

Ex-Ante Evaluation (for Japanese ODA Loan)

1. Name of the Project

Country: The Democratic Socialist Republic of Sri Lanka

Project: Kandy City Wastewater Management Project

Loan Agreement: March 26, 2010

Loan Amount: 14,087 million yen

Borrower: The Government of the Democratic Socialist Republic of Sri Lanka

2. Background and Necessity of the Project

(1) Current State and Issues of the Wastewater Sector in Sri Lanka

Although effluence of wastewater is increasing in Sri Lanka as the Country's water supply is extended, the national sewerage service ratio remains at only 2.5%. Outside of the Greater Colombo area, which has a comparatively well developed sewerage system, wastewater is released to the sea and rivers after being treated inadequately by septic tanks and other such facilities, or even without any treatment. This situation results in deteriorating sanitary conditions in these areas and water pollution in water-source rivers. Under such conditions, the development of appropriate wastewater facilities is an urgent issue in Sri Lanka. Kandy City is Sri Lanka's second-largest city and one of the most popular tourist destinations. Nonetheless, Kandy City does not have any piped sewerage system, and as a result water quality is worsening in the Mahaweli River (which is Kandy City's water source), rivers that flow through the city, and Kandy Lake. Consequently, appropriate wastewater management is required to improve the water quality of these rivers, etc. Moreover, in order to improve hygiene in the low income/densely populated areas in Kandy City, it is required not only to develop the piped sewerage system but also to solve the shortage of sanitation facilities (toilets, etc.).

(2) Development Policies for the Wastewater Sector in Sri Lanka and the Priority of the Project

In Sri Lanka's "Ten Year Horizon—Development Framework" (2006-2016), it is planned to achieve improved access to sewerage facilities while improving the sewerage service ratio to 3% by 2011 based on the Millennium Development Goals. Furthermore, the Kandy Municipal Council seeks to significantly improve living environments in low income/densely populated areas by 2020. The project is in agreement with these policies, as it aims at developing the piped sewerage system in Kandy City as well as developing and improving sanitation facilities in low income/densely populated areas.

(3) Japan and JICA's Policy and Operation in the Wastewater Sector

In Japan's Country Assistance Program for Sri Lanka (FY2004), "development of economic infrastructure" is emphasized as an important field of assistance. Moreover,

JICA considers that the improvement of urban environment is one of the development issues in Sri Lanka, and therefore plans to support the construction of a piped sewerage system and sanitation facilities and the improvement of living environment of the urban poor. Thus far, Japan has dispatched experts to Sri Lanka's wastewater sector among other activities. Under its loan assistance scheme, it has provided consultation services that include a Preliminary Detailed Design for the project through the "Water Sector Development Project" since 2007. Furthermore, JICA started dispatching Japan Overseas Cooperation Volunteers (JOCVs) to Sri Lanka to facilitate raising people's awareness about improved hygiene in low income/densely populated areas in the project's target area. The project will work together with such activities of JOCVs.

(4) Other Donors' Activity

The Asian Development Bank (ADB) will implement the Greater Colombo Wastewater Management Project in this year, and it is studying future implementation of a water supply and wastewater treatment project in Jaffna. Moreover, Sweden, Denmark, Austria, and other countries have supported the rehabilitation of the sewerage system in the Greater Colombo area.

(5) Necessity of the Project

In Kandy City, the amount of wastewater has increased as the water supply system has extended and its population and number of tourists have grown. However, wastewater is not being sufficiently treated in Kandy, and thus sanitary conditions and water-source river quality are deteriorating. In order to cope with this situation, it is urgently required to develop a piped sewerage system in the city. In addition, low income/densely populated areas of Kandy City lack toilets and other sanitation facilities, and even the existing facilities are poorly managed. This has resulted in worsening health and sanitation conditions and living environment. Consequently, it is required in these areas to develop, improve, and properly maintain and manage sanitation facilities. These efforts are also in line with Japan's and JICA's assistance policies. Furthermore, because the project will raise living standards and help reduce poverty by improving the health conditions, hygiene, and living environment of the people in the area, there is a high necessity for the project from the standpoint of poverty reduction.

