

Ex-Ante Evaluation (for Japanese ODA Loan)
Southeast Asia Division 2, Southeast Asia and Pacific Department, JICA

1. Name of the Project

- (1) Country: The Kingdom of Cambodia
 - (2) Project Site/Target Area: Phnom Penh (population: approximately 2.28 million)
 - (3) Project: The Project for the Expansion of Phum Prek Water Supply System
- Grant Agreement: November 12, 2022

2. Background and Necessity of the Project

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

To spread the fruits of the improved water supply system in Phnom Penh, the Cambodian government has been improving the water supply system in provisional cities. JICA has been supporting the Cambodian government throughout this process through technical cooperation, grant aid, and loans. In 1993, immediately after the civil war ended, the Study on Phnom Penh water supply system in the Kingdom of Cambodia, which was the master plan, was formed with assistance from JICA. According to the plan, the Cambodian government would develop water treatment plants and water pipe networks in Phnom Penh through grant aid from Japan and enhance the management and maintenance capability through technical cooperation with Kita-kyushu city and other organizations. Thanks to the combined effects of support from other donors, the Phnom Penh Water Supply Authority (PPWSA) achieved 90% water supply coverage, non-revenue water of 6%, and 24-hour water supply services in 2006.

However, in the PPWSA's water supply area with Phnom Penh at its core, due to a rapid increase in the number of inhabitants and commercial facilities, the daily average water demand in 2022 is 642,000 m³ which exceeds the current water supply capacity of 592,000 m³. The demand is expected to be 1,578,000m³ by 2030. In addition, due to aging of the previously developed facilities, degradation of the pump control system, and other problems, creating a stable water supply and efficient management and maintenance are urgent tasks in addition to enhancing the water supply capacity. To carry out these tasks, the PPWSA has been developing new water treatment plants using donor funds according to the basic water supply system development plan (2017). Furthermore, the Cambodian government gave high priority to developing water supply networks in major cities in its conclusive national development framework "Fourth Rectangular Strategy" (2018 to 2023), recommending the development of water facilities using private domestic and overseas funds.

The Project for the Expansion of Phum Prek Water Supply System (hereinafter, "this Project") aims to reduce the load on the existing facilities due to being operated beyond

their capacity and to solve various problems such as insufficient water quantity and pressure due to the demand being greater than the supply capacity by expanding the main water treatment plant that distributes water to the central part of Phnom Penh. The Cambodian government's master plan also regards this Project as a high-priority project essential for the economic growth of the urban area. This Project involving grant aid with business and operation aims to develop facilities in an efficient way by drawing on the technologies and knowledge of Japanese private companies and other organizations.

Due to the influence of the worldwide spread of COVID-19, the number of infected people in Cambodia rapidly increased after the community-acquired infection in the latter half of February 2021 and the infection also spread into the provinces. Under such circumstances, people started attaching importance to thoroughly carrying out infection spread prevention measures (e.g., hand-washing), which in turn further increased the need for access to sanitary and safe water.

(2) Japan and JICA's Cooperation Policy and Operations in Relation to the Water Supply Sector

Japan selected water supply infrastructure development as an important sector in Japan's Country Development Cooperation Policy for Cambodia (July 2017) ("Life Quality Improvement") and the JICA Country Analysis Paper for Cambodia (March 2014). This Project is consistent with Japan's and JICA's cooperation policy and analysis.

Since 2020, in the project with grant aid with business and operation for expanding the water supply system in Ta Khmau, a water treatment plant has been under construction by using Japanese private companies' knowhow on efficient facility development, management, and maintenance, as is the case with this Phum Prek project.

In April 2022 at the fourth Asia-Pacific Water Forum, Prime Minister Kishida announced the Kumamoto Water Initiative in which the Japanese government would provide a fund of approximately 500 billion yen over five years to promote high-quality water supply and that Japan would accelerate water-related efforts in the Asia and Pacific area and also around the world. This Project contributes to this initiative.

