

**1. Name of the Project**

Country: India

Project: Guwahati Sewerage Project

Loan Agreement: February 27, 2015

Loan Amount: 15,620 million yen

Borrower: The President of India

**2. Background and Necessity of the Project****(1) Current State and Issues of the Sewerage Sector in India**

In India, the generation of sewerage has been increased due to rapid population expansion and industrialization. Meanwhile, just 30% of the amount of generated sewerage is treated by sewerage facilities, and sewer network service ratio reaches only 36% for the whole India. Therefore, a lot of raw sewerage is being discharged into rivers without any treatment. As a result, infectious diseases and bad odor are appeared via polluted water, thereby compromising hygiene condition of habitants and deteriorating the living environment. In addition, sewerage service providers in India face a number of technical and financial difficulties with respect to management and maintenance of the facility, including low house connection rates, low water tariffs, lack of capacity, and personnel shortages.

**(2) India's Development Policies for the Sewerage Sector and the Role of the Current Project**

Under the current 12th Five-Year Plan, the Government of India takes up establishment of sustainable access to sewerage and sanitation facilities for all urban population in India. Especially, the Government of India focused on sewerage facilities corresponding to water supply facilities and recycled sewage to tackle water scarcity. The project intends to carry out construction of sewerage facilities corresponding to water supply facilities in the urban area where has no sewerage facilities, and therefore meets the Indian government's sewerage policy.

**(3) Japan and JICA's Policy and Operations in the Sewerage Sector in India**

In Japan's Country Assistance Programs for India (May 2006), the Japanese government designated as priority area reducing poverty and environmental problems in India as well as providing support for sewerage development as part of its efforts to solve environmental problems. Meanwhile, in its Country Analysis Paper (March 2012), JICA prioritizes the development of industrial and urban infrastructure in India, and aims to support sewerage development in order to prevent water contamination in the major rivers, solve poor public sanitation, and improve life quality. Previously, JICA received authorization to provide ODA loans to India of the amount of 230.2 billion yen for 11 projects in sewerage sector (including water supply and sewerage projects).

**(4) Other Donors' Activities**

In its Country Assistance Strategy for India, the World Bank notes population increases in medium-sized cities and changes resulting from industrialization as high priority issues; the World Bank is working to support sewerage development to resolve these issues. The Asian Development Bank (ADB) is also engaged in supporting India's sewerage sector alongside implementing poverty reduction measures; in addition to developing facilities, the bank also focuses on establishing facility management and maintenance systems based on international standards, enhancing organizations and technical skills, and promoting Public-Private Partnerships (PPP) based on lessons learned in other countries. The ADB approved to finance for improving water supply system in Guwahati city under "the Multi Tranche Financing Facility for the Assam Urban Infrastructure Investment Program" in October 2011.

**(5) Necessity of the Project**

Guwahati, being the largest city with population of 1,200,000 in the North Eastern Region of India, plays an important role as a gateway city for all North Eastern states in terms of transportation, commerce and economy, owing to its connectivity and strategic location. Since there is no public integrated sewerage system in Guwahati, un-treated or semi-treated sewage is disposed in to nearby drains and low-lying areas. This results in generation of bad odor and vermin and unhygienic conditions to its citizens. Biochemical Oxygen Demand (BOD) of drain water in the city is 90 mg/l in 2013, which is much higher than the effluent standard of 20 mg/l. Considering the progress of on-going water supply projects under JICA and ADB's support, the volume of effluent to be generated in the city will considerably increase in the future, which result in worsen hygienic condition of the city environment and greater risk to health problem of its citizen. Therefore development of an integrated scientific sewerage system is imperative for improving sanitation and living condition of its citizens.

### 3. Project Description

#### (1) Project Objective

The Objective of the Project is to provide reliable sewerage services by carrying out construction of sewerage facilities in Guwahati City. Its primary objective is to provide a stable sewerage service and to contribute to improving the living environment of area residents.

#### (2) Project Site/Target Area

Guwahati City in the State of Assam

#### (3) Project Components

- 1) Sewerage Treatment Plant (conventional activated sludge process), Trunk Sewers, Pumping /Lifting Stations, SCADA (International competitive bidding)
- 2) Lateral Sewers, House connections (Local competitive bidding)
- 3) Consulting services: Review of detailed design, bidding assistance, construction management, management improvement, public awareness, etc (Short list)

#### (4) Estimated Project Cost (Loan Amount)

22,782 million yen (Loan Amount: 15,620 million yen)

#### (5) Project Implementation Schedule

October 2014–March 2022 (90 months). The Project will be completed when the facilities are put into operation (March 2022).

