

Solar: High hopes for clean energy

FROM PAGE 13

China's installed solar capacity was about 3 GW in 2011, according to figures from the NEA, which is 10 percent of the world's total.

The development of the wind industry may provide a template for how large-scale solar development may unfold in China.

As the wind industry process showed, the Chinese government is prepared to scale renewable development aggressively once the technology reaches a price point that it considers appropriate, and when local manufacturers and developers can competently fulfill the government's growth targets.

Overcapacity looming

After the central government asked local governments to save energy, reduce carbon emissions and develop high-tech industries, the local governments have been eager to develop the solar industry in their regions in the past few years. The photovoltaic industry happens to meet all those requirements.

More than 300 Chinese cities are making efforts to develop the solar photovoltaic industry, mostly driven by short-term interest, leading to the issue of overcapacity in the sector, said an official from the NEA who declined to be named.

Overcapacity in the polysilicon sector — a key material in the production of solar panels — led to 80 percent of the plants shutting down this year. "There are more than 2,000 companies in the country's photovoltaic industry, half of which are focusing on producing solar products," according to Shi Lishan, deputy director of the New Energy and Renewable Energy Department with the NEA.

China controls nearly 70 percent of the world's solar panel production capacity and exports almost 90 percent of its output to Europe and the US. In compar-



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ZHANG QIAN
SENIOR OFFICIAL, CANADIAN SOLAR

son, Chinese companies only account for about 8 to 10 percent of the global solar products value chain.

Over the past eight years, the price of solar products has significantly dropped due to the development of solar technology in China. The cost of solar modules has been lowered to \$1 per watt. The solar cells conversion rate has continued to increase, rising from 14 percent to 19 percent.

The investment return of downstream businesses — solar farms — is around 8 percent now, which is relatively good, industry players said.

Challenges ahead

Meanwhile, the challenges the wind power industry now faces could be the next hurdle for solar power development.

Roughly 25 percent of China's wind power isn't connected to the power grid due to limitations in the grids' capacity to transmit power from the distant regions where the power is generated to the power consuming areas. Also, local grids lack the ability to absorb wind-generated power, which can be quite unstable.

The less populated western part of China — which has more sunshine hours per year than other regions in the country — is the major destination for large-scale solar power

projects.

In terms of installed capacity, China's top 10 solar power producers are: Qinghai, Ningxia, Gansu, Shandong, Jiangsu, Hebei and Shaanxi provinces and the Inner Mongolia, the Xinjiang Uygur and the Tibet autonomous regions. Those provinces and regions account for almost 90 percent of the country's output. Seven of those provinces and regions are in western China.

Located in Northwest China's Qinghai province, Golmud has been labeled the Photovoltaic Capital of China due to a series of large projects. One example is a 200 MW project by CPI Huanghe Hydropower Development Corp.

The province vowed to approve 1 GW of solar farms this year — one-third of the country's newly added capacity, an aggressive target that has raised concerns.

Solar power rationing has happened twice over the past year in Golmud, partly because the local grid was unable to absorb the solar-generated power, causing millions of yuan in losses for local solar farm developers.

In 2011, China's connected solar capacity was 2.12 GW, or nearly 70 percent of the installed capacity, according to the China Electricity Council.

"The grid infrastructure in the western regions is not adequate to support solar connections," said Zhang Qian, a senior official at Canadian Solar. "More transmission lines need to be built."

Electricity needs to be transmitted to the grid before being distributed, which requires companies to convert solar power into high-voltage electricity.

"This process adds more costs," said Lian of Solarbuzz.

Therefore, electrical grid companies are reluctant to connect solar power into their



Workers assemble solar modules at a factory in Nantong, in East China's Jiangsu province. There are more than 2,000 companies in the country's photovoltaic industry.

systems.

The central government started subsidizing grid companies in 2012 in an effort to encourage them to bring more renewable energy into the country's power system.

However, the subsidies only cover part of the costs, according to Jiang Liping, deputy director of the Energy Research Institute, which is affiliated with State Grid.

More costs may occur as local governments start to tax the land for the projects, and getting the limited approvals is becoming expensive.

Most developers are State-owned power companies, such as China Huaneng Group, China Huadian Corp, Datang International Power Generation Co, and China Power Investment Corp.

A few private developers such as Hanergy and Astronergy are also involved in the business.

For now, the issues do not seem urgent as installed capacity is still limited, but they might hamper the development of the solar sector in the future.

Solar power integration could

become a more serious issue that it was for the wind power industry when applications scale up because solar power requires more flexible technology, according to Bai Jianhua, chief economist of the Energy Research Institute.

