by utilizing the irrigation technology center constructed with grant aid.

(4) Other Donors’ Activity

The World Bank, Kuwait Fund, and OPEC Fund planned and executed the renovation and construction of irrigation facilities.

(5) Necessity of the Project

As stated above, the project is consistent with Myanmar’s developmental agenda and development policies, as well as with Japan’s and JICA’s assistance policies. Accordingly, both the needs and relevance for JICA’s support in implementing this project are high.

3. Project Description

(1) Project Objectives

This Project aims to renovate and improve existing irrigation facilities, and provide necessary equipment in Bago region in order to increase agricultural production, thereby contributing to improve living standards of farmers in the region and economic development of Myanmar.

(2) Project Site/Target Area

North & South Nawin irrigation areas, Wegyi irrigation area in Pyay District, Bago Region, and Taung Nyo irrigation area in Thayarwaddy District (total of 87,527 ha with about 117,000 beneficiaries)

(3) Project Components

- 1) Renovation of irrigation facilities (e.g. main/distribution canals, maintenance road for canal, canal structures)
- 2) Procurement of construction machineries (e.g. hydraulic excavators, bulldozers, agricultural machineries)
- 3) Consulting service (e.g. detailed design, tender assistance, supervision of construction)

(4) Estimated Project Cost (Loan Amount)

16,774million yen (Loan Amount 14,870 million yen)

(5) Schedule

From September 2014 to December 2018 (a total of 52 months). Project completion is defined as the completion of civil engineering work (scheduled for December 2018).

(6) Project Implementation Structure

- 1) Borrower: The Government of the Republic of the Union of Myanmar
- 2) Guarantor: None
- 3) Executing agency: Ministry of Agriculture and Irrigation, Irrigation Department
- 4) Operation and Maintenance System: Ministry of Agriculture and Irrigation, Irrigation Department

(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 the large-scale farming (irrigation) sector as per the “Japan International Cooperation Agency Guidelines for Environmental and Social Consideration” (issued in April 2010) and is deemed to have minimum adverse impacts on environment. In addition, the project does not include any characteristics likely to cause an impact or areas susceptible to impact specified by the Guidelines.

(iii) Environmental Permit: Myanmar’s domestic laws do not require the preparation of an environmental impact assessment (EIA) report concerning the project.

(iv) Anti-Pollution Measures: Negative impact due to poor air quality, waste, and noise is expected during construction work. However, undesirable impacts can be minimized by taking measures to mitigate problems, such as using construction machines that can minimize noise and waste, sprinkling water, collecting waste, and banning nighttime work. No particular negative impact due to the project is expected upon the provision of facilities.

(v) Natural Environment: The project does not include any national parks or other areas susceptible to impact, and is expected to have minimum adverse impacts on the natural environment.

(vi) Social Environment: The project mainly aims at renovating existing facilities, and does not include the acquisition of land or relocation of residents.

(vii) Other/Monitoring: The executing agency will monitor air quality, waste, noise, labor environment, etc. during construction.

2) Promotion of Poverty Reduction: None

3) Promotion of Social Development (e.g. Gender Perspective, Measure for Infectious Diseases Including HIV/AIDS, Participatory Development, Consideration for the Person with Disability etc.): None

(8) Collaboration with Other Donors: Agricultural machineries given in the grant aid “The Food Security Project for Underprivileged Farmers (2KR)” (2012) will be used at the government tractor station that manages a target area. Technical cooperation for “Enhancement of

productivity through irrigated farming” is now being formulated. This technical cooperation is expected to establish a highly profitable farming system in combination with irrigation, agricultural machinery, and high-yield breeds.

- (9) Other Important Issues: This project is considered to be adaptable to climate change, since improved irrigation facilities will ensure stable farming production that can cope with changing amounts and patterns of precipitation, which are expected as part of the impact of climate change.

4. Targeted Outcomes

(1) Quantitative Effects

1) Performance Indicators (Operation and Effect Indicator)

Indicator	Baseline (Actual Value in 2012)	Target(2020) [Expected value 2 years after project completion]
Cultivated Area by crops (ha)	Pulses 26,761	Pulses 74,207
Production Volume of major crops (ton/year)	Pulses 35,474	Pulses 94,835
Vehicle Operation Cost Saving (Kyat/ha/year)	138,163	120,460
Net Annual Average Farm Income (Kyat/year/household)	1,930,000	2,853,904

The following items are monitored as reference values.

- Yield by major crops (ton/ha):
Baseline (Actual Value in 2012) is for rice in the rainy season (2.45-3.13), rice in the dry season (2.80-3.77), and pulses (0.81-1.56).
- Cultivated Area by crops (ha):
Baseline (Actual Value in 2012) is for rice in the rainy season (87,527) and rice in the dry season (15,171).
- Production Volume of major crops (ton/year):
Baseline (Actual Value in 2012) is for rice in the rainy season (242,306) and rice in the dry season (48,507).

2) Internal Rate of Return

Based on the assumption below, the economic internal rate of return (EIRR) of the project is calculated to be 23.3%. The financial internal rate of return (FIRR) has not been calculated.

Cost: Project cost (tax excluded), operation and maintenance cost

Benefit: Increased production volume of pulses, reduced costs for input and transport of farm products

Project Life: 30 years

- (2) Qualitative Effects: Revitalization of economic activities in the target areas

5. External Factors and Risk Control

- (1) Significant change in the rice and pulses markets

- (2) Significant change in policies for the selection and distribution of farm products

6. Lessons Learned from Past Projects

(1) Evaluation of Similar Projects: In the ex-post evaluation of the “South Nawin Irrigation Project” (1984), it is learned that the measures adopted by the government (e.g. introducing machineries for soil plowing, giving instruction on proper timing for fertilization, introducing high-yield breeds etc. in addition to securing irrigation water) were evaluated to be contributing to improved agricultural productivity. It is also understood that farmers could sell rice at a higher price thanks to the market liberalization, and became highly motivated to cultivate rice even in the dry season, which has resulted in an expansion of productivity.

Ex-post evaluation of the “Langkeme Irrigation Project” in Indonesia has demonstrated that “it is necessary to recognize that operation and maintenance after completion of a project largely influence the project outcomes, and thus it is essential to carefully establish an operation and maintenance system when formulating the project and handling its execution.”

(2) Lessons Learned from Past Projects: As stated in 3. (8) above, collaboration with other schemes in introducing agricultural machineries and high-yield breeds, and giving instruction on farming business are anticipated.

ID will assume responsibility for operation and maintenance after completion of the construction work. The allocation of necessary budget and personnel has already been agreed during the discussions in the appraisal. It has also been confirmed that consulting service will utilize personnel for water management (operation) and from the irrigation association. The personnel will instruct ID staff on water management operation and prepare rules/systems for the irrigation association as deemed necessary in the future.

7. Plan for Future Evaluation

(1) Indicators to be Used: Cultivated Area by crops (ha), production volume of major crops (ton/year), Vehicle Operation Cost Saving (Kyat/ha/year), Net Annual Average Farm Income (Kyat/year/household), EIRR

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