#### (6) Project Implementation Structure

- 1) Borrower: The President of India
- 2) Executing Agency: Guwahati Jal Board (GJB)
- 3) Operation and Maintenance System: GJB (GJB operates and maintains water supply facilities under JICA assisted project. GJB's institutional capacity is being enhanced under JICA assisted project)

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

##### 1) Environmental and Social Considerations

- (i) Category: B
- (ii) Reason for Categorization: This project is not associated with sectors, characteristics, or regions defined in the JICA Environmental and Social Guidelines (established in April 2010) as being likely to produce or suffer from environmental effects, and is therefore assessed as having no serious negative impact on the environment.
- (iii) Environmental Permit: Submission of Environmental Impact Assessment (EIA) reports is not required for the project under Indian law.
- (iv) Anti-pollution Measures: Sewage and sludge are treated to adhere to Indian environmental standards, and thus there is no serious negative impact on sewerage discharged and sludge treatment.
- (v) Natural Environment: The project area is not in or near an area that is susceptible to impact, such as a nature preserve. Therefore, the project is assessed as having a minimal negative impact on the natural environment.
- (vi) Social Environment: A total of 2.7 ha of land will be acquired for pumping stations in the Project in accordance with India's land acquisition procedures as well as the JICA Environmental and Social Guidelines. No resettlements will be required during the construction.
- (vii) Other aspects/monitoring: This project monitors air quality, water quality, noise, vibration, solid waste, and the like during the construction period. When in service, the execution agency will monitor treated sewerage, sludge, air quality, noise, and other parameters.

2) Promotion of Poverty Reduction: This project will implement public awareness activities to improve sanitation and living condition for local residents including impoverished groups.

3) Promotion of Social Development (e.g. Gender Perspective, Measures for Infectious Diseases Including HIV/AIDS, Participatory Development, Consideration for Persons with Disability, etc.): The aspect of gender will be taken into consideration in the capacity building of relevant organizations, and awareness activities.

#### (8) Collaboration with Other Schemes or Donors

While the project provides sewerage facilities in South East and South Central Zone in Guwahati city, JICA is assisting water supply project in South Central zone and ADB is assisting in South East zone.

#### (9) Other Important Issues

The Project is seeking the collaboration with Japanese Urban and Local Body.

### 4. Targeted Outcomes

#### (1) Quantitative Effects

##### 1) Performance indicators (operation and effect indicators)

Indicators	Baseline (2014)	Target (2024) (two years after project completion)
Population Covered (thousand persons)	0	546
Percentage of Population Connected (%) *	0	50
Capacity of Wastewater Treated (1,000 m <sup>3</sup> /day)	-	187,000
Rate of STP Facility Utilization (%) **	-	40
Effluent BOD Concentration (mg/L)	-	below 20

\* The Percentage of Population Connected has been calculated by dividing Population Covered by Population Covered and Uncovered.

\* The Rate of STP Facility Utilization has been calculated by dividing the amount of wastewater treated by Capacity of Wastewater Treated.

##### 2) Internal Rate of Return

Based on the following assumptions, the Economic Internal Rate of Return (EIRR) for this project has been calculated to be 7.3%. The Financial Internal Rate of Return (FIRR) was not calculated.

EIRR:

Cost: Project cost (excluding tax), management and maintenance cost

Benefits: Willingness to pay sewerage charge, reduction of installment and O&M expenses, reduction of medical-related expenses

Project Life: 40 years

#### (2) Qualitative Effects

Improvement in sanitation and living condition, improvement of residents' awareness about sanitation, and adaptation to climate change (Improvement of sewerage and drainage capacity by installing separate sewer system).

### 5. External Factors and Risk Control

Deterioration of the political and economic situation and natural disasters in India and the regions surrounding the project area

### 6. Results of Evaluations and Lessons Learned from Past Projects

#### (1) Evaluation Results of Similar Projects

The ex post facto evaluation of the Urban Water Supply and Sanitation Improvement Program in India and other findings show that in order to establish a sewerage tariff system that imposes the maximum possible fees on users and to develop realistic plans for individual house connections, it is necessary to correctly assess demand for sewerage services as well as residents' willingness and capability to pay sewerage charge.

#### (2) Lessons for the Project

To benefit from the above lesson, suitable sewerage tariff system will be introduced as part of this project based on data on residents' willingness and capability to pay sewerage charge which is surveyed under consulting service. In addition, preparation of necessary legal system and public relations activities for raising residents' awareness to promote house connection will be conducted as part of social development efforts.

### 7. Plans for Future Evaluation

#### (1) Indicators for Future Evaluation

- 1) Population Covered (thousand persons)
- 2) Percentage of Population Connected (%)
- 3) Capacity of Wastewater Treated (1,000 m<sup>3</sup>/day)
- 4) Rate of STP Facility Utilization (%)
- 5) Effluent BOD Concentration (mg/L)
- 6) Economic Internal Rate of Return (EIRR) (%)

(2) Timing

Two years after project completion