

Ex-ante Evaluation

1. Name of the Project

Country: India

Project: Hussain Sagar Lake and Catchment Area Improvement Project

(Loan Agreement: 03/31/2006; Loan Amount: 7,729 million yen; Borrower: The President of India)

2. Necessity and Relevance of JBIC's Assistance

In India, water usage is increasing together with the growth in population. Reliance on groundwater is lowering the groundwater level, leading to a serious imbalance in the supply and demand of water. As a result of the sudden population influx in urban areas and industrialization, the discharge of waste exceeds disposal capacity, and raw sewage is discharged into rivers in amounts that far exceed the self purification capacity. As a result, the public health and living environment of local residents are threatened by diarrhea and hepatitis, etc., that are caused by the polluted water.

The 10th 5-Year Plan (April 2002-March 2007) by the Government of India proposes to supply adequate and safe drinking water to the entire population, to clean up the major polluted rivers and to improve the river catchment area environment, and to immediately establish sanitary landfills. Based on this, in the National Water Policy (April 2002), Ministry of Water Resources aims to give priority to the allocation of water resources for drinking water, irrigation, and hydroelectric power, in that order. Ministry of Environment and Forests also has been working on cleaning up of rivers and lakes, starting with the River Ganga in 1985 and is in the process of construction of sewerage facilities under the National River Conservation Plan and the National Lake Conservation Plan. In the current Programme called as Common Minimum Programme as well, there is a commitment to expansion of public investment in this sector.

In JBIC's current Medium-Term Strategy for Overseas Economic Cooperation Operations, a priority sector in assistance to India is "Environmental Improvement." The assistance provided by this project is consistent with the strategy.

Hyderabad, with a population of approximately 6 million, is the state capital of Andhra Pradesh in southern India. It is rapidly developing as a center of international business (e.g., IT industry, etc.) and tourism. Hussain Sagar Lake, which was constructed in 1562, is located in the city center and is a symbol of the city. While domestic sewage and industrial wastewater have been rapidly increasing along with economic growth, sewage treatment facilities have been underdeveloped in the upstream area, which has a population of approximately 1.6 million. As a result, untreated wastewater is flowing into the lake, thus leading to eutrophication. Because there is concern over effects on the sanitary condition of residents living in the area surrounding the lake and in the upstream area of the lake, JBIC's assistance is highly necessary and highly relevant.

3. Project Objectives

The objective of this project is to improve water quality of the Hussain Sagar Lake and provide reliable recycled water supply and sewerage service in the catchment area and vicinity of the Lake by carrying out construction of sewerage treatment facilities and recycled water supply facilities, dredging of sediments and so on, thereby improving sanitary conditions of people including the poor in the catchment area and vicinity of the Lake.

4. Project Description

(1) Target Area

Hyderabad metropolitan area, State of Andhra Pradesh

(2) Project Outline

- (a) Sewerage facilities: Construction and upgradation of sewerage treatment plants (5 locations, 69,000 m³/day in total), capacity enhancement of interception and diversion works, and construction of sewer lines
- (b) Recycled water (treated wastewater) supply facilities: Construction of reservoirs, pumping stations, and pipelines
- (c) Lake environment improvement: Desilting/ dredging and disposal of sediments, shoreline improvement, surplus weir repair, drainage improvement, etc.
- (d) Slum development: Construction of solid waste management facilities, public toilets, and sewerage networks
- (e) Public awareness and community participation on environment and sanitation, capacity building
- (f) Consulting services

(3) Total Project Cost/Loan Amount

9,224 million yen (Yen Loan Amount: 7,729 million yen)

(4) Schedule

February 2006 – December 2012 (83 months)

(5) Implementation Structure

- (a) Borrower: The President of India
- (b) Executing Agency: Hyderabad Urban Development Authority (HUDA)
Furthermore, the Hyderabad Metro Water Supply and Sewerage Board (HMWSSB) will implement the sewer lines, diversion weirs and intercepting sewers, and recycled water supply facilities. Hyderabad Municipal Corporation will implement the repair of surplus weirs, riverbank improvement, and slum development. The remainder will be implemented by HUDA.
- (c) Operation and Maintenance System: Same as (b)

(6) Environmental and Social Consideration

- (a) Environmental Effects/Land Acquisition and Resident Relocation
 - (i) Category A
 - (ii) Reason for Categorization
This project is classified as Category A because it has the potential to exert significant negative impact, under the “Japan Bank for International Cooperation Guidelines for Confirmation of Environmental and Social Considerations” (established April 2002).
 - (iii) Environmental Permit
The EIA report is not required for the project in India’s relevant regulation, but an EIA report was completed in October 2005.