(3) Other Donors' Activity

Agence Francaise de Developpement (AFD) has been supporting the construction of new water treatment plants (phases 1 and 2) in Bakheng, the northern part of Phnom Penh. This Project for Phum Prek is to expand the Phum Prek water treatment plant located at the center of Phnom Penh and so does not overlap with the AFD's project.

3. Project Description

(1) Project Description

[1] Project Objective(s)

This Project is to increase the water supply quantity by expanding the water supply

facilities at the Phum Prek water treatment plant in Phnom Penh where the water supply is too low for the demand, which will contribute to improving the quality of life in Cambodia through improving the living environment of the residents of Phnom Penh.

[2] Project Component(s)

a) Details of facilities, equipment, and materials

[Facilities] Establishment of a new water intake facility (47,250 m³/day), increase in the number of water treatment facilities (45,000 m³/day), construction of a new distributing reservoir (6,000 m³), installation of intake and distribution pumps, construction of a new distribution pump site, and a supervisory control and data acquisition (SCADA) system

[Equipment and materials] None

b) Details of consulting services/intangible components

[Consulting services] Bidding support and various management services (e.g., manufacturing process, quality, and cost management and payment support) in the construction stage

[Intangible component(s)] None (the facilities are managed and maintained by the contractor of this Project or a special purpose company (SPC) in which the contractor participates.)

[3] Beneficiaries of This Project (Target Group): Residents of Phnom Penh

(2) Estimated Project Cost (Loan Amount): 4,553 million yen, approximate contribution:
Japan: 3,361 million yen; Cambodia: 1,192 million yen

(3) Schedule (Duration of cooperation): Planned from November 2022 to February 2027 (52 months in total)

(4) Project Implementation Structure

1) Executing Agency: Phnom Penh Water Supply Authority (PPWSA)

2) Management and Maintenance Agencies:

Ten years after construction: The Japanese company or SPC to be established in Cambodia obtains the business rights by concluding a contract with the PPWSA and performs facility management, maintenance, and tap water supply after the construction of the facilities by grant aid has been completed. The funds for this Project are only used for the facility construction and consulting services. The Japanese company or SPC bears the management and maintenance costs. The PPWSA purchases water filtrated by the Japanese company or SPC and distributes it.

After that: PPWSA

(5) Cooperation and Sharing of Roles with Other Donors

1) Japan's Assistance Activities:

In the technical cooperation "Project for Strengthening Administrative Capacity of Urban Water Supply in Cambodia" (2018 to 2023), Japan is providing support for

enhancing Cambodia's ability to enforce water supply laws and regulations targeting the General Department of Potable Water Service under the Ministry of Industry, Science, Technology & Innovation (MISTI).

2) Other Donors' Assistance Activities:

AFD is also supporting the establishment of new water treatment plants in Phnom Penh.

(6) Environmental and Social Consideration

1) Environmental and Social Consideration

[1] Category: B

[2] Reason for Categorization: This Project is not in a sector or have characteristics that tend to exert effects nor does it take place in an area that is easily affected as specified in the JICA Guidelines for Environmental and Social Consideration (issued in April 2010). Accordingly, the undesirable influence on the environment is judged to be minor.

[3] Environmental Approval: The Environmental Protection Contract (EPC) of this Project was approved by the Ministry of Environment on August 16, 2021. In addition, the initial environmental survey for this Project was carried out by October 2021.

[4] Pollution Control: During the construction, various measures are implemented to satisfy the air quality, water pollution, and waste standards in Cambodia. Example measures are spraying water, washing cars, dust sheets for construction vehicles, installation of temporary cofferdams, and reuse of surplus soil. After the service begins, the PPWSA will treat sludge to be released during the water purification process. Therefore, the influence is expected to be minimal.

[5] Natural Environment: The area(s) affected by the project are not designated as or near national parks, or other sensitive areas, and the level of undesirable impact on the natural environment is expected to be minimal.

[6] Social Environment: The project site is on the premises of the existing water treatment plant and water intake facility of the executing agency, so no additional land acquisition or involuntary relocation of residents will take place.

