

Ex-Ante Evaluation (for Japanese ODA Loan)

1. Name of the Project

Country: Lao People's Democratic Republic

Project: Vientiane Capital Water Supply Expansion Project

Loan Agreement: March 23, 2016

Loan Amount: 10.271 billion yen

Borrower: The Government of the Lao People's Democratic Republic

2. Background and Necessity of the Project**(1) Current State and Issues of the Water Supply Sector in Laos**

In Lao People's Democratic Republic (hereinafter, "Laos"), the percentage of the population with access to safe, clean water remains somewhere around 70%. Meeting water demand is considered a problem that must be solved in order to achieve sustainable economic growth.¹

Vientiane Capital has seen its population increase from 630,000 in 2000 to 850,000 in 2013. The city's population in 2020 is expected to exceed 1,000,000. The water coverage ratio in the urban service area (258 of 483 villages) in Vientiane Capital remains as low as 72%, meaning that stable water supply has not yet been achieved.² The design capacity of the four treatment plants in the urban service area is about 180,000 m³/day. Today, 200,000 m³ water is supplied daily, meaning that water supply is barely managed by forcing treatment plants to work over capacity. There are concerns that the lack of safe drinking water in the capital city will lead to deteriorating health conditions. Lately, more and more industrial parks and large commercial complexes are being constructed in the city. This makes further water demand increases likely, since water will be needed not only by households but also by industrial and commercial operations.

(2) Development Policies for Water Supply Sector in Laos and the Priority of the Project

The government of Laos has defined the following goals: (1) give 80% of the population access to safe water by 2015 and (2) set up a water supply system with sanitary, sustainable, quality services in major urban areas as part of the 7th National Socio-Economic Development Plan (2011–2015). Prime Ministerial Decision No. 37 in 1999 on the Management and Development of the Water Supply Sector, defines 80% water coverage by 2020 in urban areas as a goal. In response to the decision, the government of Laos formulated an investment plan in the water supply sector, stating that the government aims to achieve 90% water coverage in the Vientiane Capital by 2020. Under these circumstances, this project will contribute to urban residents' accessibility to safe water, and is thus defined as priority project.

(3) Japan and JICA's Policy/Actual Performance for Water Supply Sector

JICA analyzed urban environment improvement as a priority area under "Development of Economic and Social Infrastructure", a key factor in the Country Analysis Paper for Laos (March 2015). Japan's Country Assistance Program for Laos (April 2012) also identified "Development of Economic and Social Infrastructure" as a key factor. Thus, the Project is in line with these analyses and policies.

So far, JICA has renovated the Chinaimo water treatment plant, expanded and renovated the Kaolieo water treatment plant, and carried out similar projects under the Grant Aid Project for "the Project for Vientiane Water Supply Development". JICA has also provided training programs for engineers involved in the operation and maintenance of water facilities at prefectural water agencies, including in Vientiane Capital, under the Technical Cooperation for "Capacity Development of Water Supply System" (2003–2006).

(4) Other Donor's Activities

The French Development Agency supported the formulation of the Vientiane Capital Water Supply Master Plan and set up a water distribution network in Vientiane Capital, while the Export-Import Bank of China provided loans for a project to expand the Dong Makkhai treatment plant. In addition, the private sector also implemented programs to construct new water treatment plants (build, operate and transfer (BOT) programs).

(5) Necessity of the Project

This project fulfills water demand in Vientiane Capital, where it is likely to increase in the future. Therefore, the aim of the project is in line with the issues and development policies of the Government of Laos, Japan's Country Assistance Programs, and analysis results. Consequently, the necessity and relevancy in implementing this project are high.

3. Project Description

¹ UNDP, The Millennium Development Goals Progress Report for the Lao PDR 2013

² 2014 Annual Report for Vientiane Capital Water Supply State Enterprise

(1) Project Objectives

This project aims to improve water supply services in Vientiane Capital through expanding the Chinaimo water treatment plant (located in southern Vientiane), water intake plant, as well as water distribution/supply center facilities, thereby contributing to better living condition and promoting further investment in Vientiane Capital.

(2) Project Site/Target Area: Vientiane Capital

(3) Project Components

- 1) Civil works: Set up facilities related to the Chinaimo water treatment plant
- 2) Electric/Mechanical Equipment: Set up water intake, transmission/distribution, storage pumps, and monitoring systems
- 3) Consulting services (e.g. detailed designs (D/D), Tender assistance, Construction supervision and Technical Transfer, etc.)

(4) Project Cost (Loan Amount)

11,800 million yen (Loan Amount: 10,271 million yen)

(5) Project Implementation Schedule

From February 2016 to April 2022 (total of 75 months)

Project completion is defined as the commencement of the operation of the facilities (April 2021).

