Ex-Ante Evaluation

Southeast Asia Division 3
Southeast Asia and Pacific Department
Japan International Cooperation Agency

1. Name of the Project

Country: The Socialist Republic of Viet Nam (Vietnam)
Project: Second Ho Chi Minh Water Environment Improvement Project (IV)
L/A signed on: December 27, 2021

2. Background and Necessity of the Project

(1) Current status and issues of the Water Environmental Sector in Vietnam and the position of this Project

Accompanying industrialization and the concentration of the population into cities, the urban areas of Vietnam have witnessed a surge in industrial wastewater and domestic sewage. However, the improvement of sewerage systems is not progressing, and polluted water is being discharged directly into rivers, causing serious pollution to the water environment. Water contamination is being triggered by a combination of factors including the fact that (i) waste products are being dumped in rivers, lakes, etc., (ii) leachate from waste landfill sites is left untreated, and (iii) nearly all industrial and domestic wastewater is discharged without being treated.

Flooded arterial roads in rainy seasons and water pollution of rivers, lakes and canals have become serious problems in Ho Chi Minh City, the largest city in Vietnam. Water pollution of rivers affects not only the water quality of small- and mid-sized rivers in the city but also in the lower course of those rivers, and of large-sized rivers to which they finally connect to the rivers serving as the water source of the city, such as Saigon River and Dong Nai River. Especially in the upper reaches of Saigon River, the water quality does not meet the reference value for surface water quality[1] specified in the National Technical Regulation on Surface Water Quality[2]. In addition, due to its low altitude and heavy rainfall, geographically the city is vulnerable to flood damage resulting from rainfall and tide level changes. The city does not have sufficient sewerage-treatment plants, thus the sewage generated in the city is discharged directly into rivers through

[1] BOD5: Biochemical oxygen demand (BOD) is a typical water quality index related to organic pollution that represents the amount of dissolved oxygen consumed when organic matter contained in water is decomposed by microorganisms.
[2] QCVN 08-MT:2015/BTNMT (B1-type)

already-existing simple septic tanks in houses. Since water pollution may further retrogress in the future with an increase in the population, the development of sewerage and drainage systems is an urgent issue.

Under such circumstances, in the city's master plan formulated through "The study on urban drainage and sewerage system for Ho Chi Minh City in the Socialist Republic of Viet Nam" implemented by JICA in 1999, the target area of this Project is recognized as the priority area for sewerage and drainage improvement. Sewerage and drainage improvement for over 30% of the priority area is to be carried out in the "Ho Chi Minh City Water Environment Improvement Project" (hereinafter referred to as the "first phase project"), and the remaining under 70% is to be implemented in this Project; thus, this Project is positioned as a high-priority project that is indispensable for the development of the city's sewerage and drainage sector.

(2) Japan and JICA's Cooperation Policy for the Water Environment Sector and the Position of this Project

The Country Assistance Policy for the Socialist Republic of Vietnam (December 2017) by the Japanese government identifies "Response to Fragility" as a key area, stating that Japan will cooperate in the field of environmental issues emerging as a result of rapid urbanization and industrialization. In addition, in the JICA Country Analysis Paper for the Socialist Republic of Vietnam (June 2020), "addressing urban problems due to rapid economic growth and industrialization" is analyzed as a priority issue; thus, this Project is in line with the Japanese policy and JICA's analysis.

Since the improvement of sewerage and drainage systems is believed to contribute to the improvement of the urban and living hygiene environment of Ho Chi Minh City as well as the achievement of SDG 6 (Ensure availability and sustainable management of water and sanitation for all), it is necessary for JICA to continue to support the implementation of this Project.