[7] Other/Monitoring: During the construction for this Project, the contractor will monitor air quality, water quality, waste, and other similar matters. After service begins, the management and maintenance agency will monitor waste and other similar matters.

(7) Cross-Cutting Issues: None in particular

(8) Category of Gender: [Not applicable] GI (Gender mainstreaming needs assessment and analysis project)

<Description of activities and reason for classification> Although gender mainstreaming needs were studied and checked for this Project, it includes no specific efforts that

contribute to gender equality or women's empowerment.

- (9) Other Important Issues: In addition to the contract for facility management and maintenance for ten years after construction, another contract is concluded to provide training on maintenance and management by the Japanese company or SPC to the PPWSA. The training will be covered by the budget of the counterpart.

4. Targeted Outcomes

(1) Quantitative Effects

1) Performance Indicators (Operation and Effect Indicators)

Indicator	Baseline (Actual value in 2020)	Target (2030) [3 years after project completion]
Phum Prek water treatment plant's water supply capacity (m ³ /day)	150,000	195,000

(2) Qualitative Effects:

- [1] Increase in the quantity and pressure of water from water taps in central Phnom Penh
- [2] Improvement of the PPWSA staff's ability to manage the water treatment plant and perform maintenance through a transfer of technologies related to such tasks
- [3] Improvement in public hygiene

5. Preconditions and External Conditions

- (1) Preconditions: There are risks of unexploded shells and mines in Cambodia, so the underground was checked prior to the project start at Cambodian government's expense. It has been confirmed that there is no influence on the project execution.
- (2) External Conditions: None in particular

6. Lessons of Similar Past Projects and Application of the Lessons to This Project

Regarding the Sewage System Development Project in Four Cities, a yen loan project in the Republic of Tunisia, the ex-post evaluation results, etc. (evaluated in FY2008) stated as follows: The detailed design that was planned to be carried out by other donors (e.g., the World Bank) at the Tunisian government's expense had been significantly delayed, which resulted in the construction for the yen loan project and the manifestation of its effects being delayed. We have learned that it is important to closely communicate with other donors and executing agencies to check the progress and share information.

In this Project, the Cambodian government bears the cost of constructing water pipes and the construction must be completed by the test operation of the water treatment plant. Accordingly, prior to the start of the project we reached an agreement with the PPWSA, the

executing agency, that we will closely communicate with them and that the PPWSA will report on the progress of various stages of this Project, such as securing of budgets, design, procurement, and construction, by the predetermined dates.

7. Evaluation Results

This Project contributes to stable water supply through expansion of the water supply facilities to cope with the rapid increase in the demand for water in Phnom Penh. This Project matches Cambodia's development tasks and policies and Japan's and JICA's cooperation policy and analysis, also contributing to SDG 6. In addition, this Project with grant aid with business and operation is expected to effectively introduce appropriate and efficient management and maintenance technologies. The development of human resources in Cambodia and the establishment of smooth processes in the water business also contribute to the participation of Japanese companies and organizations in other water supply system projects in Cambodia and other developing countries. This Project also matches Japan's Infrastructure System Export Strategy. Accordingly, the necessity of this Project is great.

8. Plan for Future Evaluation

(1) Indicators to be Used

As indicated in section 4.