3. Project Description

(1) Project Objectives

The objective of the project is to improve the living environment and water quality of Mahaweli River through better sanitation facilities by constructing a proper system for collection, treatment, and disposal of wastewater in Kandy City, including rehabilitation of sanitation facilities in densely populated areas, and thereby enhance the standard of living, health, and well-being of the people in the area.

(2) Project Site/Target Area

Kandy City

(3) Project Outline

- 1) Construction of Wastewater Treatment Plant (WWTP), Main Pumping Station, etc.
- 2) Construction of Sewage Collection System and Manhole Pumping Stations
- 3) Property Connections
- 4) Facility for Densely Populated/Low Income Areas
- 5) Consultancy Services (Project Management Services, Capacity Building, and Public Relations)

(4) Estimated Project Cost

17,278 million yen (of which, Yen Loan: 14,087 million yen)

(5) Schedule

March 2010 – September 2018 (total of 103 months). The project will be completed when facilities begin operation (October 2017).

(6) Project Implementation Structure

- 1) Borrower: The Government of the Democratic Socialist Republic of Sri Lanka
- 2) Executing Agency: National Water Supply and Drainage Board (NWSDB). The Project Management Unit (PMU) will be comprised from NWSDB and Kandy Municipal Council.
- 3) Operation and Maintenance System
- 4) Kandy Municipal Council (setting and collection of fees; operation, maintenance, and management of sewerage collection and sludge disposal facilities) and NWSDB (operation, maintenance, and management of WWTP)

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

1) Environmental and Social Consideration

- ① Category: B
- ② Reason for Categorization: The project is classified as Category B because it does not correspond to sensitive sectors, characteristics, or areas that are mentioned in the “Japan Bank for International Cooperation Guidelines for Confirmation of Environmental and Social Considerations” [formulated in April 2002] and thus will not have a significantly adverse impact on the environment.
- ③ Environmental Permit: The Environmental Impact Assessment (EIA) report for the project was approved by the Central Environmental Authority (CEA) in September 2005.
- ④ Anti-Pollution Measures: Countermeasures to reduce odor will be implemented under the project from the design and construction stages. Because effluent from the WWTP will be discharged into rivers, etc., after being treated to meet effluent standards in Sri Lanka, no significant impacts caused by treated water discharges are anticipated. Moreover, generated sludge will be dried and then appropriately disposed of in landfill, etc.

- ⑤ Natural Environment: The project area is not in the sensitive areas (such as a national park, etc.) nor in the vicinity of such areas, and thus it is anticipated that adverse impacts on the natural environment by the project will be minimal.
- ⑥ Social Environment: Acquisition of the approximately 2.7 ha of government land for construction of the WWTP, pumping stations, etc., is proceeding in accordance with domestic procedures in Sri Lanka. As a result of said acquisition, relocation of the houses of government employees (12 households) and private citizens (7 households) is required, and replacement housings will be provided by the project. It should be noted that the target area of the project includes an area registered as a World Cultural Heritage site; however, it is considered that the project will not have a significant impact on tangible cultural resources, etc., in the area. The Department of Archeology prepared an Archeological Impact Assessment (AIA) report for the project that was approved in January 2010.
- ⑦ Others/Monitoring: An external monitoring committee (chaired by CEA) and stakeholders' committee have been established to monitor noise and other items during construction stage and the quality of released water, odor, air pollution, sludge quality, etc., after commencement of operation.

2) Promotion of Poverty Reduction

The project will rehabilitate existing public toilets and newly construct or rehabilitate public bathing facilities in low income/densely populated areas, and will support the construction of private toilets for households having the space and willingness to install private toilets after the construction of piped sewerage system in the areas. In addition, in order to promote connection to the piped sewerage system by private residents, including those of low-income, the project will provide the initial cost for individual connections free of charge to all households living in the project's target area (approximately 11,000 households) during the project's implementation period. Furthermore, the sewerage tariff structure has been set with consideration for the income levels of low-income residents. It is expected that sanitation conditions in the target area as well as the health of residents (including low-income residents) will be improved through these approaches. Thus the project will contribute to better living standards and poverty reduction in the target area.

