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Environmental in the People's Republic of China

Environmental issues have been impacting China's economic development concerning how to maintain a sustainable and friendly environment. China's government has decided to greatly develop its environmental service industry in terms of the newly issued 11th Five-Year Plan; this opens tremendous opportunities in this field for PA environmental service providers. However, competition is also becoming increasingly fierce as more domestic companies and third-party countries entering this industry sector.

The Pennsylvania Beijing office covers all of China in this industry sector, except Taiwan.

Overview of the Market

China's environmental service sector was started in the 1970s, and recorded a high growth rate of approximately 25% annually from 1994-2005 due to the Government's increasing attention toward how to maintain the stable growth of China's economy and great efforts made to clean up the polluted environment.

Despite the high growth rate, however, China's environmental service industry is still at a comparatively low level with a weak foundation, inadequate innovation, as well as low marketization. Incomplete structure is yet another feature of the industry with environmental consulting, trade and financial services still at a preliminary stage. In comparison to the proportion of international environmental services sector to the whole environmental industry, which is about 50%, China's figure is only around 10%. Most recent statistics show that in 2004, revenue of the Chinese environmental services sector was roughly \$6 billion, accounting for only 1.5% of the world environmental service revenue.

China is facing severe environmental problems stemming from its overuse of natural resources, dense population, rapid industrial growth, heavy reliance on soft coal, outdated technology, under-priced water and energy, and insufficient infrastructure. According to the World Bank, China had 20 of the world's 30 most polluted cities in 2004. However, the central government of China has been making the environment issue more and more of a priority. As part of the 11th Five-Year Plan, the government believes an estimated US \$175 billion will be spent on environmental protection, which will focus on regional development.

With the escalation of both environmental problems and environmental solutions, there is a desperate need for environmental services, especially from companies who provide innovative solutions, high-quality and price-competitive services.

While there are already a great number of strong domestic suppliers in the traditional area of environmental service industry such as engineering design, there are still great opportunities in this area for PA service suppliers in many profitable projects with high technology content. Other areas such as general consulting service, Environmental Impact Assessment, environmental training and pollution treatment facility operation can also be targets of PA firms.

However, another fact that cannot be ignored is that with market expansion, and increasing competition both at home and from abroad, profit margins of the environmental service sector in China will narrow. This is also due to comparatively low pricing for environmental service industry in China. Statistics show that the profit level of environmental service industry is on the decline annually, at about 2 percentage points lower than the average profit level of the entire environmental industry. PA firms should notice this point and make adaptable strategies accordingly as China remains a very price-sensitive market.

Market Demand

According to the newly inaugurated 11th Five-Year (2006-2010) Plan of China, which was unveiled early this year in Beijing, enhancing environmental protection is one of the government's top priorities. Apart from estimated spending of \$175 billion during the coming five years, China is planning to reduce (based on 2005 figure) the main pollutants by 10%, and energy consumption per unit of GDP by 20% before 2010. Also, the government is actively promoting development of renewable energies and hopes the proportion of renewable energies to the entire energy consumption can reach 10% by 2010.

Driven by this plan, the environmental service industry will definitely see a tremendous growth in the next five years and should present huge opportunities for both domestic and foreign firms. It is estimated that the annual revenue of the Chinese environmental service industry will reach 110 billion RMB by 2010, with an annual growth rate of 15%-17%. China will also invest around 20 billion RMB to build up its environmental service capacity.

In the 11th Five-Year period, environmental service may revolve around the following key development areas:

Water environment:

- Protection of water quality of water sources including the Yellow River, Songhua River, Huai River, Hai River, Liao River, Tai Lake, Chao Lake, Dian Chi, Three Gorges area
- Municipal wastewater treatment and reclamation facility building projects
- Improve treatment of industrial wastewater

Atmospheric environment:

- Coal-fired power plant desulphurization to reduce SO₂ by 10%
- Improving air quality in 113 key cities

Solid waste:

- Hazardous waste and medical waste facility buildings for 31 provincial hazardous waste treatment centers and 300 medical waste centers
- Solid waste downsizing and comprehensive utilization
- Non-harmful treatment and recycling of municipal solid waste

