

Ex-Ante Evaluation

Southeast Asia Division 2

Southeast Asia and Pacific Department

Japan International Cooperation Agency (JICA)

1. Basic Information

Country: Kingdom of Cambodia (Cambodia)

Project: Siem Reap Water Supply Expansion Project (Phase 2)

L/A signing date: 21 October 2021

2. Background and Necessity of the Project

(1) Current State and Issues of Water Supply Sector in Cambodia and the Positioning of the Project

Water supply systems and other infrastructure in Cambodia suffered extensive damage during the civil war that continued through to the early 1990s, and this has severely restricted access to safe water. Although Japan and other donors have worked hard to restore water supplies services since the end of the war, these efforts have been concentrated in the capital Phnom Penh and water supply rate in regional cities and towns are still low.

In 2011, Siem Reap was the third-largest city in Cambodia with a recorded population of 221,000. The city was anticipating a rapid increase in demand for water due to a combination of natural population growth and tourists drawn to the nearby Angkor Wat heritages, which was attracting more than 2.8 million visitors per year. On the other hand, Siem Reap had one of the lowest water supply connection rates among major cities in Cambodia, with critical water shortages causing hygiene issues. Due to this background, the Loan Agreement for the Siem Reap Water Supply Expansion Project (hereinafter referred to as “the Project”) was signed in March 2012. The Project was funded with a Japanese ODA loan of 7,161 million yen towards a total project cost of 7,700 million yen. By 2020, the population of Siem Reap had grown to 294,000, while annual tourism numbers had doubled over the previous decade, from 2.27 million in 2009 to 5.84 million in 2019. Notwithstanding the impact of the global COVID-19 pandemic, tourism is expected to rebound, the water supply expansion is ever more urgent in order to meet further increasing water demand. Meanwhile, the Royal Government of Cambodia (hereinafter referred to as “the RGC”) has nominated access to safe and secure water supplies as a priority development goal in the Rectangular Strategy Phase IV and the National Strategic

Development Plan 2019–2023. The RGC has identified an urgent need for upgrading and expanding of water supply networks in eight regional cities including Siem Reap, with a target of extending access to 90% of urban residents by 2023.

The Project is currently in progress, with completion due January 2023. Following a significant increase in project costs attributable primarily to substantial fluctuations in exchange rates, the RGC requested an additional loan ((hereinafter referred to as “the Loan”) from the Government of Japan (hereinafter referred to as “GoJ”) in December 2019. Also, extensive roadworks in Siem Reap authorized by the RGC in September 2020 required changes to the Project such as additional protections and rout changes for treated water transmission main that had already been installed, as well as relocation of distribution pipes. In addition, Siem Reap Water Supply Authority (hereinafter referred to as “SRWSA”) has a plan to increase water supply connection rate and improve its profitability which has been impacted by COVID-19, through expansion of distribution networks in areas of strong population growth. Accommodating the roadworks and coordinating with the expansion of distribution pipes is critical to the success of the Project, but the RGC does not have funding capacity to cover the additional cost. This is why the RGC submitted an additional request to the GoJ in March 2021 regarding the additional loan for these purposes.

(2) Japan and JICA's Cooperation Policy, etc. in the Water Supply Sector and the Positioning of the Project

The JICA Country Analysis Paper for Cambodia (March 2014) identifies water supply infrastructure as a development priority, while the Country Assistance Policy for Cambodia (July 2017) likewise identify improved living standards as a priority area, with a particular focus on support for urban infrastructure development such as water supplies, sewerage and wastewater, power supplies (expanding coverage areas) and urban transportation (railways, buses and vehicle registration). The Project aims to align with these objectives.

The Project also aligns with the goal of improving resilience against infectious disease as stated by Japanese Prime Minister Yoshihide Suga at the December 2020 special session of the United Nations General Assembly in Response to the Coronavirus Diseases Pandemic, as well as the objective of strengthening infectious disease control outlined in the JICA’s Initiative for Global Health and Medicine.