(6) Project Implementation Structure

- 1) Borrower: The Government of Lao People's Democratic Republic
- 2) Guarantor: None
- 3) Executing Agency: Department of Public Works and Transport, Vientiane Capital (DPWT-VC)

4) Operation and Maintenance System: The Vientiane Capital Water Supply State Enterprise (NPNL) shall operate, maintain, and manage the facilities once they are constructed

(7) Environmental and Social Considerations/Poverty Reduction/Social Development

1) Environmental and Social Consideration

- i. Category: B
- ii. Reason for Categorization: This project targeted water supply sectors other than the large-scale projects specified by the Guidelines for Environmental and Social Considerations (Established in April 2010), and unfavorable environmental impact was considered minor. At the same time, the project targeted areas outside of areas vulnerable to the features and impacts defined in the guidelines. Therefore, the project was categorized as a B.
- iii. Environmental Permit: Preparation of an Environmental Impact Assessment (EIA) report for this project is not required under Lao law. The Initial Environmental Examination (IEE) Report for this project was approved by Department of Natural resources and Environment in Vientiane Capital in February 2015.
- iv. Anti-Pollution Measures: During construction, measures will be taken to address air quality, water quality, waste, noise, vibration, and similar factors in order to satisfy the country's emissions criteria and environmental requirements. Measures by contractors will include spraying water, creating a pond for wastewater treatment, and setting a limit on work hours. Once the facilities are in use, DPWT-VC shall provide management instructions to avoid generating offensive odors from gasified liquid chlorine.
- v. Natural Environment: The project site is not located in sensitive areas such as national parks, and adverse impact on the natural environment is assumed to be minimal.
- vi. Social Environment: The Project requires no land acquisition or resettlement, since it will take place within the existing treatment plant and water distribution pond, as well as laying equipment under public roads. However, expanding the Chinaimo water treatment plant requires temporary borrowing of land next to the project site owned by another ministry or agent for the purpose of storing materials. Therefore, coordination will take place between the executing agency and the other ministry or agent for temporary use of the land.
- vii. Other / Monitoring: During the construction period, the DPWT-VC will monitor air quality, water quality, waste, noise, vibration, offensive odor, and the like. After the handover, the NPNL will carry out monitoring.

2) Promotion of Poverty Reduction: N/A

3) Promotion of Social Development (e.g. Gender Perspectives, Measures to Prevent

Infectious Diseases Including HIV/AIDS, Participatory Development, Consideration for Persons with Disabilities, etc.): This project will implement awareness activities and take steps to spread the benefits of the project in terms of public health and a better way of life while considering the active participation of women, according to the Strategy for Advancement of Women in the Public Works and Transportation Sector 2014–2025. For this project, external labor forces other than local residents are likely to come to the construction site. To mitigate the risk of HIV/AIDS at the project site, the project will include preventative measures.

(8) Collaboration with Other Donors: None in particular

(9) Other Important Issues: Bidding evaluations will be introduced based on the life cycle cost (LCC) concept as a part of a procurement package (Electric/Mechanical Equipment) for this project. In addition, this project helps mitigate the impact of water supply due to climate change issues, such as floods and deterioration in water-related hygienic conditions. Thus the project will contribute to climate change adaptation.

4. Targeted Outcomes

(1) Quantitative Effects

1) Outcomes (Operation and Effect Indicator)

Indicators	Original (Year 2013)	Target Number (2024) two years after project completion
Population Served in Urban Area (Person)*	489,175	782,157
Amount of Water supply in Urban area (m ³ /day)*	199,619	326,224
Percentage of Population Served in Urban area (%)*	72	95
Daily Average Water Supply Amount of Chinaimo WTP (m ³ /day)	93,272	109,090
Facility utilization rate for the Chinaimo water treatment plant (%)	116.6	90.9

Note: Values are for the Vientiane urban area planned water supply zone. Values indicated above are subject to change, due to progress in construction and expansion of the other treatment plants. To calculate the target, planned figures for the 2024 are used, since completion is expected in April 2021.

(2) Qualitative Effects

Contributing to better living condition and promoting further investment in Vientiane Capital

(3) Internal Rate of Return:

EIRR: 23.54%

Costs: Project costs (excluding tax), operation & maintenance expenses, cost of updating equipment

Benefits: Reduction in costs for taking in alternative water and expenses incurred in relation to suspended water supply

Project Life: 30 years

FIRR: 8.40%

Costs: Project cost, operation & maintenance expenses, costs for updating equipment

Benefits: Revenue from water fees

Project Life: 30 years

5. External Factors and Risk Control

Confirmed with the executing agency their obligation to temporarily use land owned by another ministry or agency to store materials and equipment for expanding the Chinaimo water treatment plant.

6. Lessons Learned from Past Projects

(1) Lessons learned from similar projects

The ex-post evaluation on the Grant Aid Project for Expanding the Vientiane Water Supply Development describes various needs, such as sound financial management for NPPL, infrastructure development for the water supply network, and capacity development of staff at the water treatment plants. The report clearly indicates the necessity of setting appropriate water fees, improving capacity for formulating business plans (including capital investment plans), and improving management systems as recommendations to JICA.

(2) Lessons for the Project

Management improvement, including financial issues at NPNL is currently taken care of through the implementation of technical cooperation projects on building the business management capacity of state water supply enterprises. This loan assistance project includes technical transfer on maintenance and operation of water purification facilities as a scope of consulting service

7. Plans for Future Evaluation

(1) Indicators to be Used:

- 1) Population Served in Urban Area (Person)
- 2) Amount of Water supply in Urban area (m³/day)
- 3) Percentage of Population Served in Urban area (%)
- 4) Daily Average Water Supply Amount of Chinaimo WTP (m³/day)
- 5) Facility utilization rate for the Chinaimo water treatment plant (%)

(2) Timing:

Two years after project completion