

Ex-Ante Project Evaluation

Southeast Asia Division 2
Southeast Asia and Pacific Department, JICA

1. Name of the Project

Country: Kingdom of Cambodia

Name of Project: West Tonle Sap Irrigation and Drainage Rehabilitation and Improvement Project (II)

L/A signing date: February 26, 2019

2. Background and Necessity of the Project

(1) Current State and Issues Concerning the Irrigation Sector in Cambodia

In the Kingdom of Cambodia (hereinafter referred to as “Cambodia”), 27% of the working population is engaged in farming. Agriculture accounts for 23% of GDP and it is the major means of making a living in rural farming communities, which are home to most of the country’s impoverished population. Rice as a staple food is the country’s largest agricultural crop. Cambodia has already achieved self-sufficiency in rice, but it now needs to export it to spur its economic growth. According to references issued by the Ministry of Water Resources and Meteorology in 2018, Cambodia’s irrigated area remains at 1.32 million ha (about 40% of its total cultivated acreage), and has yet to reach the targeted area of 1.63 million ha (about 50% of total cultivated acreage) that was set as a 2018 goal.

With heavy annual rainfall, the area surrounding Tonle Sap Lake has high potential as a water resource. However, many of the irrigation facilities that currently exist in Cambodia were constructed by forced labor during the civil war period (1975–79), and consequently, a high percentage of them do not function adequately due to problems with design, construction, or old age. This makes farmers in the region depend on rainwater, which in turn results in low productivity. Therefore, constructing and rehabilitating irrigation facilities are a pressing issue.

Under the Rectangular Strategy-Phase III (2013–2018), the Royal Government of Cambodia defined improving agricultural productivity, facilitating diversity, and modernizing farming through marketing as key challenges to help alleviate poverty and support the economic growth of the country through quality irrigation. In its National Strategic Development Plan (2014–2018), Policy Paper on the Promotion of Paddy Production and Rice Export (2010), and similar documents, the Cambodian government established higher agricultural production as a key goal through upgrading and constructing irrigation facilities and increasing the size of its total irrigation area.

Given these conditions, JICA formulated master plans for 21 regions as part of a development study titled Basin-wide Basic Irrigation and Drainage Master Plan Study (January 2007 to March 2009), which was implemented based on a request from the Royal Government of Cambodia to promote the efficient use of

water resources in four river basins with high development priority. An ODA loan titled West Tonle Sap Irrigation and Drainage Rehabilitation and Improvement Project (hereinafter referred to as “the Project”, L/A of the Project (I) was signed in August 2011) aims to develop irrigation facilities covering six areas selected as priority projects under the study.

In addition to the unexpected depreciation of the yen caused by drastic exchange fluctuations after project launch and the fact that the area had fragile soil spread over a wider area than expected, additional funding is needed to cover design changes on some water canals. Specifically, there is a water canal requiring a concrete lining (65.8 km total length) to increase capacity and cope with natural conditions of the Project site (e.g. rainfall, floods, and inundation than usual). To cover these additional costs, the Royal Government of Cambodia readied its own funds to cover land acquisition fees and costs to clear unexploded ordnances. However, the government found it difficult to come up with the full amount to cover project costs in addition to the above. They therefore requested an additional loan from the Japanese government in April 2018. To ensure smooth implementation and realize its expected development impact, additional funding is necessary in a form of the Project (II).

(2) Japan and JICA's Aid Policy and Achievements in the Irrigation Sector

According to the Japanese Development Cooperation Policy for the Kingdom of Cambodia (July 2017), Japan provides assistance while placing importance on promoting agriculture, the major industry of its rural areas, under the priority goal of “Industrial development”. The project is defined as an agricultural promotion program that aims to manage water resources in the river basin; support irrigation facility development; strengthen operation, maintenance, and management systems for irrigation facilities and human development; and reinforce the operation of Farmer Water Users' Communities (FWUC) to ensure appropriate water management by farmers under the development theme of “promoting agriculture and improving rural livelihoods” for the priority goal. The JICA Country Analysis Paper for the Kingdom of Cambodia (March 2014) mentions the significance of “assistance in developing irrigation facilities, building capacity in irrigation techniques, and improving rice cultivation techniques to improve productivity and quality of rice, a major product”. Therefore, the Project is aligned with Japan and JICA's country assistance policies and analyses. The Project site covers an area with a poverty rate higher than the national average (13.5% in 2014) (average poverty rate in the target three provinces: 20.8% in 2017), and aims to increase agricultural production through constructing and rehabilitating irrigation and drainage facilities. Therefore, it is considered to be contributory to Sustainable Development Goal (SDG) 1 (No poverty) and Goal 2 (Zero hunger).

(3) Other Donor's Activity

The Asian Development Bank (ADB) used to be the top donor in supporting the country's water resource management and irrigation development. Recently, however, an increasing number of ODAs are provided by China, South Korea, and Middle Eastern countries. In addition to the ODAs, an increasing number of dam development and irrigation/drainage facility development projects are being provided to Cambodia. In the water resource management sector, the

ADB provided upper stream policies (formulation of legal and regulatory systems related to river basin management, establishment of a national/river basin water resource management committee, and formulation of river basin water resource management plans). Currently, the ADB has an ongoing aid program for developing irrigation facilities. The Agence Française de Développement (AFD), Agence de l'eau (France), and JICA support Cambodia in establishing the river basin water resource management committee and irrigation facility development in areas that do not overlap, while using the expert knowledge of the ADB.