(3) Other Donors' Activities

The World Bank states that the improvement of the urban water environment is included in "Ensuring environmental sustainability and resilience" (one of the three key areas) in the "Country Partnership Framework" for Vietnam between 2018 and 2022, and has been implementing sewerage improvement projects in multiple provinces and cities. In addition, in the "Country Partner Strategy" between 2016 and 2020, the Asian Development Bank (ADB) describes the

promotion of environmental sustainability and response to climate change as one of the three pillars, and has placed emphasis on the development of infrastructure related to clean water supply and sewage treatment aiming to reducing the environmental burden and promoting the future participation of private companies. In Ho Chi Minh City, the World Bank implemented the "Ho Chi Minh City Environmental Sanitation Project (Nhieu Loc-Thi Nghe Basin) (phase 1 and phase 2)" from 2001 to 2021, but its target area does not overlap with the target area of this Project.

3. Project Description

(1) Project Objectives

The objective of this Project is to raise the capacity for treating polluted water and mitigate the damage caused by flooding through the improvement of the sewerage and drainage system in Ho Chi Minh City, thus contributing to improvement of its urban and living hygiene environment.

(2) Project Site / Target Area

Ho Chi Minh City

(3) Project Components

1) Drainage system improvement (Target area: Tau Hu-Ben Nghe Canal Basin[2]; canal renovation, and installation of pump stations and stormwater drainage pipes)
   ① Construction and expansion of pump stations (5 places, international competitive bidding)
   Ben Me Coc 1 (0.80 m^3/sec) (expanded portion), Ben Me Coc 2 (1.05 m^3/sec), Cau Me (7.0 m^3/sec), Phan Van Khoe (7.0 m^3/sec), Pham Phu Thu (3.0 m^3/sec))
   ② Drainage channel renovation (approximately 9 km)
2) Sewerage system improvement (Target area: Tau Hu-Ben Nghe Canal Basin 25.3 km^2)
   ① Expansion of sewage relay pump station (311.1 m^3/min (expanded portion), final capability: 511.2 m^3/min, international competitive bidding)

[2] The target area for the drainage system improvement has a population of about 1.8 million. Additionally, the target area of the drainage improvement project in the Hang Bang area (sub-component of the Ho Chi Minh City Water Environmental Improvement Project canceled by ADB in 2006) was also Tau Hu-Ben Nghe Canal Basin, the same target area of this Project. Since a drainage channel is to be connected to the intercepting sewer, it will be carried out as a sub-component of this Project.

② Installation and renovation of sewage and drainage pipes (intercepting sewer 33.762 km, international competitive bidding)

③ Expansion of sewage treatment plant (active sludge process)[3] (328,000 m^3/day (expanded portion), final capability: 469,000 m^3/day, international competitive bidding)

3) Consulting service (detailed design, assistance in bidding, construction supervision, awareness-raising activities related to environment and hygiene, etc.) (shortlist method)

(4) Estimated Project Cost

47,845 million yen (amount covered by this ODA loan: 10,813 million yen)

(5) Schedule

March 2006 - June 2024 (220 months in total). The Project is to be completed at the beginning of operation (scheduled for June 2023).

(6) Project Implementation Structure

1) Borrower: The Government of the Socialist Republic of Viet Nam represented by the Ministry of Finance of the Socialist Republic of Viet Nam

2) Executing Agency:

① Line Agency: Ho Chi Minh City People's Committee (hereinafter referred to as "HCMCPC")

② Executing Agency: Transportation Works Construction Investment Project Management Authority (hereinafter referred to as "TCIP")

3) Operation and Maintenance Organization: The local company in charge of the first phase of this Project will likely be carrying out the operation/maintenance for the second phase. However, the final decision will be made before the completion of second phase or start of the operation.

(7) Other Projects, Collaboration and Sharing of Roles with Other Donors

1) Japan's Activity

JICA has provided financial and technical assistance for sewerage improvement and strengthening of maintenance system for Hanoi City, Ho Chi Minh City, Hai Phong City, Hue City and Binh Duong Province. ODA loan projects include the “Hanoi City Water Environment Improvement Project" (1995) and the "Ho Chi Minh City Water Environment Improvement Project" (2001). For technical cooperation project, "Enhancing Management Capacity of Sewage Works" (January 2016 to May 2019), JICA supported the establishment of a system for developing human resources for the sewerage

[3] The expansion of the Binh Hung sewage treatment plant constructed in the first phase project.

operations.