(iv) Anti-Pollution Measures

In the EIA report, it is noted that the level of arsenic contained in some of the sediments of lakebed exceeds India's standards, and so detailed analysis of content and elution test will be conducted prior to dredging the sludge. In the case of possible contamination of the soil or water, the sludge will be disposed properly in a controlled disposal site in accordance with India's regulations. Measures will be taken to reduce the odor by adequately removing liquid from the sludge at the sewerage treatment plants and by covering the sludge with soil.

(v) Natural Environment

The project site is not located in or around any sensitive areas such as nature preserves, and it is likely to have a minimal adverse impact on the natural environment.

(vi) Social Environment

The site for sewerage treatment plants will be the land owned by the executing agency, and it will not involve any land acquisition or involuntary resettlement.

(vii) Other/ Monitoring

The executing agency will monitor the quality of influent and effluent water of the sewerage treatment facilities, the quality of the groundwater at the sediments disposal site, and the noise, vibration, and air quality during construction.

(b) Promotion of Poverty Reduction

In the slum area located in the catchment area, toilets, lateral sewerage networks, and solid waste collection facilities will be installed to support improvement of the living environment of the urban poor.

(c) Promotion of Social Development (e.g. Gender Perspective)

Community participation will be promoted in lake and catchment area conservation activities, together with carrying out public awareness activities related to public health and environmental protection to raise the awareness of residents and related government agencies on public health.

(7) Other Important Issues

None

5. Outcome Targets

(1) Evaluation Indicators (Operation and Effect Indicator)

Indicator	Baseline (2005)	Target (2013, 3 years after completion)
Total population served by sewerage system in the catchment area (10,000 persons)	47.9	104.9
Amount of wastewater treated (m ³ /day)	20,000	69,000
Rate of facility utilization (%)	-	100
BOD concentration for each STP (effluent) (mg/l)	<8	<2 (repaired facilities, 20,000 m ³ /day) <5 (new facilities, 30,000 m ³ /day)

Improvement of lake water quality (BOD) (mg/l)	<=25	<=8
Amount of recycled water supply (m ³ /day)	-	15,000

(2) Economic Internal Rate of Return: 10.2%

(a) Cost: Project cost (excluding tax), operation and maintenance expense

(b) Benefit: Willingness to pay for incremental sewerage services and recycled water supply, and solid waste services as well as increase in tourists due to improvement in the lake environment.

(c) Project Life: 30 years

6. External Risk Factors

Economic stagnation/deterioration in India and the surrounding area of the project as well as natural disasters

7. Lessons Learned from Findings of Similar Projects Undertaken in the Past

In the ex-post evaluation of similar projects in the past, it has been learned that it is necessary to draw up an integrated environmental conservation plan for lake catchment area that includes not only the development of sewerage treatment facilities but also takes into account the effects of industrial wastewater and wastes, etc. This project will be implemented in accordance with Hyderabad's Master Plan which lasts until 2020. In addition, appropriate treatment and disposal of industrial wastewater and solid waste will be promoted through environmental awareness activities.

8. Plans for Future Evaluation

(1) Indicators for Future Evaluation

(a) Total population served by sewerage system in the catchment area (10,000 persons)

(b) Amount of wastewater treated (m³/day)

(c) Rate of facility utilization (%)

(d) BOD concentration for each STP (effluent) (mg/l)

(e) Percentage of population served (%)

(f) Improvement of lake water quality (BOD) (mg/l)

(g) Amount of recycled water supply (m³/day)

(h) Economic internal rate of return (EIRR) (%)

(2) Timing of Next Evaluation

After project completion