

Ex-ante Evaluation

1. Name of the Project

Country: People's Republic of China

Project: Yunnan Province Kunming City Water Environment Improvement Project (I)

(Loan Agreement: June 23, 2006; Loan Amount: 12,700 million yen; Borrower: The Government of the People's Republic of China)

2. Necessity and Relevance of JBIC's Assistance

Dianchi Lake (area 309 km², about half of Lake Biwa (670 km²)) is situated to the south of Kunming City, the capital of China's Yunnan Province (population 5 million, about 3.6 times of Shiga Prefecture (1.38 million)). It is a freshwater lake in the Yangtze River basin. Since the 1980s, economic development centering on urban areas in Kunming City brought increasing volumes of untreated sewage flowing into Dianchi Lake. By the 1990s, the water quality of Dianchi Lake had deteriorated to a level unsuitable even for agricultural use, and Dianchi Lake was designated a vital environmental protection area (Three Rivers and Three Lakes) in 1996.

In response to such situation, the State Environmental Protection Administration formulated the "10th State Environmental Protection Five-Year Plan," which designated Dianchi Lake water quality improvement as a national priority project. Sewage from the Kunming City urban center (population 2.81 million) is the largest source of water pollution in Dianchi Lake. Yunnan Province and the Kunming Municipal People's Government planned increased sewage treatment capacity to treat this sewage in the 10th Five-Year Plan for National Economic and Social Development (2001-2005). The Kunming Municipal People's Government carried out projects designed to increase sewage treatment capacity, such as sewage treatment plant construction and development of the sewage pipe network in the urban center. However, that area's current sewage treatment capacity (464,000m³/day) does not cover sewage output volume (688,000m³/day), and untreated sewage continues to flow into Dianchi Lake. By 2015, central urban area sewage output volume is forecast to increase to 900,000 tons/day due to urban area expansion and increased population. Restraining the flow of water pollutant into Dianchi Lake by increasing sewage treatment capacity in this area is an extremely important issue for the Chinese government, Yunnan Province, and Kunming City.

The Japanese government announced the Economic Cooperation Program for China in October 2001, and set out a policy placing more emphasis on areas such as conservation of environments and eco-systems, improvement of living standards and social development in the inland regions, human resources development, institution building, and technology transfer. Moreover, the reduction of water pollution/pollution control and the development of human resources are also established as priority areas in JBIC's Medium-Term Strategy for Overseas Economic Cooperation Operations. Thus, JBIC's assistance for this project is highly necessary and relevant.

3. Project Objectives

This project is to enhance the sewage treatment capacity in the Central Area of Kunming City and

decrease the pollution load to Dianchi Lake, by constructing sewage treatment systems, and thereby improve the living condition in the area.

4. Project Description

(1) Target Area

Kunming City, Yunnan Province

(2) Project Outline

Civil works, procurement of equipments, pertaining to sewage treatment facilities in the Kunming City urban center, and training program

- (a) Development of the sewage pipe network
- (b) Rehabilitation and expansion of the sewage treatment plants
- (c) Construction of new sewage treatment plants

(3) Total Project Cost/ Loan Amount:

52,981 million yen (Yen Loan Amount: 12,700 million yen)

(4) Schedule

July 2006-end of December 2012 (78 months)

(5) Implementation Structure

- (a) Borrower: The Government of the People's Republic of China
- (b) Executing Agency: Kunming Municipal People's Government
- (c) Operation and Maintenance System: Kunming Dianchi Lake Investment Company, Limited

(6) Environmental and Social Consideration

(a) Environmental Effects/Land Acquisition and Resident Relocation

(i) Category: B

(ii) Reason for Categorization

This project is classified as Category B according to the "Japan Bank for International Cooperation Guidelines for Confirmation of Environmental and Social Considerations" (established April 2002). This categorization is assigned because this project does not correspond to sectors or regions described in said guidelines as being sensitive to negative impact, and because it is not deemed to have a significant harmful impact on the environment.

(iii) Environmental Permits

The State Environmental Protection Administration approved the Environmental Impact Assessment(EIA) report for the project in August 2005.

(iv) Anti-Pollution Measures

Water leaving sewerage facilities will be treated to meet Chinese domestic water emissions standards before being discharged into the river, where it is not foreseen to have any particular impacts. Also, sludge created at sewage treatment plants is planned to be appropriately disposed of at existing landfill disposal sites.

(v) Natural Environment

The project target area and surrounding area does not correspond to an area sensitive to impact, such as a national park. Undesirable impacts on the natural environment are assumed to be minimal.

(vi) Social Environment

Steps will be taken according to Chinese domestic procedures to acquire a 35ha site for the project. There will be no relocation of residents.

(vii) Other/Monitoring

The Kunming City Environmental Protection Office will monitor water quality for the project.

(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, 3 years after completion of project)
Population served by sewage treatment (unit: 10,000 people)	197.0	315.2
Sewage treatment volume (unit: 10,000m ³ /day)	46.4	90.0
Percent of sewage treated (%)	68	99.8
Quality of water discharged (BOD) (mg/L)	5-14	< 10

(2) Financial Internal Rate of Return: 5.5%

(a) Costs: Project cost, operation and maintenance cost

(b) Benefits: Revenue from fees

(c) Project life: 30 years

6. External Risk Factors

(1) Current city planning may change planned areas for roads or other developments and construction site change, causing delays in civil works.

(2) Change in the policy of principle of fee burden could cause a shortage of fiscal funds or fees collected, affecting operation and maintenance.

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

From past ex-post evaluations of yen loan projects, the lesson has been learned that to ensure sustainability of project results, it is important to set an appropriate fee system, considering operation and maintenance costs, investment cost, ability of beneficiary residents to pay, and the capacity for fiscal burden. It is also important to formulate technical standards for operation and maintenance

frequency, and judgment for facility renewal. Thus, the project will confirm through interim supervision and other means that an appropriate fee system and technical standards will be established.

8. Plans for Future Evaluation

(1) Indicators for Future Evaluation

- (a) Population served (unit: 10,000 people)
- (b) Volume of sewage treated (unit: 10,000m³/day)
- (c) Percentage of sewage treated (%)
- (d) Quality of water discharged (BOD) (mg/L)
- (e) FIRR (%)

(2) Timing of Next Evaluation

After completion of project