

Ex-Ante Evaluation

1. Name of the Project

Country: Federative Republic of Brazil

Project: Environmental Improvement Project in the Basin of Lake Billings

Loan Agreement: October 14, 2010

Loan Amount: 6,208 million yen

Borrower: Companhia de Saneamento Básico do Estado de São Paulo (SABESP)

2. Background and Necessity of the Project

(1) Current State and Issues of the Sewerage Sector in Brazil and in São Paulo

In Brazil, the water connection rate in urban areas has reached 90%, but the sewerage connection rate remains at 47%. Inadequate sewage treatment is adversely affecting the living environment in urban areas. Particularly in São Paulo, which is the country's most populous city, Lake Billings is a major source of water for the São Paulo metropolitan area; but with the household effluent of residents living in the basin flowing into the lake, this is causing severe water pollution. Consequently, developing a sewer system here as a measure for ensuring the water quality of source of water supply and dealing with sewage is a pressing issue. Although the sewerage connection rate in São Bernardo do Campo (SBC)—the area targeted by this project—is relatively high at 76%, the sewage treatment ratio is only 37%, and this situation needs to be urgently addressed.

(2) Sewerage Sector Policies in Brazil and São Paulo and the Priority of the Project

In addition to enacting the National Sanitation Law in January 2007, Brazil also announced the Program for the Acceleration of Growth (PAC). 40 billion real (approximately 2.36 trillion yen) over the four years of 2007-2010 has been planned as an investment in the sanitation sector. Development of a sewer system has clearly been placed as a priority measure.

In São Paulo, SABESP has formulated a long-term plan for water and sewer system development, and as part of this, it has established the basic policy of transporting the sewage in the northern part of Lake Billings to outside the basin and processing it at the existing ABC sewage treatment plant. There are also plans to invest 3,030 million real (approximately 178.9 billion yen) in the sewerage sector over the four years of 2007-2010, demonstrating that the project has been heralded as one of the key projects of the company.

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

JICA has continuously provided support which contributes to environmental improvement in Brazil. Most recent examples of water and sewer system development projects (ODA loans) include the completed Parana State Environmental Improvement Project (23,686 million yen), Northeast Water Resources Development Project (3,595 million yen) and Sanitation Improvement Project for Baixada Santista Metropolitan Region (21,320 million yen), the current Sanitation Improvement Project for Santa Catarina Coastal Region (14,426 million yen), and the planned Sanitation Improvement Project for Baixada Santista Metropolitan Region (II) (19,169 million yen, E/N signed in July 2010).

(4) Other Donors' Activity

Several financing projects have been conducted for the sewerage sector by international organizations, including 15 loan projects by the World Bank from 1978 to January 2010 (approved total of approx. 1,834 million dollars), and 12 loan projects by the Inter-American Development Bank (IDB) from 1971 to 2009 (approved total of approx. 2,251 million dollars).

With regard to São Paulo, the World Bank has provided SABESP with 280 million dollars for the Water and Sewer System Development Project (1989-1993) and 42 million dollars for the Environmental Improvement Project in the Basin of Reservatorio de Guarapiranga (1993-2000), and

the IDB has provided 450 million dollars and 200 million dollars for the Tiete River Decontamination, Stages I and II respectively.

(5) Necessity of the Project

Together with the nearby Reservatorio de Guarapiranga, Lake Billings supplies approximately 28.2% of all water consumed in the São Paulo metropolitan area. Its standing is such that it could be described as the “water jug” of the metropolitan area. Nevertheless, despite the increasing amount of sewage flowing into Lake Billings, the percentage of sewage treated is low, and water pollution has not been improved. The basin is also home to vast natural forests. There are state and municipal parks as well as areas designated as state sanctuaries. 13 rare species of fauna inhabit in these sanctuaries, including the harpy eagle (*Harpia harpyja*) and white-lipped peccary (*Tayassu pecari*: a mammal of the order Artiodactyla, similar to a wild boar), but there are concerns about the future impacts on these precious flora and fauna caused by polluted water, in particular pollution by phosphorus, nitrogen and heavy metals. In view of this situation, there is a great need to implement this project, which will help improve the environment of the basin.

3. Project Description

(1) Project Objective

By developing the SBC sewer system in the northern basin of Lake Billings, the Project aims to achieve the transfer of sewage outside the basin and to prevent the lake water from becoming polluted, thereby helping to improve the quality of the source of water supply in the São Paulo metropolitan area, to improve the living environment for residents living in the basin, and to preserve the surrounding natural environment.

(2) Project Site/Target Area

São Bernardo do Campo (SBC)

(3) Project Component(s)

The project includes the following civil work and consulting services in SBC:

- Installation of main sewer pipes and surface development in the northern basin of Lake Billings (137.2km), and construction of pump stations (3 locations)
- Construction of an environmental center (funded by SABESP capital)
- Consulting services (detailed design, tender assistance, construction supervision, etc.)

(4) Total Project Costs

12,357 million yen (Loan amount: 6,208 million yen)

(5) Schedule

The planned implementation schedule is from November 2009 to July 2016 (81 months in total). The project will be deemed complete at the conclusion of the consulting services.

