China Takes a Loss to Get Ahead in the Business of Fresh Water

Gilles Sabrie for The New York Times

A fisherman at a seawater canal, near a cooling tower of the desalination plant in Tianjin, China.

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TIANJIN, China — Towering over the Bohai Sea shoreline on this city's outskirts, the Beijiang Power and Desalination Plant is a

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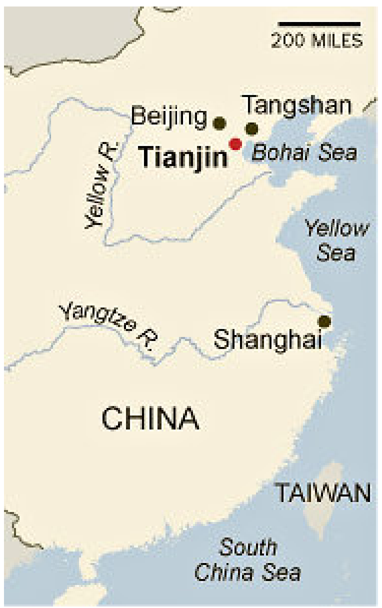

The New York Times

A desalination industry has grown in cities near Beijing.

There is but one wrinkle in the $4 billion plant: The desalted water costs twice as much to produce as it sells for. Nevertheless, the owner of the complex, a government-run conglomerate called S.D.I.C., is moving to quadruple the plant's desalinating capacity, making it China's largest.

“Someone has to lose money,” Guo Qigang, the plant's general manager, said in a recent interview. “We're a state-owned corporation, and it's our social responsibility.”

In some places, this would be economic lunacy. In China, it is economic strategy.

As it did with solar panels and wind turbines, the government has set its mind on becoming a force in yet another budding environment-related industry: supplying the world with fresh water.

The Beijiang project, southeast of Beijing, will strengthen Chinese expertise in desalination, fine-tune the economics, help build an industrial base and, along the way, lessen a chronic water shortage in Tianjin. That money also leaks away like water — at least for now — is not a prime concern.

“The policy drivers are more important than the economic drivers," said Olivia Jensen, an expert on Chinese water policy and a director at Infrastructure Economics, a Singapore-based consultancy. "If the central government says desalination is going to be a focus area and money should go into desalination technology, then it will."

The government has, and it is. At the government's order, China is rapidly becoming one of the world's biggest growth markets for desalted water. The latest goal is to quadruple production by 2020, from the current 680,000 cubic meters, or 180 million gallons, a day to as many as three million cubic meters, about 800 million gallons, equivalent to nearly a dozen more 200,000-ton-a-day plants like the one being expanded in Beijiang.

China's latest five-year plan for the sector is expected to order the establishment of a national desalination industry, according to Guo Yozhi, who heads the China Desalination Association. Institutes in at least six Chinese cities are researching developments in membranes, the technology at the core of the most sophisticated and cost-effective desalination techniques.

The National Development and Reform Commission, China's top-level state planning agency, is drafting plans to give preferential treatment to domestic companies that build desalting equipment or patent desalting technologies. There is talk of tax breaks and low-interest loans to encourage domestic production.

In an interview, Mr. Guo called the government role in desalination "symbolic," saying that direct government investment in seawater projects does not exceed 10 percent of their cost. By comparison, he said, big water ventures like the massive South-North Water Diversion Project, which will divert water from the Yangtze River in the south to the thirsty north, are completely government-financed.

Still, the government's plans could mean an investment of as much as 200 billion renminbi, or about $31 billion, by state-owned companies, government agencies and private partners.

Beijiang's desalination complex, built by S.D.I.C. at the behest of the Development and

Reform Commission as a concept project, was almost wholly made in Israel, shipped to Tianjin and bolted together. Nationally, less than 60 percent of desalination equipment and technology is domestic.

China's goal is to raise that to 90 percent by 2020, said Jennie Peng, an analyst and water industry specialist at the Beijing office of Frost & Sullivan, a consulting company based in San Antonio.

There are plenty of reasons for China to want a homegrown desalination industry, not the least of which is homegrown fresh water. Demand for water here is expected to grow 63 percent by 2030 — gallon for gallon, more than anywhere else on earth, according to the Asia Water Project, a business information organization.

