Japanese ODA Loan

Ex-ante Evaluation

1. Name of the Project (Country)

Country: Federative Republic of Brazil
Project: Sanitation Improvement Project for Santa Catarina Coastal Region
Loan Agreement: March 31, 2010
Loan Amount: 14,426 million yen
Borrower: State Water Supply and Sanitation Company of Santa Catarina
(Companhia Catarinense de Águas e Saneamento)

2. Background and Necessity of the Project

(1) Current Status and Issues of the Sewerage Sector in Santa Catarina State

In Brazil, a water supply and sanitation company was established in each state under the National Sanitation Plan (PLANASA) which was launched in 1973, and development of water and sewer systems was started with the aim of achieving an 80% water connection rate and a 60% sewer connection rate. In Santa Catarina State, the State Water Supply and Sanitation Company (hereinafter called CASAN) has been developing water and sewer systems. As a result of prioritizing water supply system developments, the sewer connection rate remained at 28% in the state in 2008 which is a much lower level than the national average of 77%.

As Santa Catarina State had small and medium sized cities with relatively low-density populations in the past, individual septic tanks had traditionally been used to treat waste water rather than sewer pipes and treatment plants. However, with population migration from inland areas to the coastal region in recent years as well as an increase in tourists to coastal cities, individual treatment systems can no longer handle the volume required. The groundwater level is high in the coastal region and septic tank-treated water does not percolate into the ground fast enough. The insufficiently treated effluent leaches and discharges into rivers and the sea due to the effluent exceeding the treatment capacity of individual septic tanks. This led to concerns about water pollution problems, including the contamination of groundwater sources, outbreaks of diseases such as cholera and hepatitis, the contamination of the sea that may affect swimming, the contamination of farmed fish such as oysters and mussels, as well as impacts on ecosystems including impacts on mangrove forests and rare animal species. Therefore, there is a need for improvement of the waste water treatment systems.

(2) Development Policies for the Water and Sewerage Sector in Santa Catarina State and the Priority of the Project

Santa Catarina State is implementing the Catarinense Development Plan (PCD) SC 2015 which is a 10-year plan started in May 2006. The state is revising the system and is shifting the construction and the operation of facilities in the water and sewerage sector to CASAN. The CASAN, which provides services to 205 cities out of 293 cities in the state, has been implementing a sanitary environment program with a total

budget of 390 million dollars since 2005, towards the goal of achieving a 100% water connection rate and a 78% sewer connection rate.

The Project supports part of the sewer system development under CASAN's water and sewer system development plan.

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

The Project matches Japan's policy which sets five priority assistance fields including the environment, manufacturing industry, agriculture, health and social development based on the Brazilian government's multi-year plan (Plano Plurianual: PPA) and the results of the policy consultation with the Brazilian government conducted in July 2007. The Project also matches JICA's policy because JICA also defines the environment as one of the priority fields in JICA's cooperation in Brazil and the Project contributes to the improvement of the urban environment in the environment field.

JICA has continuously provided support which contributes to environmental improvement in Brazil. Recent examples of assistance for water and sewer system improvements include the Parana State Environmental Improvement Project (an ODA loan, with a 23,686 million yen maximum), the Sanitation Improvement Project for Baixada Santista Metropolitan Region (an ODA loan, with a 21,320 million yen maximum) and the Study on Integrated Plan of Environmental Improvement in the Catchment Area of Lake Billings in Sao Bernardo do Campo City (technical cooperation, 2005-2007).

(4) Other Donor's Activity

Several financing projects have been conducted for the water and sewerage sector in Brazil by international organizations, including 13 loan projects by the World Bank from 1978 to 2007 totaling approx. 1,788 million dollars (approved amount), and 10 loan projects by the Inter-American Development Bank (IDB) from 1971 to 2005 totaling 1,813 million dollars (approved amount). In the water and sewerage sector, international organizations have worked to increase the water connection rate in Brazil through water system developments for the supply of clean water.

With regard to Santa Catarina State, the World Bank provided a loan of 67.5 million dollars (1991) and the German Credit Institute for Reconstruction (KfW) provided a loan of 5.1 million euros (1996) to CASAN as assistance for basic sanitation improvements in cities (mainly water supply development). The Project does not overlap other assistance because it aims to support sewer system development.

(5) Necessity of the Project

The lack of sewer facilities in the Santa Catarina Coastal Region is affecting local industries such as tourism and the natural environment, in addition to the residents' sanitation environment. Therefore, the Project is highly necessary since it aims to improve sewer systems. The Project matches development policies and aid policies because the Brazilian government defines water and sewer system development as a high priority issue in its plan and the Japanese government and JICA also set support for the sewerage sector (which is part of urban environmental improvement efforts) as a

priority assistance field in their aid policies. The provision of support by JICA is, therefore, highly relevant.

3. Project Description

(1) Project Objectives

The Project aims to increase the sewer connection rate, thereby contributing to the improvement of sanitation and the living environment as well as preserving the natural environment of the region. The Project consists of waste water treatment plant construction and expansion which will be carried out in five municipalities situated in the coastal region of Santa Catarina State, the southern part of Brazil.