Ecological environment:

- Resources and species protection
- Protection of rural environments and soil pollution control
- Enhanced protection of key ecological function zones and natural reserves

Nuclear and radiation environment safety:

- Improve prevention and control of radiation pollution
- Perfect management of radiation sources

Environmental service capacity buildup:

- On-line monitoring projects
- Pollution-source monitoring system buildup

Market trends in some key regions are as follows:

Beijing area:

Beijing's effort to clean up the environment is mainly focused on the 2008 Olympic Games. To achieve a "Green Olympic Games" the government will spend at least \$5.4 billion on environmental cleanup to host the 2008 games, which includes plans to improve air quality, water environment, wastewater treatment, solid waste cleanup, recycling and noise control.

Shanghai area:

In east China, Shanghai is at the forefront of environmentally friendly initiatives. Many efforts are centered on the World Expo to be held in Shanghai in 2010. The bureau of Shanghai World Expo Coordination is making great efforts towards a "green expo," so expect opportunities to appear for PA environmental planners and remediation firms. The site for the expo is currently occupied by large chemical and steel facilities, which will be moved to make way for the expo and will need extensive cleanup and testing.

Guangdong area:

It is estimated that over three percent of GDP in Guangdong Province will be invested on the environment by 2010. According to the Environmental Protection Bureau of Guangdong, the province plans to allocate 135.6 billion Yuan to fund six significant environmental projects that include the treatment of solid waste, desulphurization, ecologic system protection, radioactive waste treatment, environmental monitoring systems, and sewage treatment. Within the next five to ten years, the construction of 163 sewage treatment plants are expected to be completed in order to clean up the heavily contaminated Pearl River. Another 64 sewage treatment facilities are being planned to treat the Han River, Rong River and Lian River in eastern Guangdong. An active major project is the Guangdong Pearl River Delta Urban Environment Project, financed by a US \$128 million loan from the World Bank and a US \$10 million grant from the Global Environment Fund (GEF). This project, designed to address the environmental problems of the

Pearl River Delta and the South China Sea, is expected to be completed by December 21, 2009, with total investments estimated to reach US \$5.5 billion.

Sichuan area:

In the next five years, Sichuan province plans to reach the following goals: 55% of the cities counted should be higher than urban air quality standard II, urban wastewater treatment rate should be over 50%, and urban solid waste treatment rate be 65%. Environmental industry output value will amount to 5 percent of the provincial GDP. Currently, the provincial government strategy is to enhance environmental protection and build Sichuan as an ecological province. The three focuses of Sichuan province in its 11th Five-Year Plan are to enhance treatment of industrial wastewater outlet sources, urban solid waste outlet sources, and rural pollution outlet sources.

Best Prospects

Currently, the annual production value of China's environmental protection sector is 180 billion Yuan (USD\$21 billion), 40 billion Yuan (USD\$4.8 billion) of which is for environmental services. External pressure and domestic awareness are carving out a fast-growing market for environmental technologies and expertise. Products enjoying the best sales prospects are those that focus on low-cost, energy saving, and are profitability enhancing.

Although it has traditionally been difficult to sell environmental services in China, the opening of China services market to foreign competition, improved standards and demand for sophisticated technologies as well as China's decision to learn from foreign countries to development domestic environmental industry have led to growing opportunities. Many European firms have been successful in bundling consulting services with turnkey design/build projects. Some equipment providers offer free consulting services up front as a lost-leader to develop sales later in the project. World Bank and ADB projects usually include substantial consulting and technical assistance components.

Best prospect imports to China include:

Environmental engineering design and related services

Although there are already a great number of strong domestic suppliers in the engineering design area, there are still immense opportunities in this area for PA service suppliers in many profitable projects with high technology content. For the time being PA firms have to partner with a local partner to deliver EPC or design service. Some more detailed aspects that are still weak in China include:

- Analysis and testing involved in engineering design projects
- Product performance testing
- Indoor environment quality and noise testing

Environmental consulting:

As this is still at a preliminary stage of development, there is still no large-scale or comprehensive domestic environmental consulting firm in China. Some detailed aspects that are needed include:

- EIA (see market access section for further information)
- Environmental management system and product certification consulting
- Environmental training such as EHS training and policy and regulation training

Environmental pollution control:

China remains quite weak in this area, and the country will definitely learn from foreign countries' technology in this regard. Detailed aspects for Chinese imports include:

- Operation and management of municipal and industrial wastewater treatment facilities
- Operation and management of municipal and industrial solid waste treatment facilities
- Operation and management of waste gas treatment facilities

Key Suppliers

Domestic competition:

Driven by the high growth of the industry from 1994 to 2005, more companies, institutions, and professionals have entered this industry.