3. Project Description

(1) Project Objectives

The objective of the Project is to increase rice production at 6 sub-project areas in West Tonle Sap region by constructing and rehabilitating irrigation systems, establishing and strengthening FWUC and Farmer Water User Groups (FWUG) and improving the farm management capacity of farmers, thereby contributing to enhancement of agricultural income and living standard of farmers in the project area

(2) Project Site/Target Area

Battambang Province (Ream Kon and Por Canal sub-projects), Pursat Province (Damnak Ampil, Wat Loung, and Wat Chre sub-projects), and Kompong Chhnang Province (Lum Hach sub-project)

(3) Project Components

- 1) Constructing and rehabilitating irrigation and drainage facilities (headworks at four locations, and a 620-km irrigation canals and drains)
- 2) Supporting the establishment and reinforcement of the FWUC and FWUG, agricultural extension services, and agricultural land holding survey
- 3) Consulting service (detailed design, bidding assistance, construction supervision)
- 4) Equipment (trucks and motorcycles)

(4) Estimated Project Cost

9,549,000,000 yen (3,599,000,000 yen of which is covered by yen loans for Project (II))

(5) Schedule

Planned for the period between August 2011 and December 2021 (125 months). The Project will be considered completed when facilities begin service (December 2020)

(6) Project Implementation Structure

- 1) Borrower: The Royal Government of Cambodia
- 2) Executing Agency: Ministry of Water Resources and Meteorology (MOWRAM)
- 3) System for operations, administration, maintenance, and management: The MOWRAM and its provincial office will maintain headworks as well as the main and secondary canals; while the FWUC will operate and maintain branch canals. Under the FWUC, FWUG and farmer water user sub-groups (FWUSG) will be established to take responsibility for

the actual maintenance and management of the water canals.

(7) Collaboration and Division of Work with Other Projects and Donors

1) Japan's Assistance Activities

So far, Japan has provided the Improvement Agricultural River Basin Management & Development Project (September 2009–September 2014) and the Agricultural Productivity Promotion Project in West Tonle Sap (October 2010–March 2015) to the country. The Project will provide assistance for the establishment and operation of the FWUC of the Project, as well as agricultural extension services, by effectively using human resources developed and instruction manuals created through in the course of the technical cooperation program. Information-sharing and collaboration will also be carried out under the River Basin Water Resources Utilization Project in Cambodia (May 2014–May 2019, Technical Cooperation) and Policy Advisor on Irrigation and Drainage (July 2017–July 2019) projects. In addition to the above, JICA has an ongoing project titled Southwest Phnom Penh Irrigation and Drainage Rehabilitation and Improvement (ODA loan, approved in July 2014, 5.606 billion yen) targeting the three provinces that serve as the country's major granary centers.

2) Responses of Other Aid Organizations

Currently, China is helping with the construction of main canals, intake structures, and with the secondary and branch canals for the lower stream at one of the project sites (Damnak Ampil sub-project, Pursat Province), while JICA is constructing headworks as well as secondary and branch canals for the upper stream. Both parties are holding discussions to determine the appropriate positions to connect the main and secondary canals.

(8) Environmental and Social Consideration, Poverty Reduction, Social Development

1) Environmental and Social Considerations

- i. Category Classification: B
- ii. Rationale for Category Classification: It is deemed that the Project does not apply to any of the large-scale projects in the agricultural sector that are listed in the Japan Bank for International Cooperation Guidelines for Confirmation of Environmental and Social Considerations (established in April 2002) and that its adverse impacts on the environment will not be significant. Moreover, it is deemed that the Project is not relevant to the sensitive characteristics and areas that are mentioned in these guidelines. Thus, the Project is classified as Category B.
- iii. Environmental Permits: Under the laws of Cambodia, there is no requirement to prepare an Environmental Impact Assessment (EIA) report for the Project. (The size of the targeted sub-project falls below the size that requires an EIA [5,000 hectares].)
- iv. Measures for Pollution Control: No particular impacts are anticipated in terms of water pollution or soil contamination caused by fertilizers and agrochemicals following the start of the Project,

as fertilizers and agrochemicals will be used and disposed of appropriately through awareness-raising activities that include guidance for farmers.

