

Ex-Ante Evaluation(for Japanese ODA Loan)

South Asia Division 4, South Asia Department

Japan International Cooperation Agency

1. Name of the Project

(1) Country: The People's Republic of Bangladesh

(2) Project: Chattogram Sewerage System Development Project (E/S)

(3) Project Site / Target Area : Chattogram City (3.23 million, Census 2022),
Chattogram District

Loan Agreement: November 25, 2024

2. Background and Necessity of the Project

(1) Current State and Issues of the Sewerage Sector/Area and the Priority of the Project in Bangladesh

In the People's Republic of Bangladesh, economic development is accelerating the flow of population from rural areas to urban areas, and the urban population is expected to increase from 67.98 million (39.7% of the entire population) in 2022 to 93.74 million (49.0%) in 2035 (World Bank, 2022). Increase in urban population is also leading to an increase in sewage discharge. On-site sewage treatment is the mainstay of sewage treatment in the country, with public sewerage systems in place only in some areas of the capital city of Dhaka. The population of Chattogram, the second largest city after Dhaka, is expected to increase from 3.23 million in 2022 to 4.24 million in 2035, but the public sewerage system is not yet in place, and the sludge deposited in the on-site treatment facilities is not properly pulled out and cleaned. Much of the sewage is discharged untreated into rivers, sea areas, and other public bodies of water via roadside ditches and storm drains (World Bank, 2017). As a result, gutters and storm drains are blocked by the accumulated solids, often causing road flooding during the rainy season. In addition, the waterlogging of sewage has led to the deterioration of living conditions such as odors, health hazards to residents due to pest infestation, and the deterioration of water quality in public water bodies (World Bank, 2017).

One of the strategic goals of the Prospect Plan 2021-2041 by the Government of Bangladesh is to build a resilient nation against climate change and environmental problems, and as a specific policy, the government plans to achieve 100% sewerage system coverage by 2041 in order to control water

pollution and cope with urbanization. In addition, the National Strategy for Water and Sanitation (2021), which sets forth the government's development strategy for the water and sanitation sector, calls for the construction of sludge treatment facilities and the development of sanitary sewerage systems in urban areas as one of the strategies to improve the urban environment. Furthermore, the Chattogram Water Supply and Sewerage Authority (hereinafter referred to as "CWASA"), with the support of the World Bank, developed a Sanitation Master Plan in 2017, which holds the policy of developing sewerage systems by dividing the city into six catchment areas. The Chattogram Sewerage System Development Project (hereinafter referred to as the "Project") aims to promote proper sewage treatment in Chattogram City by developing a sewerage system in Catchments 2 and 4, which are located in the city center and have a high urgency for support. The Project is positioned as an essential priority project in the Sanitation Master Plan.

(2) Japan's and JICA's Policy Cooperation Policy and Operations in the Sewerage Sector

The Country Development Cooperation Policy for the People's Republic of Bangladesh (February 2018) sets overcoming social vulnerabilities as one of the priority areas, and states that the Government of Japan will contribute to the achievement of the SDGs related to water and sanitation. The JICA Country Analysis Paper for the People's Republic of Bangladesh (March 2023), which identifies addressing urbanization issues as a priority area, states that JICA intends to consider supporting the development of public sewerage systems in Chattogram in order to prevent water pollution and improve sanitation. Furthermore, JICA Global Agenda "Environmental Management - JICA Clean City Initiative-" states that JICA will support capacity development of public entities responsible for sewage treatment, develop treatment facilities, and promote the introduction of technologies. In addition, the "Kumamoto Water Initiative" announced by Prime Minister Kishida at the 4th Asia-Pacific Water Summit in April 2022, indicates support of approximately 500 billion yen over 5 years will be provided to promote the development of high quality sanitation facilities to accelerate water-related initiatives in the Asia-Pacific region and the world. The Project is aligned with these policies and analyses.

