

Ex-ante Evaluation

1. Name of the Project

Country: The People's Republic of China

Project: Sichuan Water Environmental Improvement Project

(Loan Agreement: March 30, 2007; Loan Amount: 6,300 million yen; Borrower: The Government of the People's Republic of China)

2. Necessity and Relevance of JBIC's Assistance

In China, the sewage treatment rate in urban areas has leveled off at 48% (2005), while in rural areas sewerage facilities themselves have not spread very much. Consequently, the water pollution of rivers and contamination of seawater as typified by the frequent outbreak of red tide, have become a serious problem. In the 11th Five-Year Plan (2006–2010), to tackle the problem of water pollution, the Government of China has set the goal of raising the sewage treatment rate to 70% in all principal cities across the country. To achieve this goal, it is important to develop sewage treatment facilities. The rate of water supply in urban areas reached 89% in 2004. However, since the clean water sources are concentrated in the southwestern part of China, other areas are frequently hit by water shortages. Also, there are many cities beset with the problem of having their water supplied from deteriorating sources. In its 11th Five-Year Plan for Environmental Protection (2006–2010), the Government of China designates river basins as prioritized conservation targets with the view to raising the water quality of the designated river basins to the required level through, among other things, prevention of contamination of the said rivers, which are also important sources of drinking water, and conversion of sources of clean water. Furthermore, the Government of China promotes the creation of water-saving cities by implementing administrative measures such as regulating the amount of groundwater that can be pumped up and introducing technologies for recycling treated sewage.

Sichuan Province (population: 85 million; land area: 480,000 km²) in southwest China is located in the upper stream of the Yangtze River, one of the country's seven largest rivers. In its cities, the construction of sewage treatment facilities is lagging in the face of increasing volumes of sewage generated as a result of economic development. Thus, household sewage and industrial wastewater have been discharged untreated into the upper stream of the Yangtze River, causing a deterioration of water quality. In some branch rivers, water quality during dry season falls under category V (highly polluted). Thus, improving the water environment in the Yangtze basin is a pressing issue. Although the Yangtze River today serves as a major source of drinking water in the province, because of the impact of the water pollution discussed above, there are cities whose existing water sources cannot be used for their water supply systems. Therefore, these cities have to develop new sources of water. To cope with these issues involving the water environment, the Sichuan Provincial Government has formulated the 11th Five-Year Plan for National Economic and Social Development in Sichuan Province (2006–2010) and regards the problem of environmental contamination and ecological vandalism in the upper stream of the Yangtze River as a priority issue that should be solved through the construction of sewage treatment plants and conversion of water resources and the like.

The project addresses environmental conservation, one of the priority areas designated in the Economic Cooperation Program for China prepared by the Government of Japan and the Medium-Term Strategy for Overseas Economic Cooperation Operations of JBIC (FY2005–FY2007).

Thus, JBIC's support for this project is highly necessary and relevant.

3. Project Objectives

The project aims to reduce the volume of water pollutants discharged into the upper stream of the Yangtze River that runs through five cities (Yibin, Suining, Mianyang, Panzhihua, and Ziyang) and to ensure stable supplies of safe drinking water by expanding and improving their water supply and sewerage systems. It will thereby help improve the living conditions of the populations.

4. Project Description

(1) Target Area

Five cities of Sichuan Province: Yibin, Suining, Mianyang, Panzhihua, and Ziyang

(2) Project Outline

The project involves the construction of sewerage and water supply facilities, procurement of materials and equipment, and implementation of a training program in the aforesaid target area.

- (a) Yibin: Sewerage facilities (sewage pipes and drains: 62 km, pumping stations: 6 locations)
- (b) Suining: Sewerage facilities (sewage pipes and drains: 27 km, sewage treatment plant: 60,000 t/day)
- (c) Mianyang: Sewerage facilities (sewage pipes and drains: 140 km, pumping stations: 14 locations)
- (d) Panzhihua: Sewerage facilities (sewage pipes and drains: 21 km, sewage treatment plant: 3,9000 t/day); water supply facilities (water supply pipes and drains: 9 km)
- (e) Ziyang: Sewerage facilities (sewage pipes and drains: 47 km)
- (f) Training: Manager training, training concerning sewage technology

(3) Total Project Cost/Loan Amount

10,709 million yen (Yen Loan Amount: 6,300 million yen)

(4) Schedule

May 2007–December 2012 (68 months). The definition of project completion is “when the project is finally completed and accepted.”

