

Ex-ante Evaluation

1. Name of the Project

Country: The Republic of Costa Rica

Project: Metropolitan San Jose Environment Improvement Project

(Loan Agreement: March 31, 2006; Loan Amount: 15,001 million yen; Borrower: the Government of the Republic of Costa Rica)

2. Necessity and Relevance of JBIC's Assistance

In Costa Rica, the percentage of population connected to sewerage system is 21% on national average, while that access to water supply service is 89%. The percentage of wastewater treatment is only 4%, indicating that the sewerage system has been underdeveloped, compared with the water supply system. Costa Rica's backwardness in developing sewerage system is striking when compared with other Latin American countries, even in view of per capita Gross National Income (US\$4,670: 2004, World Bank). In San Jose metropolitan area, where 30% of the population of Costa Rica is concentrated (approx. 1.27 million inhabitants), although the development of sewerage system has started since 1920s, only 47% of the population is connected to sewerage system. In addition, most of the sewage pipe network has damaged due to aging, allowing wastewater to leak into rivers and waterways that flow through the metropolitan area. Moreover, wastewater collected in transmission mains is currently discharged into rivers without any treatment, causing serious environmental pollution and damage to human health. Costa Rica has a variety of natural resources, and in recent years the promotion of ecotourism has been drawing an increasing number of tourists primarily from the US and Europe. Since environmental pollution in the San Jose metropolitan area would damage Costa Rica's public image as a state founded on the principles of environmental protection, the development of sewerage system is an urgent issue.

Under national development policy (2002-2006), the development of water and sewerage systems is regarded as important to improve the living environment of the people, and this project is given high priority from the standpoint of preserving public image as an environmental-friendly country. This project is also consistent with JBIC's Medium-Term Strategy for Overseas Economic Cooperation Operations (fiscal 2005-2007), which is promoting "support for global issues and peace building" as one of the priorities, and is emphasizing support for environmental conservation projects in Latin America and the Caribbean to address disruption of ecosystems as well as air and water pollution.

Accordingly, the improvements to water quality in rivers in the San Jose metropolitan area are urgent and have high priority for the Costa Rican government, and there is a strong need and high relevance for the ODA loan assistance for this project.

3. Project Objectives

This project aims to improve worsening water quality of urban rivers and waterways by constructing a wastewater treatment plant and developing the sewerage network, and thereby contribute to improvements in living conditions and public health in the San Jose metropolitan area.

4. Project Description

(1) Target Area: Metropolitan Area of San Jose

(2) Project Outline

The executing agency, Costa Rican Institute of Water and Sewerage (Instituto Costarricense de Acueductos y Alcantarillados: hereinafter referred to as AyA), has aimed to achieve total compliance with wastewater quality standards (biochemical oxygen demand [BOD] and suspended solids [SS] for less than 50 mg/l) by 2025 with secondary treatment, and formulated an action plan, in which, as the first step, AyA set targets for 2015 with primary treatment (BOD not exceeding 150 mg/l and SS not exceeding 125 mg/l). This plan was approved by the Minister of Health in February 2005. This project corresponds to the above first stage and involves the procurement of materials and equipment and civil works required for the construction of a wastewater treatment plant (primary treatment) and the development of sewerage networks in the San Jose metropolitan area.

- (a) Construction of a wastewater treatment plant (primary treatment) (approx. 340,000 m³/day)
- (b) Rehabilitation/extension of main and branch line sewerage pipes (approx. 158 km)
- (c) Rehabilitation/extension of the sewerage network (approx. 331 km)
- (d) Construction of a transmission tunnel (approx. 2 km)

(3) Total Project Cost/Loan Amount

25,003 million yen (Yen Loan Amount: 15,001 million yen)

(4) Schedule

April 2006-July 2013 (88 months)

(5) Implementation Structure

- (a) Borrower: the Government of the Republic of Costa Rica
- (b) Executing Agency: AyA
- (c) Operation and Maintenance System: AyA

(6) Environmental and Social Considerations

(a) Environmental Impacts/Land Acquisition and Resident Relocation

(i) Category: B

(ii) Reason for Categorization

This project is classified as Category B because it is in a sector and/or doesn't have a characteristic that is likely to cause undesirable environmental impact, which is defined in the "Japan Bank for International Cooperation Guidelines for Confirmation of Environmental and Social Considerations" (established April 2002), as well as because it is not in a region that is likely to be affected by such undesirable environmental impact.

