



China: Water Pollution Control Market in China

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Summary

Severe water shortages and pollution increasingly challenge much of China. The Chinese government has undertaken numerous steps to address the water issue. Improving water quality, upgrading wastewater treatment capacity and building a water-conservation society are high on agenda in the country's 11th five-year plan (2006-2010). Along with these government policies come both huge opportunities and fierce competition. Facing formidable domestic and third country competitions, the U.S. firms should carefully choose its market entry strategy and gauge the market situation. Alliance with a Chinese partner is highly recommended unless the company has strong and abundant resources to focus on this large market.

Market Demand

At present, many regions in China are encountering a severe water shortage, due to both a large population and water pollution created by rapid economic development with minimal regard for environmental impacts. In recent years, China has seen a significant improvement in its water and wastewater infrastructure, but there is still an annual water shortage of 30 - 40 billion cubic meters. Among the 669 cities in China, nearly 400 cities suffer from inadequate water supply, among which 110 cities including Beijing, Shanghai and Dalian, suffer from severe water shortage. In the wastewater treatment sector, the official municipal wastewater treatment rate was only 45.7% at the end of 2005. According to a report released by Chinese Ministry of Construction, as of June 2005, there are still 297 cities in China which do not have any wastewater treatment facilities.

In addition, water bodies also suffer terrible pollution especially Huai, Hai, Liao Rivers, Tai lake, Chao Lake, and Dian Chi lake. Ground water is over-tapped. The entire country is facing formidable water challenges. (Please see the below **Waste water discharge and pollutant discharge in recent years** for a rough outline of pollution situation in China in recent years)

Waste water discharge and pollutant discharge in recent years

Item	Waste water discharge (100million tons)			COD Discharge (10,000 tons)			Ammonia Discharge (10,000 tons)		
	Total	Industrial	Municipal	Total	Industrial	Municipal	Total	Industrial	Municipal
2001	432.9	202.6	230.3	1404.8	607.5	797.3	125.2	41.3	83.9
2002	439.5	207.2	232.3	1366.9	584	782.9	128.8	42.1	86.7
2003	460	212.4	247.6	1333.6	511.9	821.7	129.7	40.4	89.3
2004	482.4	221.1	261.3	1339.2	509.7	829.5	133	42.2	90.8
2005	524.5	243.1	281.4	1414.2	554.8	859.4	149.8	52.5	97.3

(Source: State Environmental Protection Administration)

In view of this situation, the Chinese government is vigorously taking measures. At the beginning year of the 11th five-year plan (2006-2010), China set an ambitious goal which requires major pollutants such as

Chemical Oxygen Demand (COD) discharge be decreased by 10% by the end of 2010. Water issue is among the top priorities of the nation's environmental protection of the five years. It is estimated that in the coming five years, China will invest 175 billion USD in environmental protection, accounting for 1.3-1.4% of GDP.

In April 2005, the Chinese government issued the National Water-saving Technology and Policy Guideline which is aimed at promoting development and application of water-saving technology, and improving water usage rate to achieve sustainable unitization of water resources. Chinese Government has formerly launched a campaign for building a "Water Conservation Society".

Market Data

Water pollution control market

Unit: (Million USD)

	2002	2003	2004	2005
Total Market Size	14,085	16,840	19,377	22,313
Total Local Production	10,224	11,800	13,565	15,600
Total Exports	360	523	585	643
Total Imports	4,221	5,563	6,397	7,356
Imports from the U.S.	422	556	639	735

Note:

* All figures in the above table represent unofficial estimates. No official statistics are available.

* The market size represents all aspects of water pollution control including equipment, product and service and all sub-sectors of the water industry including water, wastewater treatment, reuse and recycling.

* China's environmental protection industry is growing at 15% per year.

Best prospects

1) Municipal Wastewater Treatment

- The standardization of water and wastewater treatment equipment
- Biological denitrification and phosphorus removal technology with high efficiency and energy saving technology
- Manufacturing technology of anaerobic biological reactor such as UASB reactor, anaerobic filter, anaerobic attached-film expanded bed, anaerobic fluidized bed reactor
- Immobilized microbe technology
- Membrane manufacture technology
- Low speed and variable speed multi-pole centrifugal blower
- Sludge treatment and disposal equipment
- Packaged thickening, dewater belt press
- Horizontal screw centrifugal dewatering
- Methane electric generator
- Automatic control equipment for water treatment