2) Other Donors' Activity

None

(8) Environmental and Social Considerations, Cross-Cutting Issues, and Gender Categorization

1) Environmental and Social Considerations

① Category: A

② Reason for Categorization: This Project falls under the category of exhibiting characteristics that are likely to have significant adverse impact on the environment specified in the "Japan Bank for International Cooperation Guidelines for Confirmation of Environmental and Social Considerations" (hereinafter referred to as "JBIC Guidelines"(established in April 2002.

③ Environmental Permit: The Environmental Impact Assessment (EIA) report on this Project was approved by Ho Chi Minh City Department of Natural Resources and Environment (hereinafter referred to as "DONRE") in October 2005 as well as in December 2005. However, since the construction was not started within 36 months from the EIA approval, the Transportation Works Construction Investment Project Management Authority (hereinafter referred to as "TCIP") submitted the revised version of EIA to DONRE in November 2016. (Under domestic law, approval of the revised EIA is not necessary.)

④ Anti-Pollution Measures: Sewage that flows into sewage-treatment plants will be discharged into rivers after it is treated in a manner that meets the effluent standards of Vietnam. Thus, if the sewage water is properly treated, the discharge is not expected to have any adverse impact on the environment. In addition, initially, the sludge was composted at the sewage treatment plants. However, due to foul odor, the sludge is now treated at another facility and then disposed at the Da Phuoc landfill disposition site. Currently, the level of foul odor is below the reference value and confirmed that there are no complaints from residents.

⑤ Natural Environment: The target areas of this Project are not located in sensitive areas such as national parks or their surrounding regions, and it

is assumed that any adverse effect on the natural environment will be kept to a minimum.

⑥ Social Environment: This Project involves the resettlement of 160 households and land acquisition of 19,544 m^2, which were proceeded in accordance with the domestic procedures of Vietnam and the relocation plan formulated based on JBIC Guidelines. In a meeting held in September 2007, local residents were informed of the outline of this Project and its compensation policy, but no particular opposition to the implementation of this Project. The land acquisition and the resettlement of households were completed in July 2015. In addition, no particular troubles were reported in the post-relocation monitoring survey conducted in 2015.

⑦ Other / Monitoring: In this Project, the TCIP will monitor air quality, water quality, noise and vibration, and foul odor, as well as resident relocation during construction. When the improved facilities are in use, the Steering Center of the Urban Flood Control Program (SCFC) will monitor air quality, water quality, noise and vibration, and resident relocation.

2) Cross-Cutting Issues

① Projects Related to Climate Change Adaptation Measures

By improving rainwater drainage through the improvement of sewage treatment facilities, this Project is expected to reduce the deterioration of the public hygiene and the environment in the event of heavy rains and floods caused by climate change; therefore, this Project will contribute to climate change adaptation.

② Poverty Alleviation and Consideration for the Poor

The plan for poverty reduction and hygienic environment improvement activities was formulated by Ho Chi Minh City in 2016. In the future, activities for poverty reduction and hygienic environment improvement will be carried out based on this plan, and their implementation status will be monitored.

③ Measure for Infectious Diseases Including AIDS/HIV

The Executing Agency has agreed that the implementation of AIDS prevention measures will be carried out by the contractor and the monitoring will be implemented by the AIDS Countermeasure Section of Ho Chi Minh City Department of Health.

3) Gender Category: [Gender Project] ■ GI (S): Gender Informed (Significant)

<Details of activities/Reason for categorization> During the appraisal, it was agreed that the Project will determine the site and the time of the hygiene and environmental education paying special attention to female participants. Therefore, this project was categorized as Gender Informed (Significant).

(9) Other Important Issues

Nothing in particular.