As of 2005, there are about 3,400 companies and institutions with about 170,000 professionals earning annual revenue of more than 26 billion Yuan RMB in this industry. Among the 3400, 1201 are engaged in environmental engineering with annual revenue of 14.3 billion Yuan RMB, 734 in consulting services with annual revenue of 1.78 billion Yuan RMB, 665 in pollution control facility operations with annual revenue of 7.27 billion Yuan RMB, 1258 in environmental monitoring with annual revenue of 1.69 billion Yuan RMB, 456 in research and development of technology and product with annual revenue of 1.3 billion Yuan RMB. (Please note: some of the companies counted above may provide one or several kinds of services at the same time, thus the total numbers added together are not equal to 3400)

Moreover, the Chinese government is also planning to foster around 10-15 domestic environmental service providers with strong international competitiveness within the next couple of years. This may form another stream of competitive forces in the market.

Main players in the domestic market are traditional design institutes, academies of environmental science, research institutes of universities and institutions affiliated with local environmental protection bureaus.

Third party and PA position:

Germany, U.K. France, Japanese firms are also strong competitors that PA companies face. While Germany, U.K, and France have advantages in the wastewater treatment field, and Japanese companies are stronger in air pollution prevention and control area, the U.S. outclasses the competitors in environmental monitoring, waste management, pollution site restoration and remediation. However, strengthening the position of European and Japanese competitors are their bilateral aid programs. While these industrialized countries support their national environmental enterprises in China through the provision of foreign assistance loans and grants, the lack of such a bilateral program for PA companies frequently disadvantages PA services providers in favor of those bringing bilateral aid packages with them.

Optimistically, PA service providers and technologies are generally respected in China for their professional and timely delivery. The PA Trade Development Agency, which provides grant to fund feasibility studies, and technical assistance to projects of Chinese top priority areas, also provides opportunities for PA environmental service providers. Active U.S. players in the market include such companies as ERM, Black & Veatch, CDM International, Earth Tech, Ecology and Environment, MWH, OMEX Engineering & Construction, Tetra Tech and URS Corporation.

Prospective Buyers

Domestic:

Governments at all levels, especially provincial and municipal governments, are main domestic end-users of environmental services as they are the main decision makers in local developmental and infrastructure projects.

Private companies are in the mix of end users but must comply with certain regulations that require them to employ certain environmentally friendly procedures.

International organization and multinational companies:

Other end-users include international financial institutions that finance environmental projects in China, such as the World Bank and the Asian Development Bank.

To meet national and provincial compliance standards, many multinational corporations in the manufacturing, pharmaceutical, information technology, and automotive industries in China have also demonstrated a need for environmental consulting services. If you provide EHS or environmental impact study services to major corporations in the PA or elsewhere, you should be selling to their China operations as well. Many environmental consulting firms target multinationals in China's growing IT, semiconductor, pharmaceutical and petrochemical industries.

Market Issues & Obstacles

- Engineering and design:

For Foreign companies which want to do EPC or design for environmental projects in China, a Chinese partner is usually needed, as almost no foreign company has an engineering design license due to restrictive policy of the Ministry of Construction. 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.

- Consulting service:

General Status:

China's WTO environmental services commitments cover sewage services, solid waste disposal services, cleaning services for exhaust gases, noise abatement services, nature and landscape protection services, and other environmental protection services. Under the bilateral WTO agreement, Foreign Service suppliers may provide environmental consultation services through cross-border delivery, without having to establish a representative office in China. All other foreign service suppliers may operate in China through a joint venture.