2) Industry Wastewater Treatment

- High concentration organic wastewater treatment technology and equipment

- Membrane separation technologies, such as Reverse osmosis, Ultrafiltration, Microfiltration and Ion exchange
 - Wastewater deepen treatment and reuse technology and equipment in each industry sectors such as surface treatment, mining, colliery, paper and pulp, metallurgy, petroleum exploitation, electronic sector, mechanical sector and chemical sector
 - High efficiency ozone generator and ClO₂ generator
 - High efficiency Ultraviolet disinfection device
- 3) Water Conservation
- Water saving technologies and equipments in power and energy sector, textile sector, petroleum and chemistry sector and metallurgy
 - Miscellaneous water saving devices or apparatus
 - Sea water and brackish water usage and desalting technologies and equipments
 - High efficiency air cooling technology and waterless production technology
- 4) Natural Water Body
- Organic pollution and eutrophication natural water body pollution control and rehabilitation technology
 - Natural water body substrate sludge disposal technology
 - Algae control technology
 - Artificial water scenery water quality maintenance
- 5) Monitoring Instruments
- Pollution source on-line monitoring instrument
 - Portable monitoring instrument
 - Intelligent auto-sampling, data collection and treatment and remote control system with high reliability and precision
 - City water monitoring network
- 6) Water Treatment Agents
- Water treatment biological and enzyme agents
 - High efficiency flocculation and coagulation agent
 - Pollution-less bactericide
- 7) Services
- The integrated engineering project service including financing, design, equipment supply, construction and installation and operation
 - Professional water treatment facilities operation and maintenance
Water market information service

Key suppliers:

Domestic suppliers:

Domestic companies are very strong competitors in this sector. As the Chinese government has been greatly encouraging learning from advanced foreign technology for the sake of boosting the domestic industry, Chinese companies have been developing very fast since late 1990s. Localization is an inevitable tendency. Domestic products, equipment and service providers are now main force in this market. Well-established names in this market include Beijing Capital, Golden State, Jian Gong Golden Sources, Sound Group, Tsinghua Unisplendour, Tsinghua Tong Fang, Anhui Guo Zhen Environment Protection, Shenzhen Water Group and China Environmental Protection Group.

Third country suppliers and U.S. position:

European companies including those from France, UK and Germany are strong competitors that U.S. companies will face in this water market. Strengthening the position of these European competitors are their bilateral aid programs. While these industrialized countries support their national environmental enterprises in China through provisions of tied aid, the lack of such a program for the U.S. companies normally disadvantages U.S. services providers in favor of those bringing bilateral aid packages with them. Well-established European companies in the market include Veolia, Ondeo, Degremont Suez, Thames water, and Berlin Wasser.

Optimistically, U.S. products and technologies are generally respected in China as high-quality and durable. And the U.S. Trade Development Agency, which provides grants (though not large in amount) to fund feasibility studies, and technical assistance to projects of Chinese top priority areas, also provides opportunities for U.S. environmental service providers. Active U.S. players in the market include such companies as Ch2Mhill, ERM, Black & Veatch, CDM International, Earth Tech, Ecology and Environment, MWH, GE, McWong, Tetra Tech and URS Corporation.

Prospective buyers

Municipal End-Users:

Local governments and state-owned enterprises can be the main end user of municipal water and wastewater treatment technologies, products, and services. Actively responding to the 11th five-year plan goal set by the government, local governments are trying to improve wastewater treatment capacity by building more or upgrading wastewater treatment plants.

Industrial End-Users

1) State-Owned Enterprises/Government Owned Corporations

Based on the requirement of the Chinese government that polluters pay for pollution treatment, companies, especially those large heavy polluters in the paper-making, printing, steel and petrochemical industry, should have their own wastewater treatment plants. These companies are major wastewater treatment technology, equipment and service users. Most state-owned enterprises are large or mid-sized and generally take the relevant environmental regulations seriously. Some enterprises in good financial standing are willing to invest in wastewater treatment facilities, and take every effort to keep the facilities in good condition. These enterprises are generally the main consumers of industrial water and wastewater treatment technology and equipment. In addition, they are also users of water treatment technology and equipment for the sake of product quality and safety.

Moreover, many large state-owned companies are also users of water conservation technology responding to the ever-increasing water tariff and the “building a water conservation society” campaign advocated by the Chinese Government.

2) Private Enterprises

Private enterprises also take water supply seriously when considering product quality and company profits. Many private enterprises now have good sales performance, and therefore have some financial ability to upgrade the production process to clean and conserve water. These companies will demand all kinds of water saving technology and equipment and represent potential end-users of new industrial water treatment equipment.

Similar to state-owned enterprises, private firms are required to construct wastewater treatment facilities, however private firms are often intent on ignoring applicable environmental regulatory standards. Also, many private firms are small-sized operations with insufficient capital to construct adequate wastewater treatment facilities. These companies are scattered across China and often represent the heaviest polluters in some regions.

