

IDEAS Machinery Industry Study Report

No. 2

**A Survey of Wastewater Treatment Facility  
Installation in China:  
Opportunities for International Cooperation of  
Technology Transfer**

Shuhua Gu

Xiliang Zhang

Bingxiang Ren

Baoling Guo

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Japan External Trade Organization  
Institute of Developing Economies Advanced School (IDEAS)  
Chiba, Japan

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GU, Shuhua, Professor, Institute for Techno-Economic and Energy System Analysis, Tsinghua University, Beijing, China

ZHANG, Xiliang, Associate Professor, Iteesa and Deputy Director of International Technology Transfer Center, Tsinghua University, Beijing, China

REN, Bingxiang, Secretary General, Jiangsu Environmental Protection Industrial Association, Nanjing, Jiangsu, China

GUO, Baoling, Secretary General, China Association of Machinery Industry for Environmental Protection, Beijing, China

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# Part I. Overview of China's Wastewater Treatment Facility

## Industry and Its Potential Market

### 1. China's Industry Wastewater Discharge and Control

According to *Ten Years of Environmental Protection in China*, a material published by former Ministry of Urban and Rural Construction and Environmental Protection, in 1982, discharged volume of wastewater in the whole country was 31 billion tons, and the treatment rate of industrial effluents was 17%. However, in 1989 these two figures became to be 25.21 billion tons and 57.1%, respectively. Table 1 shows the wastewater discharge and treatment by industrial enterprises and at and above county level.

**Table 1 Wastewater Discharge and Treatment by Industrial Enterprises at and above County Level**

Item	1991	1993	1995	1997	1999	2000
Total Volume of Industrial Wastewater discharged (10,000 tons)	2358687	2194919	2218943	1883296	1607678	1530558
Volume of Wastewater up to the Discharge Standards (10,000 tons)	1182722	1204858	1228680	1164623	1158703	1257294
Up-to-Standard Rate of Industrial Wastewater Discharge (%)	50.1	54.9	55.4	61.8	72.1	82.1
Volume of Wastewater Treated (10,000 tons)	1559112	1793426	2156615	2510913	2778021	3137881
Percentage of Industrial Wastewater Treated (%)	63.5	72.0	76.8	84.7	91.1	95.0
Volume of Treated Industrial Wastewater up to the Discharge standards (10,000 tons)	423310	450326	481428	536311	719927	914610

Data Source: 1. National Bureau of Statistics, 1999, *China Environmental Statistics 1998*, China Statistics Press  
 2. National Bureau of Statistics, 2001, *China Statistics Yearbook 2001*, China Statistics Press

## **2. Industrial Wastewater Treatment Equipments in China**

Now there are about 2,000 enterprises engaged in water treatment facilities and equipment production in China. Also there are a number of universities and institutions making a contribution to the transformation from wastewater treatment technologies and equipments to pollution control ability. They cooperate with enterprises, jointly taking on some service missions, such as technology research, product development and engineering design. Up to 2000, the number of wastewater treatment facilities in the whole country has reached 64,453 sets, which are 22,604 sets more than that of 1991 and 19,592 sets more than that of 1996 respectively. According to industrial statistics, in 2000 there are 65,848 sets of wastewater treatment facilities scattered in different industries, among which 9,343 sets are in chemical industry, or 14.2% of the total; 5,629 sets are in paper industry, or 8.5% of the total; 6,713 sets are in food industry, or 10.2% of the total; and 838 sets are in leather industry, or 1.3% of the total. Almost all these facilities were locally produced, since domestic enterprises have owned the ability of equipment and Engineering complete set production. For some special requests that cannot be locally satisfied, corresponding foreign technologies were imported. The importation not only met the demands, but also promoted the progress of wastewater treatment technologies and equipments in China.

In 2000, the production value of water treatment technologies and equipments in China was about 10 billion Yuan, increasing by 140% compared with that of 1995. Among the newly increased equipments, those for wastewater treatment in chemical industry and light industry are the main parts. After years of development, production of wastewater treatment equipments has formed its own scheme, in which unit equipments occupied 2/3 and combined equipments occupied another 1/3.

Key demand fields for wastewater equipments in China include:

- Key projects on water pollution control at national and local levels
- Environmental protection facilities construction in basic facilities construction
- Wastewater control in chemical, paper, ferment, textile, pharmacy, iron& steel, electricity, and mining industries
- Ecological construction and comprehensive pollution control in cities and towns
- Technology retrofitting in conventional industries and old industrial bases
- Market generated by Western Development Program
- Clean production and integrated resource utilization
- Emergency treatment on major water pollution accident
- Improving the living conditions and environment of citizens
- Foreign market

## **3. Forecasts on Future Market**

According to some authorities from SETC and SEPA, total investment in environmental protection in China for the next five years will hit more than 700 billion Yuan, or 1.3% of the GDP in the corresponding period, in order to obtain the environmental protection goal in the 10<sup>th</sup> Five-Year Plan. It is estimated that production value of environmental protection equipments and environmental monitoring apparatuses will be 200 billion Yuan, among which the demand for wastewater treatment facilities and equipments from industry and city will value to approximately 90 million Yuan.

Recently, Chinese government issued *Development plan of environmental protection industry in the 10<sup>th</sup> Five-Year Plan period*, in which the objective of environmental protection industry development was described. That is, in 2005, total production value of environmental protection industry in China will hit 200 billion Yuan, among which production value of environmental protection facilities and equipments will

be 55 billion or 27.5% of the total; production value of comprehensive resource utilization will be 95 billion Yuan or 47.5% of the total, and production value of environmental services will be 50 billion Yuan or 25% of the total. The annual growth rate of China's environmental protection industry will be obtained at 15% during the 10<sup>th</sup> Five-Year Plan period.

It is estimated that the production value of wastewater control and treatment facility and equipment branch will be reaching 25 billion Yuan, or 40% of the total production value of China's environmental protection industry, and enterprises in chemical and light industry are the main users. According to forecasting, major drivers to the market of wastewater treatment facility and equipment could be but not restricted to the following facts:

- National Western Development Program
- The Project of Introducing Water for the South to the North, especially the east route subprojects
- Environmental Pollution Control Projects Related to the Beijing Olympic Games
- Water Pollution Control Projects in the 14 Coastal City around the Bohai Bay
- State Technology Retrofitting Project
- New Business Chances in Environmental Protection Market brought by China's entry into WTO

According to the demand in domestic market and need for technology adjustment, foreign advanced technologies will be further introduced in the 10<sup>th</sup> Five-Year Plan period, including membrane technology, wet oxidation technology, high concentration industrial wastewater advanced treatment technology, biological membrane technology, anaerobic technology, bio-gas technology, grey water treatment technology and recycled water quality stabilization technologies. Design and manufacturing technologies, key equipments and technologies, as well as related software are the emphasis of the importation.

It is estimated that the exportation of industrial wastewater treatment equipments will increase. In this field, cooperation between local and foreign enterprises will become more and more familiar.