



China

## 22 Xi'an Water Supply Project (1) (2)

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This project's objective was to cope with the tight water demand and control over-pumping of groundwater by improving the water supply system and constructing a multi-purpose dam in Xi'an, thereby contribute to the improvement of sanitary level of residents and economic development of the region.

**Loan Amount/Disbursed Amount:** 7,139 million yen/7,138 million yen

**Loan Agreement:** August 1993/November 1995

**Terms and Conditions:** Interest rate, 2.6%(1)2.1%(2); Repayment period, 30 years (grace period, 10 years); General untied

**Final Disbursement Date:** September 1998/December 2002

**Executing Agency:** Ministry of Construction



**External Evaluator:** Mitsue Mishima (Overseas Project Management Consultants, Ltd.)

**Field Survey:** September 2004

### Evaluation Result

In this project, water supply facilities (water intake, treatment, and supply/distribution facilities) and the Heihe Dam were constructed almost as planned. The project period was much longer than planned. One of the reason is because soil at the dam site was more clayey than expected, and soil replacement was necessary. The project cost was also much higher than planned, reflecting price increases as a result of change in government policy.

The population served in the area covered by the project is about 2.5 million (2003), which is larger than the initially planned 2.2 million. Total water treatment capacity of the project is 1.1 million m<sup>3</sup>/day and the maximum water supply was 1.02 million m<sup>3</sup>/day (2004), representing a maximum facility utilization ratio of as high as approximately 93%. The volume of water supply from the Heihe water intake system in 2004 was 207 million m<sup>3</sup>/year, which was less than the water supply capacity of 305 million m<sup>3</sup>/year because the use of industrial water decreased compared to planned volume. However, as the water supply/distribution pipes extension project is now being implemented in order to expand the water supply area, further increase in water use is expected in the future. Also, as a result of the decrease in the use of groundwater, the maximum land subsidence has substantially

decreased from 80-100mm/year during the 1984-1995 period to 28mm/year in 2003.

In the beneficiary survey, 62 out of 106 household users indicated positive impacts of the project, such as "improvement of sanitation condition" and "saving of time to obtain water". In the survey for companies, hospitals, schools, etc., 6 out of 10 respondents indicated the project contributed to their business activities.

There is no problem with the technical capacity and the operation maintenance system of Xi'an Water Supply General Company and Xi'an Heihe Water Supply Co. Ltd., who carry out operations and maintenance, and their financial status is good.

### Third-Party Evaluator's Opinion

This project, which aims to supply safe water, has a positive socioeconomic impact on Xi'an. In order to improve the financial status of the executing agency, measures are being taken, including the raising of rates.

**Third-Party Evaluator:** Mr. Song Guojun (academia)

Obtained a doctoral degree in environmental economics from Renmin University of China. Presently holds the post of Professor of School of Environment and Natural Resources, Renmin University. Specializes in environmental economics.

#### Heihe Dam constructed under the project



The total water storage capacity of Heihe Dam is 204.29 million m<sup>3</sup> which is comparable to that of Kurobe Dam (199.28 million m<sup>3</sup>) in Toyama Prefecture. The power plant constructed under the project (maximum output: 20MW) generated 65,600MWh/year of electricity from June 2004 to May 2005, almost achieving the planned figure of 65,930MWh/year.

#### A beneficiary of the project



In the beneficiary survey for household users, in addition to "improvement of sanitation condition", positive impacts mentioned were "saving of time spent on housework by women" and "reduction in children's labor to obtain water".