The Project also provides a material contribution to Sustainable Development Goal (SDG) 3 *Ensure healthy lives and promote well-being for all at all ages* and SDG 6 *Ensure sustainable and ongoing access to water and sanitation for all*.

(3) Other Donors' Activities

The Asian Development Bank funded a water supply upgrade at Siem Reap between 2018 and 2020, and the French Development Agency built a water treatment plant (capacity 15,000 m³/day) between 2017 and 2019.

3. Project Description

(1) Project Objective

The objective of the Project is to ensure water supply through expanding the water supply system, thereby contributing to improve the living environment in Siem Reap city where water shortages have reached critical levels due to a combination of rapid urbanization and tourism growth, and to promote the tourism industry in the region.

(2) Project Site / Target Area

Siem Reap City (population 294,000), the Kingdom of Cambodia

(3) Project Components

- 1) Water diversion facilities, water transmission main (10 km approx.), treated water transmission main (25 km approx.), water treatment plant construction (60,000 m³/day), distribution pipes (254 km approx.)
- 2) Consulting services (detailed design, bidding assistance, supervision of works, human resource development/organizational strengthening, etc.)

(4) Estimated Project Cost

15,552 million yen (yen loan amount of the Loan: 6,336 million yen)

(5) Schedule

The Project started in March 2012 and is expected to run through to January 2024, a total of 143 months. The Project will be completed at the service opening of the facilities in January 2023.

(6) Project Implementation Structure

- 1) Borrower: Royal Government of Cambodia
- 2) Guarantor: None
- 3) Executing Agency: Siem Reap Water Supply Authority (SRWSA)
- 4) Operations and Maintenance Structure: Siem Reap Water Supply Authority (SRWSA)

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

1) Japan's Assistance Activity

Japan has previously provided technical assistance with the operation and maintenance of water supply facilities to a number of waterworks in regional cities, including SRWSA, through the Project on Capacity Building for Water Supply System in Cambodia (Phase 2), which ran from 2007 to 2012. This was followed by the Project on Capacity Building for Urban Water Supply System in Cambodia (Phase 3; 2012–2018), which shifted the focus towards management issues such as financial management, organizational structures, and staff training and education.

2) Other Donors' Assistance Activity

N/A

(8) Environmental and Social Considerations, Cross-cutting Issues, and Gender Classification

1) Environmental and Social Considerations

(i) Category: B

(ii) Reason for the Categorization: An analysis of the characteristics of the sector, the Project and the region in line with the JICA Guidelines for Environmental and Social Considerations (April 2010) found no significant negative environmental impacts from the Project.

(iii) Environmental Permits: The Initial Environmental Impact Assessment (IEIA) for the Project was approved by Ministry of Environment of Cambodia in July 2012. The IEIA for changes to the intake facility and water treatment plant construction sites were approved by the Ministry in August 2019.

(iv) Anti-Pollution Measures: Machinery and equipment will be subject to regular maintenance during construction. No construction work will be performed at night. Appropriate wastewater and effluent treatment will be provided. The executing agency has maintained pollution control

measures at the existing water treatment facility through developing manuals and instructions on chlorine, water quality and sludge management. After commencing the service, the Project will adopt a similar approach to minimizing environmental impacts particularly with respect to air and water quality and construction noise and vibration.

- (v) Natural Environment: Some of the transmission main passes through or near to protected areas, but domestic law permits development in these areas. The necessary procedures and processes have been followed. The SRWSA is committed to minimizing disruption to the natural environment caused by construction work, and to restoring vegetation and other natural assets after completion. It is therefore envisaged that negative impacts on the natural environment will be minimal.
- (vi) Social Environment: The Project acquired approximately 3 ha land. The relevant permits were granted along with the domestic law and regulation, and land acquisition was completed in March 2017. No involuntary resettlement was required.
- (vii) Others / Monitoring: During construction, contractors will be required to monitor water quality, noise and vibration and ecosystems, under the supervision of the implementing agency. After commencing the service, the implementing agency will monitor water quality, waste and ecosystems.