Another 35 GW of solar projects are in the pipeline, according to Solarbuzz's estimate.

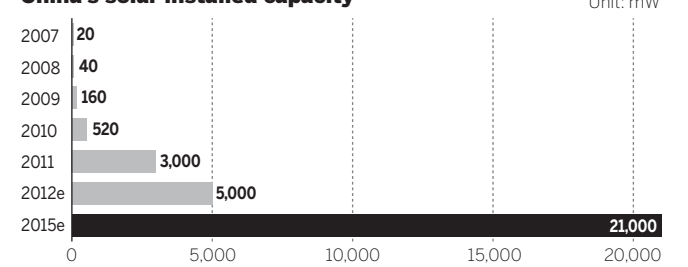
But China wants solar power to be a real alternative to traditional power plants by 2015, which means that the price of solar power can be comparable to traditional power sources.

And despite a recent adjustment in renewable energy policies, the country is still committed to develop clean energy, with unprecedented investment flowing into the sector.

In the second quarter of the year, the country led clean energy investment with \$18.3 billion, a 92 percent increase compared to the first quarter of last year. The largest Chinese PV project financed recently was the Shanlu & Shengyu Bayannur Wuyuan plant, with \$316 million, Chinese media reported.

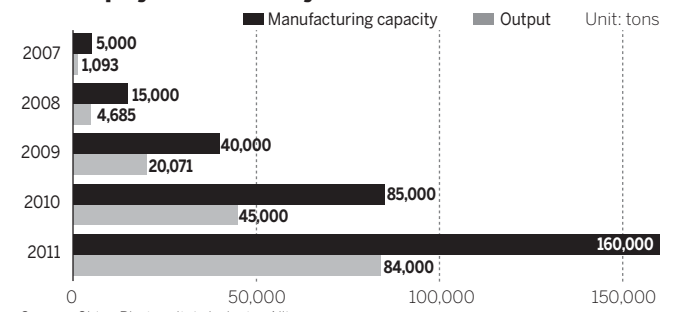
CLEAN ENERGY SHINING

China's solar installed capacity



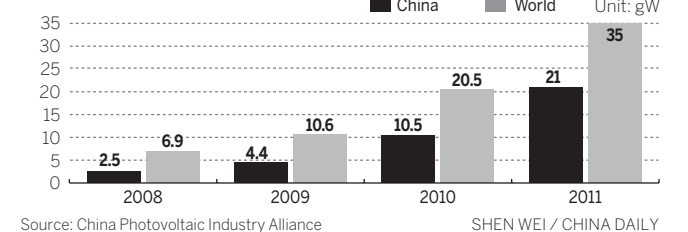
Source: The National Energy Administration, China Photovoltaic Industry Alliance, china5e.com

China's polysilicon industry



Source: China Photovoltaic Industry Alliance

Solar module production



Source: China Photovoltaic Industry Alliance SHEN WEI / CHINA DAILY

Water: Consumers notoriously sensitive to high prices

FROM PAGE 13

"One spot in Tibet had good water quality, but it wasn't far from a highway. The road made it difficult to set up a large conservation area to prevent contamination," said Pang.

The current site for Kunlun Mountains water is protected by JDB with a conservation area of 11 square kilometers.

Pang said that an area on the Changbai Mountains in Northeast China was considered, but the fact that too many domestic companies use the mountains for their branding made him drop it.

"The water source is the most valuable asset for a mineral water brand. If another company which uses the same asset does something wrong, it will be an irreversible damage to my brand," Pang said.

Exploration was further delayed by the release of a new national standard for mineral water in 2008. The standard imposed stricter upper limits for several substances. The standard for bromate, a potential carcinogen, for example, was lowered to below 0.01 milligram a liter.

In 2007, Pang finally found the right place — Xidatan on the Kunlun Mountains, a site on the Tibetan Plateau that is 4,100 meters above sea level.

The site, according to Pang, provides sufficient and high-quality mineral water, is backed by a runoff made of melting snow, and has a low population density, making it easier to conserve water quality.

But that wasn't enough. To test if the water quality was

stable enough, Pang sampled the water every month for six months, and sent the samples to three independent laboratories. The results finally persuaded him to build his factory there.

The efforts by Pang and his team have paid off.

In February, Kunlun Mountains Natural Mineral Water won the Watermaster's Golden Award of Excellence at the annual Berkeley Springs International Water Tasting, an event dubbed the water industry's Oscars.

Tian Wei, JDB Group's brand manager, said the reward was a proud moment for her and for the company.

"It's the first time that a Chinese brand, or even an Asian brand gets this honor," Tian said.