(2) Project Site/Target Area

Five cities situated in the Santa Catarina Coastal Region (1. Balneário Barra do Sul, 2. Piçarras, 3. Penha, 4. Bombinhas, 5. Florianópolis)

(3) Project Components (including the procurement methods)

1) Project Outline

The Project conducts the construction and expansion of sewer pipes in 10 districts, the construction of six new waste water treatment plants, the expansion of two existing waste water treatment plants, etc. in the region.

2) Description of Civil Engineering Work and Equipment to be Procured (figures in brackets indicate the part subject to the loan)

- Main sewer pipes: 30.8 km (22.2 km)
- Pipes which accompany ground surface improvements: 497.9 km (467.9 km)
- Pump stations: 68 stations (63 stations)
- Waste water treatment plants: 8 plants (7 plants)

(Note) In the municipality of Bombinhas, the Project only includes consulting services (detailed design, tender assistance, construction supervision) and the main construction is not covered by the loan.

3) TOR for Consulting Services

Detailed design, tender assistance, construction supervision, etc.

(4) Estimated Project Cost (Loan Amount)

20,267 million yen (Loan amount: 14,426 million yen)

(5) Schedule

The planned implementation schedule is from March 2010 to January 2016 (71 months

in total). The Project will be deemed complete when the facilities begin operating in January 2016.

(6) Project Implementation Structure

1) Borrower: State Water Supply and Sanitation Company of Santa Catarina (CASAN)
2) Guarantor: Federative Republic of Brazil
3) Executing Agency: CASAN
4) Operation and Maintenance System: A Project Management Unit (PMU) will be established under the Special Project Department and it will conduct general project supervision from the time of the loan agreement to project completion. A total of seven personnel including the unit chief, a technical manager, a financial manager and four staff members will be assigned from CASAN to the PMU, and they will be joined by consultants who will sign the contract for the Project.

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

1) Environmental and Social Consideration

a Category: B

b Reason for Categorization: The Project is categorized as B because it has been determined that its potential adverse environmental impact is not significant according to the JBIC Guidelines for Confirmation of Environmental and Social Considerations (established in April, 2002), in light of the characteristics of the sector, the Project and the area.

c Environmental Permit: Preparation of an Environmental Impact Assessment (EIA) report is not required under Brazilian domestic law. Instead, the Santa Catarina Environment Foundation (FATMA), which is a state government agency, will check the environmental impact and issue licenses at the preview, installation and operation stages.

d Anti-Pollution Measures: No particular impact from discharging treated water is expected because the waste water treatment plants will treat the effluent to the level of the domestic drainage standard before they discharge the water into rivers and the ocean.

e Natural Environment: Although the project sites in three districts of Florianópolis overlap nature conservation areas designated by the federal government or the state government, the environmental impact of the Project is expected to be small because the FATMA already conducted screening and issued a license for the preview stage.

f Social Environment: The Project will acquire approx. 21 hectares of land. The land will be acquired in accordance with the domestic procedures of Brazil. The Project involves no resident relocation.

g Other/Monitoring: In the Project, the department responsible for water

quality inspection at CASAN will monitor pH, SS, BOD, COD, DO, T-N, T-P and the number of *E. coli* every six months during the project implementation and when the facilities are in operation.

2) Promotion of Poverty Reduction: Favelas (slums) are included in the project sites. Through the streamlining of water supply systems, the Project will enable the stable supply of the minimum necessary amount of water for living in these areas and therefore contribute to an improvement in living conditions in impoverished areas.

3) Promotion of Social Development (e.g. Gender Perspective, Measure for Infectious Diseases including HIV/AIDS, Participatory Development, Considerations for Persons with Disabilities, etc.): None in particular

(8) Collaboration with Other Donors: None in particular

(9) Other Important Issues: None in particular

4. Targeted Outcomes

(1) Performance Indicators (Operation and Effect Indicator) (5 cities subject to the Project)

Indicator	Baseline (2008)	Target (2018) [Expected value 2 years after project completion]
Total population served (persons)	18,092	184,705
House connections (houses)	4,490	51,068
Percentage of population served (%)	7	65
Amount of treated wastewater (m^3/day)	8,674	48,698
Rate of facility utilization (%)	80	65
BOD concentration (mg/L) (Secondary treatment)	IN 282-331 OUT 28	IN 235-389 OUT 28-39

(2) Internal Rate of Return

Based on the conditions listed below, the Financial Internal Rate of Return (FIRR) of the Project will be 9.3%.

[FIRR]
• Cost: Project cost, operation & maintenance cost
• Benefit: Income from sewerage charges
• Project Life: 40 years

5. External Factors and Risk Control

Detailed guidance will be provided including dispatching experts using technical assistance loans and conducting ODA loan procedure seminars, training in Japan, etc. because the executing agency has not experienced implementing a Japanese ODA loan project.

6. Lessons Learned from Past Projects

Past experience has shown that the utilization of consulting services in establishing a project management unit (PMU) which will conduct the centralized management of multiple projects is effective when supervising projects which cover a wide area. Therefore, the utilization of consulting services will be included in the TOR.

7. Plan for Future Evaluation

(1) Indicators to be Used

1) Total population served (persons)
2) House connections (houses)
3) Percentage of population served (%)
4) Amount of treated wastewater (m^3/day)
5) Rate of facility utilization (%)
6) BOD concentration (mg/L) (Secondary treatment)
7) Internal Rate of Return (FIRR) (%)

(2) Timing

Two years after project completion