(6) Project Implementation Structure

- 1) Borrower: Companhia de Saneamento Básico do Estado de São Paulo (SABESP)
- 2) Guarantor: Federative Republic of Brazil
- 3) Executing Agency: SABESP
- 4) Operation and Maintenance System: SABESP

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

- 1) Environmental and Social Consideration

- a. Category: B
- b. Reason for Categorization:
This project is not likely to have significant adverse impact on the environment due to the fact that the project sector and project characteristics are not likely to exert impact and the project is not located in a sensitive area under the “Japan Bank for International Cooperation Guidelines for Confirmation of Environmental and Social Considerations” (established in April 2002).
- c. Environmental Permit:
Preparation of an Environmental Impact Assessment (EIA) report is not required under Brazilian domestic law. Instead, the Secretaria do Meio Ambiente (SMA) will check the environmental impact and issue licenses at the preview, installation and operation stages.
- d. Anti-Pollution Measures:
No particular impact is expected from the treated water that is transported outside the region and discharged from the existing treatment plant, because the effluent will be treated to satisfy Brazil’s domestic effluent standard before it is discharged into rivers and lakes, and because it will be subject to supervision by the executing agency and the state government agency.
- e. Natural Environment:
The project site is not located in or around any sensitive areas, such as national parks, and so any adverse impact on the natural environment is assumed to be minimal.
- f. Social Environment:
The project involves the acquisition of about 800 m² of land for the establishment of pump stations. The land will be acquired in compliance with the Brazilian domestic laws and procedures. Also, a possibility has been indicated in the F/S that about 10 households may be relocated due to the acquisition of land for the project. Specific relocation numbers will be confirmed during the detailed design (D/D) stage, and SBC will implement housing development as a measure to address any resident relocation.
- g. Other/Monitoring:
During the Project, SABESP and the Companhia de Tecnologia de Saneamento Ambiental (CETESB, São Paulo’s sanitation and environmental technology corporation) will monitor the quality of water at the sewage treatment facility (the existing ABC treatment plant).

2) Promotion of Poverty Reduction

As a consideration for impoverished informal settlers in the area surrounding the lake, SBC will share the cost required relocation and resettlement, and water bill will be charged taking into account residential zones and incomes.

3) Promotion of Social Development (gender perspective, measures for infectious diseases including HIV/AIDS, participatory development, consideration for persons with disabilities, etc.)

In cooperation with SABESP and SBC, environmental education and enlightenment for local residents will be provided in order to raise the awareness of residents for environmental improvement.

(8) Collaboration with Other Donors

There are several financing projects for the sewerage sector which are funded by international organizations, including 15 loan projects by the World Bank from 1978 to January 2010 (approved total of approx. 1,834 million dollars), and 14 loan projects by the IDB from 1971 to 2009 (approved total of 2,251 million dollars).

(9) Other Important Issues

None in particular.

4. Targeted Outcomes

(1) Performance Indicators (Operation and Effect Indicator)

Indicator	Baseline (Actual Value in 2007)	Target (2019) [3 years after project completion]
Population connected to sewerage (persons)	113,635	163,400
Population served (persons)	0	147,060
Amount of wastewater treated (m ³ /day)	0	38,718
Sewage treatment ratio (%)	0	90
Number of connected houses (houses)	21,853	31,423
Ratio of connected houses (%)	46	60

(2) Internal Rate of Return

Based on the conditions below, the financial internal rate of return (FIRR) of the project will be 2.6%.
[FIRR]

- Cost: Project cost, operation & maintenance cost
- Benefit: Income from sewerage charges
- Project life: 25 years

5. External Factors and Risk Control

The area targeted by the project contains informal settlements. In addition to normalization of the residents in these informal settlements, the area is also in need of road maintenance, electricity, and water and sewer systems development. Since SBC will prioritize this kind of normalization and infrastructure improvement in the area targeted by the project, the progress of the aforementioned normalization process (resettlement plan) needs to be followed up by means of progress reports or the like.

6. Lessons Learned from Past Projects

Ex-post evaluations of similar projects undertaken in the past have shown that raising the awareness of local residents about the project leads to community spaces being made cleaner and more beautiful. In view of this, the plan in this project is to form an organization that brings together stakeholders pertaining to the entire river basin and to support community awareness-raising and environmental education.

7. Plan for Future Evaluation

(1) Indicators to be used

- 1) Population connected to sewerage (persons)
- 2) Population served (persons)
- 3) Amount of wastewater treated (m³/day)
- 4) Sewage treatment ratio (%)
- 5) Number of connected houses (houses)
- 6) Ratio of connected houses (%)
- 7) Internal rate of return (FIRR) (%)

(2) Timing

3 years after project completion (2 years after completion of the environmental center)

Construction of an environmental center funded by the borrower's own funds is planned for the purpose of raising the awareness of local residents about environmental preservation. Since the

environmental center has an exceedingly large role in manifesting the development effects of the project, the target year for evaluation will be set at 2019, that is, two years following completion of the environmental center, which is scheduled for January 2017.