(5) Implementation Structure

- (a) Borrower: The Government of the People's Republic of China
- (b) Executing Agency: Sichuan Provincial People's Government
- (c) Operation and Maintenance System
 - Yibin: Yibin Qinyuan Water Affairs Co., Ltd.
 - Suining: Suining Luyuan Drainage Co., Ltd.
 - Mianyang: Mianyang Kenong Investment Co., Ltd.
 - Panzhihua: Panzhihua Urban Construction Investment Co., Ltd.
 - Ziyang: Ziyang Urgan Construction Investment Co., Ltd.

(6) Environmental and Social Consideration

- (a) Environmental Effects/Land Acquisition and Resident Relocation

(i) Category: B

(ii) 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). Thus, this project is classified as Category B.

(iii) Environmental Permit

The Environmental Impact Assessment (EIA) report related to the project will be approved by the Sichuan Environmental Protection Bureau in April, 2007.

(iv) Anti-Pollution Measures

Wastewater from sewerage facilities will be treated and released into the river in a state and manner that meets the wastewater standards established in China. Thus, no significant adverse impact is foreseen. Additionally, sludge generated in sewage treatment plants will be appropriately disposed of in reclaimed repository sites.

(v) Natural Environment

The project site is not located in or around sensitive areas, such as national parks, and so adverse impact on the natural environment is assumed to be minimal.

(vi) Social Environment

The project involves land acquisition of about 13 ha and the acquisition will be implemented in accordance with the domestic procedures of China. The project does not involve resident relocation.

(vii) Other/ Monitoring

In the project, the environmental protection bureau of each city where the project is implemented will monitor water quality and the like.

(b) Promotion of Poverty Reduction

To help the poor, each of five cities introduce lower fee for water supply and sewerage, and it will be applied to this project as well.

(c) Promotion of Social Development (e.g. Gender Perspective, Measures against Infectious Diseases Including AIDS, and Consideration of the Disabled)

None

(7) Other Important Issues: None

5. Outcome Targets

(1) Evaluation Indicators (Operation and Effect Indicator)

Project	Indicator	Baseline (2005 actual performance)	Target (2012, at project completion)
Sewerage facilities	Population treated (10,000 persons)	67	163
	Amount of wastewater treated (10,000 m ³ /day)	7.8	37
	Percentage of wastewater treatment (%)	20	70

	Effluent quality (BOD concentration: mg/L)	130–180	10–20
	Effluent quality (COD concentration: mg/L)	250–470	50–60
Water supply facilities	Percentage of population served (%)	95	98
	Population served (10,000 persons)	56	59
	Amount of water supply (10,000 m ³ /day)	14	15

(2) Number of Beneficiaries

There are approx. 1.16 million beneficiaries in the project.

(3) Internal Rate of Return (Financial Internal Rate of Return)

Based on the conditions given below, the financial internal rate of return (FIRR) is 4.1%.

- (a) Cost: Project cost, operation and maintenance expenses
- (b) Benefit: Income from fees
- (c) Project Life: 30 years

6. External Risk Factors

1. Delays in construction due to site changes caused by changes in road maintenance areas, development areas, etc. in urban planning
2. Impact on operation and maintenance due to shortages in financial funds or collection fees due to changes in the policies relating to the fee sharing principle

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

From the ex-post evaluation of ODA loans granted in the past, it has been learned that it is important (1) to set an appropriate fee schedule that takes into consideration operation and maintenance costs, investment costs, beneficial residents' ability to pay, and ability to assume financial burden, and (2) to establish technical standards for judging the maintenance frequency and the need for the replacement of facilities. Based on this lesson, efforts will be made in the project, through interim monitoring and supervision, etc., to ensure the establishment of an appropriate fee schedule and technical standards.

8. Plans for Future Evaluation

(1) Indicators for Future Evaluation

- Population treated (10,000 persons)
- Amount of wastewater treated (10,000 m³/day)
- Percentage of wastewater treatment (%)
- Effluent quality (BOD concentration: mg/L)
- Effluent quality (COD concentration: mg/L)
- Percentage of population served (%)
- Population served (10,000 persons)
- Amount of water supply (10,000m³/day)
- FIRR (%)

(2) Timing of Next Evaluation

After project completion