Ex-ante Evaluation

1. Name of the Project

Country: People's Republic of China
Project: Inner Mongolia Autonomous Region Hohhot City Atmospheric Environment Improvement Project
(Loan Agreement: June 23, 2006; Loan Amount: 7,400 million yen; Borrower: The Government of the People's Republic of China)

2. Necessity and Relevance of JBIC's Assistance

Because about 68% of China's energy consumption was derived from coal as of 2004, air pollution has become a serious concern due to sulfur oxides (SOx), dust and soot. SOx is a primary causative factor in acid rain, and adversely affects ecosystems and people's health. Under such circumstances, during the period of The Tenth Five Year Plan (2001-2005), policymakers established a target of achieving a 10% reduction from 2000 in the output of the six main pollutants from 2000 levels. In addition, the plan prohibits the open-air burning of coal in city areas and promotes the provision of central heating systems.

Energy consumption in the Inner Mongolia Autonomous Region has risen dramatically in line with rapid economic growth. Because coal supplies about 94% of the region's energy, the area has become one of the most polluted cities in China. Hohhot, the capital of the autonomous region and the site of the present project, was ranked the 36th worst National Environmental Protection Key Air Pollution Cities, making improvement of the air environment an urgent matter. Hohhot and the eastern districts of the city, which are the project's target area, were using coal in winter for small-scale boilers for district heating. These facilities have low energy efficiency, and dust collectors and desulfurization units are not employed, so these end up being a major air pollution contributor. Furthermore, in line with the city's rapid development, air pollution is becoming more of a concern as large numbers of such small-scale boilers are newly installed, thus adding to the pollution from existing facilities. Under these circumstances, in the Tenth Five Year Plan in Inner Mongolia Autonomous Region, policymakers set air pollution reduction targets. In order to reach the above mentioned objectives, the Tenth Five Year Plan for Environmental Protection in Hohhot City promotes the expanded deployment of central heating systems, prohibits new installations of small-scale boilers, and encourages the removal of existing small-scale boilers.

The present project is in line with the Economic Cooperation Program for China set by the Japanese government, and also the Basic Strategy of Japan's ODA Loan, which focuses on environmental protection as a priority field. JBIC's assistance for this project is thus highly necessary and relevant.

3. Project Objectives

This project is to provide central heating facilities that have good energy efficiency and low levels of pollution in Hohhot City of the Inner Mongolia Autonomous Region, and thereby contribute to

mitigate the air pollution burden stemming from small-scale pollution emission sources and improve the living environment in the city.

4. Project Description

(1) Target Area

Hohhot City, Inner Mongolia Autonomous Region

(2) Project Outline

The outfitting of central heating systems and associated materials and machinery for the eastern districts of Hohhot City, together with training abroad for associated personnel.

(a) Central heating facilities: construction of heating facilities, laying of heating supply pipes, construction of heat exchange stations, and the construction of factories to divert ash composite for comprehensive use

(b) Training: Training provided in Japan pertaining to factories to divert ash composite for comprehensive use

(3) Total Project Cost/Loan Amount

13,700 million yen (Yen Loan Amount: 7,400 million yen)

(4) Schedule

July 2006-end-January 2011 (55 months)

(5) Implementation Structure

(a) Borrower: The Government of the People's Republic of China

(b) Executing Agency: Inner Mongolia Autonomous Region People's Government

(c) Operation and Maintenance System: Hohhot Municipal People's Government

(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 Permit

The Environmental Impact Assessment (EIA) for this project was approved by the Inner Mongolia Autonomous Region Environmental Protection Bureau in January 2006.

(iv) Anti-Pollution Measures

The level of air pollution at the time of installation is expected to meet Chinese domestic emissions standards and environmental standards by implementing policies that enforce dust

collection and desulfurization, and by providing 120-150m smokestacks. After recovery and treatment, cooling water will be reused, and it is not expected to have any major impact on water quality.

(v) Natural Environment

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

(vi) Social Environment

Because the land use rights for the land slated for this project have already been acquired, there is no need to acquire land or relocate residents.

(vii) Other/Monitoring

The Hohhot Environmental Protection Bureau will monitor air quality and water discharge for the present 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 Indicator (Operation and Effect Indicator)

Indicator	Baseline (2005)	Target (2012, 1 year after completion of project)
SO_2 emissions reduction volume (tons/year)	0	6,500
NOx emissions reduction volume (tons/year)	0	4,100
TSP emissions reduction volume (tons/year)	0	15,000

(2) Financial Internal Rate of Return (FIRR): 7.6%

(a) Cost: Project costs, operation and maintenance costs

(b) Benefit: Revenue from fees, subsidies

(c) Project Life: 30 years

6. External Risk Factors

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

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

(3) There is some risk of a change in prices for coal, the fuel used for central heating facilities.

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 maintenance frequency, such as of operation and maintenance, and evaluation of the necessity for facility renewal. Thus, bearing this in mind, JBIC requested the executing agency to establish a system that sets suitable fees and to determine requisite technical standards for the present project. The executing agency has already agreed to this.

8. Plans for Future Evaluation

(1) Indicators for Future Evaluation

(a) SO_2 emissions reduction volume(tons/year)

(b) NOx emissions reduction volume (tons/year)

(c) TSP emissions reduction volume (tons/year)

(d) FIRR (%)

(2) Timing of Next Evaluation

After completion of project