(iii) Environmental Permit

The EIA report was approved by the Environmental Agency of Costa Rica on March 3, 2005.

(iv) Anti-Pollution Measures

Wastewater collected in the sewerage system will be treated to meet the target values mentioned in the action plan approved by minister of health and discharged into the Tarcoles

River. No negative impact by the discharge of treated wastewater is expected in the project, according to the fact such as the report from a water quality simulation of the Tarcoles River conducted by the World Bank states that this will have no impact on the ecosystem.

(v) Natural Environment

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

(vi) Social Environment

Involuntary resettlement of seven households (squatters) will be necessary on one section of the development of transmission mains.

The ministry of housing and resettlement drew up a resettlement plan, held a discussion and confirmed their consent to resettlement.

Land acquisition for wastewater treatment plant (approx. 13ha) was completed. This project requires acquisition of a total 50 hectares for upgrading the sewerage network (30ha of which will need to be temporarily leased during the construction period); land acquisition is to be implemented in accordance with Costa Rican law.

(vii) Other/ Monitoring

AyA will monitor water quality of four rivers in urban area and the river into which treated wastewater is to be discharged. Land acquisition and involuntary resettlement will also be monitored.

(b) Promotion of Poverty Reduction

None

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

None

(7) Other Important Issues

None

5. Outcome Targets

(1) Evaluation Indicators (Operation and Effect Indicator)

Indicator	Baseline (2004)	Target (2015, 2 years after completion)
Population Treated	-	1.02 million
Amount of Wastewater Treated	-	270,000 m ³ /day
Rate of Facility Utilization	-	80%
BOD Concentration	250 mg/l (sewerage inflow)	150 mg/l (treated water)
SS Concentration	250 mg/l (sewerage inflow)	125 mg/l (treated water)
Percentage of Population Connected	45%	65%
Rivers' water quality (in the	BOD: 10-30 mg/l	BOD: not exceeding 10 mg/l

area where sewerage network is developed)*	SS: 10-100 mg/l Coliform group: 1×10^5 - 10^7 MPN**/100 ml	SS: not exceeding 25 mg/l Coliform group: 3×10^5 MPN**/100 ml
<p>* Assuming no deterioration due to other pollution sources</p> <p>** MPN: Most Probable Number (the number of coliforms estimated by a statistical method using water sample dilutions)</p>		
<p>(2) Internal Rate of Return</p> <ul style="list-style-type: none"> • Economic Internal Rate of Return (EIRR): 11.3% <ul style="list-style-type: none"> (a) Costs: project costs (excluding tax); operation and maintenance costs (b) Benefits: willingness to pay for sewerage connections and wastewater treatment (c) Project Life: 30 years • Financial Internal Rate of Return (FIRR): 7.8% <ul style="list-style-type: none"> (a) Costs: project costs; operation and maintenance costs (b) Benefits: increase in revenue due to this project (c) Project Life: 30 years 		
<p>6. External Risk Factors</p>		
<p>In the San Jose metropolitan area, AyA is responsible for waste pipes and the municipalities for drainage pipes. The collection of wastewater and rainwater in the same pipes is prohibited by Costa Rican law. However, given the fact that rainwater flows into sewerage pipes, there is a concern that a heavy influx of rainwater could result in the functional failure of the sewerage system.</p>		
<p>7. Lessons Learned from Findings of Similar Projects Undertaken in the Past</p>		
<p>Ex-post evaluation of similar projects in the past indicates the need for appropriate rate revisions in sewerage development projects. The rate is forecasted to increase by up to 250% for this project, which is within the level of users' willingness to pay. AyA is planning to raise the price incrementally in consideration of the social impact.</p>		
<p>8. Plans for Future Evaluation</p>		
<p>(1) Indicators for Future Evaluation</p> <ul style="list-style-type: none"> (a) Population Treated (b) Amount of Wastewater Treated (m³/day) (c) Rate of Facility Utilization (%) (d) BOD Concentration (mg/l); SS Concentration (mg/l) (e) Percentage of Population Connected (%) (f) Rivers' water quality (BOD, SS, coliform group) (in the area targeted for network upgrades) (g) Internal rates of return: EIRR (%), FIRR (%) <p>(2) Timing of Next Evaluation</p> <p>After project completion</p>		