- v. Natural Environment: The Project site is not located in a sensitive area, such as a national park, or in the surroundings of a sensitive area, and thus it is anticipated that its adverse impact on the natural environment will be minimal. The impact on aquatic organisms is expected to be mitigated by building fishways in the headworks.
- vi. Social Environment: Under the Project plan, approximately six households were expected to be relocated and approximately 208 ha of land was going to be acquired. Due to the added project site, however, the land acquired increased to 479ha. The Inter-Ministerial Resettlement Committee (IRC) had almost finished land acquisition by January 2018, based on the revised Resettlement Action Plan (RAP, prepared and confirmed: RAP1 (April 2015); RAP2 (June 2015); RAP3.1 (December 2015) RAP3.2 (January 2017)). Based on the revised RAP, it is confirmed that the Project involved no resettlement.
- vii. Other Matters and Monitoring: For the Project, the MOWRAM will monitor water quality and soil quality, and submit monitoring reports to JICA once a quarter during construction, and every six months for two years. The environmental monitoring report submitted in July 2017 revealed that noise produced by construction at some sub-project sites exceeded the environmental criteria of Cambodia. Construction that would have produced loud noise had already been completed by that time. However, MOWRAM will continue monitoring noise and take the necessary mitigation measures. The IRC will take part in monitoring land acquisition and complaint handling mechanisms, and report the results to JICA and MOWRAM. Based on the results, MOWRAM will submit social monitoring results to JICA every quarter until two years after completion of the construction.

2) Cross-Cutting Issues:

The Project will help to avoid or reduce climate risks through irrigation facility development and considerations to mitigate disaster damage, thus it is considered to be contributory to climate change measures (adaptation measures). The Project also supports the establishment and organizational enhancement of FWUC/FWUG/FWUSG, which takes charge of branch canals through soft components to facilitate voluntary participation of the beneficiaries. This promotes participatory water management by increasing the sense of ownership in facility operation and management.

3) Gender Categorization: Gender Informed (Significant)

<Activity Content and Reason for Classification>

The Project agreed with MOWRAM to encourage women to participate in meetings of FWUG and training sessions. Therefore, the Project shall be categorized as Gender Informed (Significant)

(9) Other Important Issues: N/A

4. Targeted Outcomes

(1) Quantitative Effects

1) Operation And Effect Indicators

Indicator	Baseline (2009 actual value)	Target value (2023) (3 years after Project is completed)
Irrigated area (hectares)	760	13,390
Rice planting area (hectares)	14,260	17,780
Number of farmer water users' groups (FWUG)/sub group (FWUSG) established* ²		FWUG: 29 FWUSG: 77
Fee collection rate for irrigation services (%)	-	60* ³
Rice production (tons/year)	22,000	65,700
Rice yield (tons/hectares)	1.5	3.7

Notes*

1: For typical ODA projects, target values are set two years after project completion. However, since irrigation projects require longer than other ODA projects to produce benefits such as increased rice production, the Project shall set a target value later than three years after project completion.

2: The FWUSG is established under the FWUG to take part in maintenance and management of branch canals. Therefore, the number of FWUSGs established was added to the indicators.

3: The fee collection rate for irrigation services was set at 60%, which is slightly higher than the normal fee collection rate of 50% in Cambodia.

(2) Qualitative Effects: Stabilized supply of irrigation water, improved farmer livelihood in the project taken place

(3) Internal Rate Of Return:

Based on the assumptions below, the economic internal rate of return (EIRR) for the Project (including loans for Phase I) is calculated at 11.5% (Previously, the figure was 14.7%). The Project will collect irrigation service fees to cover operation and maintenance costs for the branch canals. However, maintenance and management costs for the main and secondary canals were borne by the executing agency, meaning that the project will not operate based on the fees collected from users. Therefore, the Economic Internal Rate of Return (EIRR) of this project was not calculated.

[EIRR]

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

Benefit: Increased agricultural production due to irrigation

Project Life: 30 years

5. External Conditions and Risk Control

- (1) Prerequisites: None in particular
- (2) External Conditions and Risk Control: None in particular

6. Lessons Learned from Past Projects

The ex-post evaluation results for India's ODA loan project titled the Upper Indravati Irrigation Project (2003) and other projects demonstrate that active participation of farmers as beneficiaries is essential for irrigation projects. Specifically, with operation and maintenance activities for canals other than main canals, assistance should include: the clarification of roles between stakeholders, active involvement of water users' groups at an early stage, organizational reinforcement of water users' groups, and continued support to facilitate farmer participation.

In terms of Project implementation, the MOWRAM staff who are trained by the completed technical cooperation project titled the Improvement Agricultural River Basin Management and Development Project support the establishment of water users' groups through the Project's soft component using their experiences and expertise. The Project will make an effort to bring maximum benefits using knowledge and expertise obtained through the ongoing River Basin Water Resources Utilization Project and irrigation advisers dispatched from Japan, through ensuring active participation of farmers in water users' groups from an early stage.

7. Evaluation Results

This project is in line with the development issues and development policies of the Royal Government of Cambodia and JICA's assistance policies and analysis results, and contributes to the improvement of the agricultural productivity and livelihoods of farmers through constructing and rehabilitating irrigation and drainage facilities around the Tonle Sap Lake. Furthermore, the Project is seen as contributing to SDG Goal 1 (No poverty) and Goal 2 (Zero hunger), making JICA's support of the Project necessary and relevant.

8. Plan for Future Evaluation

- (1) Indicators to be Used In Future Evaluation
 4. Same as in 4. (1) to (3).
- (2) Timing of Future Evaluation: Three years after Project completion