4. Targeted Outcomes

(1) Quantitative Effects

1) Outcome (Operation and Effect Indicators)

Indicator *1	Baseline (2006 Actual) *2	Target (2025) (2 years after project completion)
Population treated (persons)	0	1,421,000
Amount of wastewater treated (m^3/day)	0	469,000
BOD concentration in sewage treatment plants (inflow, water release, disposal rate)	-	Inflow: 200 mg/l Water release: 50 mg/l Disposal rate: 75%
Discharge capacity at the water control reference point (m^3/s)	52	73
Annual maximum number of inundated households caused by 2-year probable rainfall (HH)	40,000	0
Annual maximum inundated depth caused by 10-year probable rainfall (m)	1.68	1.44

*1 The target area includes the target areas of the first phase project and this Project[4].

*2 The appraisal of this Project (I) was conducted in 2006, before which the first phase project was completed.

(2) Qualitative Effects

Improvement of urban/living environment

(3) Internal Rate of Return

Based on the conditions indicated below, the Economic Internal Rate of Return (EIRR) of this Project is 5.61%, and the Financial Internal Rate of Return (FIRR) is - 3.23%. In this Project, the value of the FIRR fell below 0% as a result of low-rate level of sewage fee.

[EIRR]

Costs (excluding tax): Project cost, operating cost, and maintenance cost

[4] The evaluation of this Project will be conducted integrally with the evaluation of the "Ho Chi Minh City Water Environment Improvement Project" and the "Second Ho Chi Minh Water Environment Improvement Project (I)-(III)".

Benefit: Reduction in the amount of flood damage

Project life: 40 years

[FIRR]

Costs (excluding tax): Project cost, operating cost, and maintenance cost

Benefit: Sewerage charge

Project life: 40 years

5. Prerequisites / External Conditions

(1) Prerequisites

Nothing in particular.

(2) External Conditions

Nothing in particular.

6. Lessons Learned from Past Projects and Application to This Project

From the ex-post evaluation of similar projects supported by Japanese ODA loans, including the "Sewerage Treatment Plant Project" in Malaysia (evaluated in 2013), the "Nanning Water Environmental Improvement Project" in the People's Republic of China (evaluated in 2014) and the "Yamuna Action Plan Project (II)" in the Republic of India (evaluated in 2015), it has been learned that, in order to secure long-lasting effectiveness after the completion of a project, it is effective to establish a support system based on the capacity of an executing agency. In order to secure stable sewerage service, it is effective to set sustainable sewerage fees and collecting systems. Another lesson learned is that it is effective to secure the participation of local residents by conducting awareness-raising activities concerning the environment and hygiene.

Based on the above lessons, this Project provided "Special Assistance for Project Implementation (SAPI) for the Ho Chi Minh Water Environment Improvement Project (2008)" to support the selection of maintenance organization, formulation of maintenance contracts, and setting the sewerage fee in Ho Chi Minh City. Furthermore, through technical cooperation projects, such as the "Project for Capacity Development on Sewerage Management in Ho Chi Minh City" (May 2009 to November 2010) and its successor, the "Project for Capacity Development on Sewerage Management in Ho Chi Minh City (Phase-2)" (September 2011 to September 2014), capacity building was carried out with the aim of improving sewerage management capacity of supervising agency and the maintenance organization. Additionally, as mentioned above,

the plan for poverty reduction and hygienic environment improvement activities was formulated by Ho Chi Minh City in 2016. In the future, activities for poverty reduction and hygienic environment improvement will be carried out based on the plan which their implementation status will be monitored.

7. Evaluation Results

This Project is in line with Vietnam's development policies as well as the Japan's country assistance policy and JICA's analysis. The Project will also improve the capacity for treating polluted water and mitigate the damage caused by flooding through the improvement of the sewerage and drainage system in Ho Chi Minh City, thus contribute to the improvement of urban and living hygiene environment. In addition, it is considered to contribute to the achievement of SDG 6 (Clean water and sanitation); therefore necessary to support this Project.

8. Plan for Future Evaluation

(1) Indicators to Be Used

As indicated in Section 4.

(2) Future Evaluation Schedule

Ex-post evaluation: 3 years after project completion.

END