2) Cross-Cutting Issues

Contractors of the Project and the SRWSA have implemented preventative measures for infectious diseases such as HIV/AIDS, as well as preventative measures from the spread of COVID-19 in accordance with the directions of the RGC. Information will be disseminated to residents in areas where the Project work is carried out, using a methodology that takes into account the needs of people with disabilities. Every effort will be made to provide employment opportunities to people with disabilities when hiring new workers, and consideration will also be given to the needs of workers with disabilities, such as information guarantees and safety guarantees.

3) Gender Categorization: GI (gender activity integration project)

Reason for Categorization: It has been confirmed that female workers engaged on construction work on the Project have been provided with dedicated facilities. Agreement has been reached at the appraisal on how to promote employment

of women, including the principle of equivalent pay for equivalent work. Thus the Project is categorized as a gender activity integration project.

(9) Other Important Issues

N/A

4. Targeted Outcomes

(1) Quantitative Effects

1) Outcomes (Operation and Effect Indicators)

Indicator	Baseline (Actual baseline in 2011)	Projected Target (2025 = two years after completion)
No. of households connected to water supply	4,867	30,516
Total served population	24,876	183,096
Turbidity (NTU)	-	Less than 5
Water treatment plant operating rate (%)	-	44%

Note: The indicators for households connected to water supply, total served population and water treatment plant operating rate are for the total SRWSA supply area including pipes, water treatment plants and other elements outside the remit of the Project, and the projected target was set based on the current situation of the whole of water supply area. Whereas, turbidity indicators apply solely to the water treatment plant constructed under the Project.

(2) Qualitative Effects

Qualitative effects include: improving the living environment of the people of Siem Reap; helping to conserve the Angkor Wat ruins by using surface water rather than extracting groundwater from beneath the ruins; providing a more stable investment environment to stimulate local industries such as tourism; and helping to control infectious disease through improved access to safe, clean water.

(3) Internal Rate of Return

Based on the assumptions outlined below, the economic internal rate of return (EIRR) for the Project has been calculated at 21.43% and the financial internal

rate of return (FIRR) at 0.10%.

EIRR

Cost: project costs associated with construction, operation and maintenance (excluding taxes), and material and equipment replacement / upgrades

Benefit: savings from reduced water purchasing and health care expenses, increased tourism related revenue

Project Life: 40 years

FIRR

Cost: project costs associated with construction, operation and maintenance, and material and equipment replacement / upgrades

Benefit: revenue from fees and charges

Project Life: 40 years

5. Prerequisites / External Conditions

- (1) Prerequisites: none
- (2) External Conditions: none

6. Lessons Learned from Past Projects

Ex-post evaluations of past water supply projects suggest that in some cases, a lack of technical capacity at regional waterworks may have prevented the full output from being realized. Thus, capacity building at implementing bodies is vital to ensure that projects can deliver sustained and ongoing output.

Technical standards in the areas of operations and maintenance at the SRWSA, the implementing body for the Project, have improved in recent years thanks to initiatives such as technical cooperation. At the same time, many of the new staff hired by the SRWSA as the organization expands have been found to lack experience in the water supply sector, and the SRWSA has been obliged to engage external consulting services to help boost operations and maintenance capacity.

7. Evaluation Results

The Project aligns with the assistance policies and analysis results of Japan and JICA, as well as the development issues and policies of the Cambodia. The provision of safe and reliable water supplies to Siem Reap city will improve living

standards in the city and help to promote tourism in the region. The Project is also consistent with the objectives of SDG 3 *Ensure healthy lives and promote well-being for all at all ages* and SDG 6 *Ensure sustainable and ongoing access to water and sanitation for all*. The Project is therefore considered to have a high level of need that warrants support.

8. Plan for Future Evaluation

(1) Indicators to be Used in Future Evaluation

As indicated in 4 above.

(2) Timing of Future Evaluation

Post-evaluation to be conducted two years after project completion

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