Chattogram City is located in the core area of the Bay of Bengal Industrial Growth Belt (hereinafter referred to as "BIG-B"), which was agreed upon at the

Japan-Bangladesh Summit in September 2014, and is a commercial city with the largest port in the country. The promotion of proper sewage treatment in Chattogram City through the Project will contribute to the realization of the BIG-B concept from the perspective of investment environment improvement. The New Plan for a “Free and Open Indo-Pacific (FOIP),” announced by Prime Minister Kishida in March 2020, includes Japan-Bangladesh cooperation under the BIG-B concept as a specific initiative under the pillar “Multi-layered Connectivity” and promotion of climate change countermeasures based on the Kumamoto Water Initiative as a specific initiative under the pillar “Addressing Challenges in an Indo-Pacific Way”. The Project is consistent with these policies as well.

(3) Other Donors’ Activities

The World Bank has already provided support for the development of a Sanitation Master Plan in 2017 and is currently forming a project including technical assistance to CWASA, such as improvement of the efficiency of customer management and fee collection, technical and financial solutions for the development of sewerage services in low-income areas. Of the six catchment areas identified in the Sanitation Master Plan, Korea Economic Development Cooperation Fund has completed the feasibility study for Catchment 3. Agence Française de Développement is implementing a loan project for Catchment 5, which component includes capacity development for CWASA in areas such as environmental and social considerations and occupational health and safety.

3. Project Description

(1) Project Description

① Project Objective

The objective of the Project is to achieve proper sewage treatment in Chattogram City by constructing a sewerage system, thereby contributing to the improvement of living and sanitation of residents and to the preservation of the water environment. This Loan is for Engineering Services in regards to the detailed design and bidding assistance for the Project, and is intended to promote the smooth implementation of the Project.

② Project Components

- a) Construction of sewerage treatment plant (Capacity approx. 60,000m³/day, Anaerobic-Anoxic-Oxic Method)
- b) Construction of trunk sewer (approx. 11km)
- c) Construction of branch sewer (approx. 70km), property connection
- d) Consulting services (Detailed design, bidding assistance, construction supervision, environmental and social considerations assistance, capacity development etc.)

This Loan covers Engineering Service, namely the detailed design, bidding assistance and environmental and social considerations assistance within the Consulting services of the Project.

③ Project Beneficiaries (Target Group)

1.07 million Chattogram City citizens (as of 2022) living with the Project area (JICA Preparatory Survey, 2023)

(2) Estimated Project Cost

Approx. 113,000 million Yen (Japanese ODA loan amount for the Engineering Service Loan: 1,696 million Yen)

(3) Schedule

November 2024-February 2029 (52 months)

Completion of disbursement (February 2029) is considered as the completion of the Project.

(4) Project Implementation Structure

- 1) Borrower: The Government of the People's Republic of Bangladesh
- 2) Guarantor: N/A
- 3) Executing Agency: Chattogram Water Supply and Sewerage Authority
- 4) Operation and Maintenance System: CWASA

(5) Collaboration and Sharing of Roles with Other Donors

1) Japan's Activity

The Project for Improvement of Management Capacity of Chattogram Water Supply and Sewerage Authority (2024 to 2028 (planned)) is under implementation. This technical cooperation project aims to improve

CWASA's management capacity, including the management of sewerage systems, and is expected to achieve synergistic effects with the Project by developing a sustainable operation and maintenance system through revenue collection and asset management.

2) Other Donors' Activity: N/A

(6) Environmental and Social Consideration

- ① Category: B
- ② Reason for Categorization: The project is not located in a sensitive area, nor has sensitive characteristics, nor falls into sensitive sectors under the JICA guidelines for environmental and social considerations (April 2010), and its potential adverse impacts on the environment are not likely to be significant.
- ③ Environmental Permit: The Environmental Impact Assessment (EIA) report for the project has been prepared in March 2023 and has been approved by the Department of Environment in August 2024.
- ④ Anti-Pollution Measures: Impact on air, water, noise, vibration and waste are expected during construction, and impact on noise/vibration, waste, etc. are expected during operation. For air pollution, noise/vibration, and waste during construction, mitigation measures will be implemented in accordance with domestic laws, such as water sprinkling and consideration of equipment layout. It has been confirmed that the noise and vibration during the operation period will meet domestic and Japanese standards. Sludge generated from the sewerage facility during operation will be disposed of at the sanitary landfill to be constructed by Chattogram City Cooperation, but will be further discussed in detail during the Engineering Service. The wastewater generated from the facility will be treated to meet the country's effluent standards and discharged into the river, and no particular impact is expected from the discharge of treated water.
- ⑤ Natural Environment: The project area is not located in or near a sensitive area such as a national park, and the project is expected to have minimal undesirable effects on the natural environment.
- ⑥ Social Environment: The project will involve land acquisition of approximately 15 ha and impact on residents who will use the project site