Northern China has long been short of water, and fast-expanding cities like Beijing and Tianjin already have turned to extensive recycling and conservation programs to meet the need.

In Tianjin, deemed a model city for water conservation, 90 percent of water used in industry is recycled; 60 percent of farm irrigation systems use water-saving technologies; 148 miles of water-recycling pipes snake beneath the city. Apartments in one 10-square-mile area of town feature two taps, one for drinking water and one for recycled water suitable for other uses.

The Beijiang plant, one of two, supplies an expanding suburb with 10,000 tons of desalted water daily, with plans to someday pump 180,000 tons. A second 100,000-ton facility supplies a vast ethylene production plant outside of town.

The Beijiang plant has faced some hiccups. The mineral-free distilled water scrubs rust from city pipes en route to taps, turning the water brown. Some residents are suspicious of the water, saying its purity means it lacks nutrients. The plant is addressing both complaints by adding minerals to the water.

But some say slaking China's thirst may be a beneficial sideline to larger aims. The global market for desalination technology will more than quadruple by 2020 to about $50 billion a year, the research firm SBI Energy predicted last month, and growing water shortages worldwide appear to ensure further growth.

Beyond that, the increasingly sophisticated membrane technologies that filter salt from seawater can be applied to sewage treatment, pollution control and a legion of other cutting-edge uses. Far outpaced now by foreign membrane producers, which command at least 85 percent of the market, China is set on developing its own advanced technologies.

Some experts say that is where the government's interest mostly lies. "What this is about is developing China's membrane industry, more than it is local use," said Ms. Jensen, the Singapore analyst. "This is an export industry fundamentally, not one to make a green China."

Whatever the motivation, China is already racing toward meeting its targets.

Just as foreign companies rushed to China to secure a place in its budding wind-energy market, the list of foreign companies that have plunged into China's desalination industry is long: Hyflux of Singapore, Toray of Japan, Befesa of Spain, Brack of Israel and ERI of the United States, among others.

And just as foreigners shifted solar-energy research and production to China, desalination companies are leaving their home bases as well. The Norwegian company Aqualyng is a partner with the Beijing city government on a desalination plant in Tangshan, a coastal city about 135 miles east of Beijing, and is studying moving its manufacturing facilities from Europe to China.

ERI, which is based in San Francisco and claims to have the desalination industry's most advanced technology, is moving research facilities to China and is considering moving manufacturing as well at some later date.

Most of the foreign companies have partnered with state-owned corporations, for help in securing business and for political protection in a country where the rule of law and protection of intellectual property are in a state of flux. And although some foreign investors in technology-laden projects like wind energy and high-speed rail later claimed their Chinese partners appropriated their technologies, the heads of ERI and

Aqualyng say they can become researchers and manufacturers in China without losing control of their products.

The chairman of Aqualyng's board, Bernt Osthus, said in an interview that the company's partnership with the Beijing government had been "close to an ideal partner," with the Norwegians controlling the technology and the Chinese providing money and local know-how.

He added, however, that the company was considering a joint research venture with a Chinese partner.

"By reducing our ownership in our equipment and taking on a state-owned Chinese partner and moving production from Europe to China, the technology effectively becomes Chinese," he said. "I'm still the owner. I'm still owning my piece of the pie. I'm just increasing the size of the pie."

And a big pie it is.

"There are large-scale desalination projects centralized all up and down the east coast of China," ERI's chief executive officer, Thomas S. Rooney Jr., said in an interview. "Our company has the most advanced technology in the entire desalination industry. And one of the beautiful things about China is that they like to adopt the most advanced technologies."

"You can either fight them or join them, and our philosophy is that China likely is going to be the next big desalination market," he added. "I would rather develop technology for China in China and take a more open approach than play the secrets game."

Mia Li contributed research.

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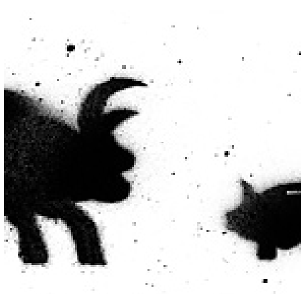

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