(2) Timing

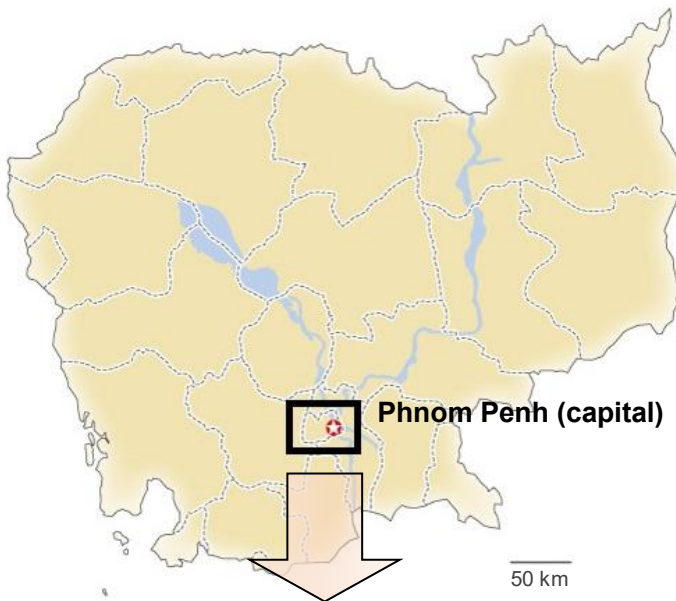
Ex-post evaluation: 3 years after project completion

End

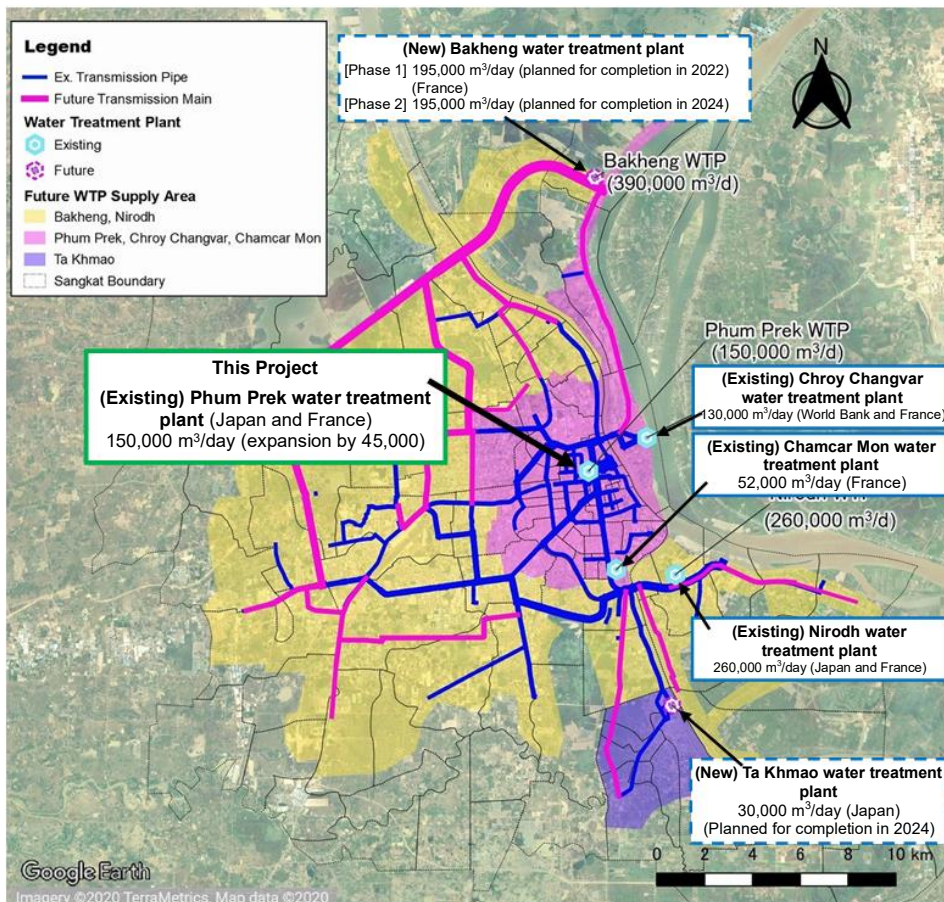
Attached material: Project for the Expansion of Phum Prek Water Supply System - Map

Map of the Project for the Expansion of Phum Prek Water Supply System

Cambodia



The PPWSA's water supply area and water treatment plants



[Source] The data in "the data collection survey on water supply development in Phnom Penh capital in the Kingdom of Cambodia" by JICA (February 2022) was edited.