for grazing, but there will be no involuntary resettlement. The land acquisition and livelihood restoration support measures will be implemented in accordance with the Abbreviated Resettlement Action Plan prepared in accordance with the domestic procedures and JICA Guidelines for Environmental and Social Considerations. There are no specific objections to the project from the project affected persons.

- ⑦ Other/Monitoring: The executing agency will monitor air pollution, water quality, ecosystem, etc. during construction, and water quality, waste, etc. during operation.

(7) Cross-Sectoral Issues

Through the construction of a separated sewer system, the Project may contribute to climate change countermeasures (adaptation), as sewage in existing storm drains will be reduced, and the risk of flooding during heavy rains and floods, which are assumed to be an effect of climate change, will be reduced. Furthermore, the Project may contribute to the reduction of greenhouse gas emissions through the introduction of energy-saving equipment at sewerage treatment plants (mitigation). Details will be determined during the formation of the main project.

Furthermore, the possibility of supporting data utilization, including data related to sewage treatment, and DX promotion for CWASA as an entity will be studied in the formation of the main project, in coordination with the World Bank.

(8) Gender Category: [To be Confirmed] GI (Gender Mainstreaming Needs Assessment and Analysis Project)

<Details of Activities/Reason for Categorization>: To confirm and agree on gender mainstreaming needs, specific initiatives and indicators during the formation of the main project, after confirming initiatives that contribute to women's employment and situation at construction sites.

(9) Other Important Issues: N/A

4. Targeted Outcomes

(1) Quantitative Effects

1) Outcomes (Operation and Effect Indicators)

Indicator	Baseline (Actual value in 20XX)	Target (20XX) [X years after project completion]
Population Treated (persons)	To be set during the formation of the main project.	
Amount of Wastewater Treated (m ³ /day)		
Rate of Sewerage Treatment Plant Utilization (%)		
BOD Concentration in Effluent from Sewerage Treatment Plant (mg/L)		
Percentage of Population Served in Catchment 2 and 4 (%)		

2) Impact: To be set during the formation of the main project.

(2) Qualitative Effects

Improvement of living and sanitation of residents, preservation of water environment (Details to be confirmed during the formation of the main project.)

(3) Internal Rate of Return

To be set during the formation of the main project.

5. External Factors and Risk Control

(1) Preconditions: N/A

(2) External Factors:

The security situation in the Project area will not deteriorate significantly. Policies related to sewerage system development and the project implementation structure will be maintained under the interim government established in August 2024.

6. Lessons Learned from Past Projects

From the ex-post evaluation of the Denpasar Sewerage Improvement Project (II) in Indonesia (evaluation year: FY 2018), lessons have been learned that it is necessary to accurately forecast the demand for sewerage services and the ability of residents to pay, and to consider a realistic plan for the tariff structure, revenue collection method, and promotion of property connections. Based on this lesson, in the Preparatory Survey for the Project, it has been confirmed that the revenue collection will be done in the same method as the already existing water supply tariff, and a plan has been made to include property connection in the Project. Engineering Services for the Project and the ongoing technical cooperation project will assist in developing a more detailed revenue collection plan and customer communications.

7. Evaluation Results

The Project is consistent with the development issues and policies of Bangladesh, as well as policies and analyses of the Government of Japan and JICA. The Project will help achieve the improvement of living and sanitation of residents and preservation of the water environment through the development of sewerage system, and thus will contribute to SDGs Goal 6 (clean water and sanitation), Goal 11 (sustainable cities and communities), and Goal 14 (life below water). Therefore, the necessity for JICA to support the Project is substantial.

8. Plan for Future Evaluation

(1) Indicators to be Used

To be set during the formation of the main project.

(2) Future Evaluation Schedule

To be set during the formation of the main project.

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