Market Issues & Obstacles

In the field of environmental protection investment and financing market, the Chinese Government has generally opened the water supply and wastewater treatment infrastructure market to international competition since its WTO accession.

However, the water supply and wastewater collection piping system remains a restricted investment sector. It is mandatory that a Chinese company must hold the joint-stock company that conducts construction and operation of the water supply and wastewater collection piping network.

For foreign companies which want to do EPC or design for environmental projects in China, a Chinese partner is usually needed, as Ministry of Construction regulations have effectively blocked foreign EPC firms from the market. The lack of this license limits foreign companies to go no further than conceptual design, while detailed design has to be done by a Chinese holder of the license. Industry insiders reveal that China may lift this restriction and begin to issue this license to foreign firms, but there is no confirmed information about the specific time frame.

Market Entry

Water and Wastewater Treatment Technology and Equipment Sales

- 1) Technology and Equipment Export: This is the most readily acceptable and accessible investment strategy for foreign companies to undertake. There is a low long-term risk in the export of technology and equipment. Most export opportunities result from the international bidding of multilateral bank funded projects or appointed purchasers of bilateral loan projects.
- 2) Local Agents/distributor: This is highly recommended as first step into the market. Beijing, Shanghai and Guangzhou could be chosen as basic entry points given their geographic position and significant roles in China's economic development.
- 3) Representative Office: Representative offices are the easiest type of offices for foreign firms to set up in China but these offices can only perform limited tasks such as "liaison" activities according to Chinese law and cannot sign sales contracts or directly bill customers or supply parts and after-sales services for a fee. Establishing a representative office gives a company increased control over their sales and permits greater utilization of its specialized technical expertise.
- 4) Establishing a Chinese Subsidiary: A locally incorporated equity or cooperative joint venture with one or more Chinese partners, or a wholly foreign-owned enterprise, may be the next step in developing markets for a company's products. Local production can avoid import restrictions including tariffs and provides U.S. firms with greater control over both intellectual property and marketing.

Environmental Service in Water Sector

Alliance with a domestic partner is a good option for providing water and wastewater treatment engineering design, construction and operation services in China. Foreign companies gain access to a

lower price labor source and the license for performing design, construction and operation can also be easily obtained. At present, this kind of license is not awarded directly to wholly foreign-owned companies. Cooperation with local institutes or engineering companies is a good way to enter this market and will also facilitate business development in local areas.

Other entry modes involved with investment

1) Build-Operate-Transfer Mode (BOT Mode)

At present, BOT is the most popular investment method in China's water and wastewater treatment market. Through the BOT investment mode, the Chinese Government is intending to absorb foreign capital and advanced technology and equipment into the construction of new wastewater plants and the reconstruction of old water and wastewater treatment facilities. The most significant issue for BOT project negotiations is investment return. Previously, a fixed payback was promised by the Government, which could ensure a stable and relatively high payback, however, with the increasing maturity of the financial market, the government can no longer agree to fixed paybacks. Flexible negotiation strategies will be required in the future to secure BOT projects. Therefore, the biggest risk may come from the Government's intervention and policy decisions. At present, the Government has not enacted any special BOT regulations or policies. Therefore the Government's commitment will be the main factor in weighing the total investment risk. Under this situation, private investors are recommended to pay close attention to the contract conditions including water pricing in BOT negotiations.

2) Joint Venture

Establishing joint ventures is very common in China's water market. Foreign investors acting alone are not permitted to hold complete control of municipal water and wastewater treatment plants. Under most situations, it is required that a Chinese partner controls the operation and facilities and therefore, joint ventures offer a suitable option for public water infrastructures. Local water companies are normally good partners, because they usually have good relationships with local administrative authorities, such as the EPB, and they are familiar with the Chinese market.

Trade Events

The 10th China International Environmental Protection Exhibition and Conference CIEPEC 2007 -(U.S. Foreign Commercial Service Beijing will set up a U.S. pavilion)

Date: June 21-24, 2007

Venue: China International Convention Center, Beijing

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Web: www.chinaenvironment.org

Water, Wastewater & Water Treatment China 2007

(U.S. Foreign Commercial Service Guangzhou will set up a U.S. pavilion)

Date: March 7-10, 2007

Venue: China Export Commodities Fair Pazhou Complex, Guangzhou

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The 2nd China International Water Expo

Date: Oct 24-26, 2006
Venue: Shenzhen Convention & Exhibition Center
Fuhua San Lu, Fu Tian District, Shenzhen, China
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The U.S. Commercial Service in Beijing/China can be contacted via e-mail at: yi.wang@mail.doc.gov; Phone: 86-10-85296655 x 837; Fax: 86-10-85296559 or visit our website: www.buyusa.gov/your_office.

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