3) Promotion of Social Development (e.g. gender perspectives, measures for infectious diseases including HIV/AIDS, participatory development, consideration for the disabled, etc.)

The project will promote understanding of the project among targeted residents and implement awareness-raising activities on health and sanitation, and it will provide connections to the piped sewerage system after confirming residents' willingness to connect. Through these awareness-raising activities, the project will continuously share information with residents regarding construction progress and other items.

For the construction of sanitation facilities in low income/densely populated areas, the project will reflect residents' needs through consultations with residents, and a monitoring committee to be comprised of resident representatives will participate in construction monitoring. As for the maintenance and management of said facilities, Community-Based Organizations (CBOs) will be activated based on the idea that such activities should be carried out by residents under the responsibility of the Kandy Municipal Council. At the same time, the project will raise the residents' awareness on appropriate maintenance and management of those facilities, health, and sanitation, thereby developing the capacity of the residents.

(8) Cooperation with Other Donors

None

(9) Other Important Issues

JICA supports the organizational capacity building of NWSDB through consultancy services in the on-going project, namely, "Water Sector Development Project."

4. Targeted Outcomes

(1) Performance Indicators (Operation and Effect Indicator)

Indicator	Baseline (Actual value in 2009)	Target (2019) (Expected value 2 years after project completion)
Sewerage treatment amount (m ³ /day)	—	13,300
Sewerage service ratio of KMC population (served population / KMC population) (%)	0	41.5
Quality of effluent water from WWTP (BOD, SS, etc.) (mg/l)	—	BOD : <20 SS : <20
Number of connections	0	11,989
Availability (%) of households that own a private toilet within their premises in low income/densely populated areas*1	58.6	88.3
Number of households per public toilet unit (households)	5	2
Incidence of waterborne diseases*2 in the target areas (cases/year)	7	2

*1: The four areas of Mahaiyawa MC, Mahaiyawa MT, Artupatti, and Deiyannewela

*2: Viral hepatitis, dysentery, typhoid, diarrhea, etc.

(2) Internal Rate of Return

Based on the conditions indicated below, the Economic Internal Rate of Return (EIRR) for the project will be 18.9%.

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

Benefit: Revenue from sewerage fees, increase in tourism revenue, reduction in medical-care expenses due to lower incidence of waterborne diseases, increase in the value of land

Project life: 30 years

5. External Factors and Risk Control

None

6. Lessons Learned from Past Projects

From previous similar projects, it was learned that 1) the project's scope must be clearly defined; 2) quality of the effluent from surrounding business establishments should be checked if it meets the effluent standards, and if the effluent exceeds such standards, strengthening of regulations/penalties must be requested to concerned agencies; and 3) the financial availability to secure the operation and maintenance cost as well as new investments after completion of the project must be confirmed.

For the project, 1) the appropriate project scale and components were studied through SAPROF and the Preliminary Detailed Design which was carried out under the on-going "Water Sector Development Project". In addition, 2) it was confirmed that heavy metals, etc., are not likely to be contained in effluent from surrounding business establishments, and that the standards for effluent from surrounding business establishments are regulated in business permits issued by the Ministry of Environment and Natural Resources and the bylaws of the Kandy Municipal Council. Furthermore, 3) it was confirmed that recovery of operation, maintenance, and management costs can be achieved through connection of nearly all households in the target area to the piped sewerage system and their payment of sewerage fees based on the sewerage fee structure that was determined and approved by the Kandy Municipal Council.

7. Plan for Future Evaluation

(1) Indicators to be Used

- 1) Sewerage treatment amount (m³/day)
- 2) Sewerage service ratio of KMC population (served population / KMC population) (%)
- 3) Quality of effluent water from WWTP (BOD, SS, etc.) (mg/l)
- 4) Number of connections
- 5) Availability (%) of households that own a private toilet within their premises in low

income/densely populated areas

- 6) Number of households per public toilet unit (households)
- 7) Incidence of waterborne diseases in the target areas (cases/year)
- 8) Economic internal rate of return (EIRR) (%)

(2) Timing

2 years after project completion