Environment Impact Assessment License:

According the Environment Impact Assessment (EIA) law, which took effect on September 1, 2003, China requires all projects to receive environmental impact evaluations prior to construction. Therefore, project managers will look to companies who have EIA licenses issued by State Environmental Protection Administration (See below EIA Department contact) to provide consulting services and project approvals. Although several PA firms have already been certified with this license, new companies entering the Chinese market may find this a challenging obstacle.

American companies without the EIA license may consider bidding on projects sponsored by the World Bank, Asian Development Bank, and other international financial organizations. These institutions frequently seek consulting services and are active in funding environmental projects throughout China.

Fortunately, there are recent signs that China is thinking of allowing more foreign consulting firms to enter the EIA business in China in the near future, and may ease its qualification requirements for an EIA license.

- Environmental monitoring and pollution source inspection:

Even with accession to the WTO, foreign service providers are generally kept out of environmental monitoring and pollution source inspections but there are still special cases that some foreign firms have been contracted to provided such services in China.

Market Entry

There are three main ways to enter China's market for environmental technologies: (1) directly enter through export of services or establishing a wholly-owned foreign enterprise; (2) partner with a local company; (3) partner with another U.S. firm that has established relationships in the target market. In the future, joint ventures between American and Chinese companies may be the most feasible way for American companies to enter the market, especially as the number of Chinese consulting firms increases. Either way, reputation and experience are the most important factors for a company to establish itself. A previously established international reputation as an environmental consulting company with a great deal of experience will make the process much easier. Having a local network also facilitates doing business in China, and may be vital to a company just starting out.

Additionally, under a bilateral WTO agreement, foreign firms can supply environmental consultation services without having a representative office in China. However, this often leads to a delayed response to some fast-implemented projects if the connection with local partner is not close enough.

Ideal Chinese partners with good sales network and government relations in this field include traditional design institutes (better affiliated with central government agencies before), academies of environmental science, research institutes of universities and institutions affiliated with local environmental protection bureaus.

Resources & Key Contacts

Central level association:

Chinese Association of Environmental Protection Administration Industry is a reputable contact for profile building in China. With 46 group members and over 1000 member companies, the association is under the supervision of SEPA. Contact info is as follows:

Mr. Su Fan and Ms. Li Baojun

Director of International Cooperation Department and Industry Information Department

Tel: (86-10) 51555020; 010-51555021

Fax: (86-10) 010-51555028

Email: sufan@chinaenvironment.org; ciepec@163.net

Web: www.chinaenvironment.com

Regional level association:

Shanghai Water Reclamation Trade Association

Contact: Mr. Mao Wei De, Secretary General

Tel: 86-21-6350 0904

Fax: 86-21-6322 5293

Address: 180, Xiamen Road, Shanghai PRC

Bureau of Shanghai World Expo Coordination

Contact: Mr. Zhu Jianhua, Director of International Exhibitors Department

Tel: 86-21-22062311

Fax: 86-21-22060641

Address: No. 3588, Pu Dong Nan Lu, Shanghai

Guangzhou Municipal Engineering Association

Tel: 86-20-83786670

Fax: 86-20-83863248

Key Contacts:

State Environmental Protection Administration:

- Ms. Wang Kaiyu
Division Chief of Environmental Industry of Science & Technology and Standards Department
Tel: 86-10-66556221
Fax: 86-10-66556218
- Mr. Zhao Weijun
Deputy Director General of Environmental Impact Assessment Department
Tel: 86-10-66556527
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Beijing General Municipal Engineering Design & Research Institute

Ms. Zhang Yun, Deputy Director

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Shanghai Municipal Engineering Design Institute

Contact: Mr. Xu Jian Chu, Chief Engineer

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Address: 901 Zhong Shan North Er Road, Shanghai.

Guangdong Environmental Protection Engineering Research and Design Institute

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Fax: 86-20-81853077

Sichuan Environmental Scientific Research Institute

Mr. Liao Hong, Deputy Director

Tel: 86-28-8555-8845

Fax: 86-28-555-1020

Address: 18 Section 4, Renmin Nan Lu, Chengdu, Sichuan, China 610041

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