She said that JDB was invited by Arthur von Wiesenberger, president of the event, after he tasted the water in China. He even flew to Xidatan to check the site.

"He tasted the water on the mountains and found the taste to be almost the same as the bottled water," Tian said.

Brand recognition

But despite the industry's recognition, what nags Pang and other people in the business is the low recognition among ordinary consumers.

Industry experts said that the biggest challenge is to persuade the notoriously price-sensitive Chinese consumers to pay extra for high-end water.

"The biggest bottleneck for the development of the high-end water market is the poor recognition among consum-



RETAIL PRICES FOR BOTTLED WATER BRANDS

NONGFU SPRING 1.5 yuan/ 550 ml	KUNLUN MOUNTAINS WATER 4.8 yuan/ 510 ml	5100 TIBET GLACIER SPRING WATER 10.9 yuan/ 500 ml	QOMOLANGMA GLACIER MINERAL WATER 13.9 yuan/ 555 ml	VOLVIC 11.8 yuan/ 500 ml	EVIAN 11.5 yuan/ 500 ml
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(All the retail prices are listed as a reference, and they might have some ups and downs in stores across the country)

Foreign bottled water brands Evian and Volvic stand next to Chinese brands 5100 Tibet Glacier Spring Water, Kunlun Mountains Water, Qomolangma Glacier Mineral Water and Nongfu Spring. China's water industry defines high-end water as products sold for more than 4 yuan per bottle of about 500 milliliters.

ers toward high-end water brands," said Liang Mingxuan, a food industry analyst with CIconSulting. "In mature markets, such as Europe, people have high requirements for water. But not here."

However, Liao of the China Mineral Water Committee cautioned that high prices do not necessarily mean high-end water.

China's water industry normally defines high-end water as products above 4 yuan per bottle of about 500 milliliters.

But to Liao, only mineral water can be called high-end water.

"At least 70 percent of China's surface water have been polluted. Unlike surface water, mineral water is usually hundreds of meters underground, so it's free from contamination," Liao said.

He added that, also unlike surface water, mineral water is considered a mineral reserve of the state and thus is subjected to an extra resources tax, which adds up to the cost of the water.

"People who have been to a decent mineral water production base would realize that the price they are paying is not too high," Liao said. "The Kunlun

Mountains water is actually being sold at a low price."

Kunlun is sold at 4.8 yuan for a bottle of 510 ml.

At a Ito Yokado outlet in Beijing, most consumers surveyed by China Daily couldn't tell the difference between "mineral water" and "mineral substance water," a kind of water that is made of surface water with mineral substances added during processing.

"Isn't this mineral water?" a consumer asked, pointing to Nongfu Spring, a bestseller in the store, according to Ito Yokado's managers. Nongfu Spring is made of reservoir water.

Sales staff at a Ito Yokado's Beijing store said that bottled water with high-price tags is difficult to sell, including Kunlun Mountains water.

"5100 Tibet sometimes sell well, but only when there's a promotion," a staff member said. When there is a promotion, 500 ml of 5100 Tibet sells for 8.9 yuan, down from 10.9 yuan.

"I often quietly observe people's buying habits in stores. In most cases, after a long comparison, young men take the cheapest bottled water," Liao said.

In addition to the Chinese consumers' low loyalty to bottled water brands, there is widespread cynicism about the manufacturers' claims regarding the place of origin.

"I would pay more money to buy Kunlun Mountains water if it is really from Kunlun Mountains," a woman in her twenties said. "But is it really from there?"

Better strategies

But despite the low recognition and trust, some brands were able to steer away from traditional sale channels, such as stores, and found opportunities elsewhere.

5100 Tibet Glacier Spring Water, the bestseller among domestic premium water brands, managed to grab a niche of high-end channels such as the high-speed railway. In 2007, it signed a strategic contract with China Railway Express, the purchasing agent for China Railways. The contract gave 5100 Tibet access to the high-speed train market and was decisive in the com-

pany's commercial success.

In 2010, the water sold to China Railway Express accounted for 81 percent of Tibet 5100's revenue, the company said. In its statement before the IPO, the company vowed to diversify its client base and reduce its reliance on CRE to 59 percent.

Tibet 5100 has since signed contracts with local governments, Air China, China Mobile and BP Plc. In its latest marketing campaign, it's selling a "water card" through online retailers. Customers who buy the prepaid card get a home-delivery service.

In its 2011 financial report, Tibet 5100 said its reliance on China Railway was reduced to 62 percent.

Kunlun Mountains water is clearly lagging behind.

"You can't expect to recover costs within three to five years," Pang said, indicating the business is still operating at a loss.

The water's place of origin, a long distance from major markets in eastern China, means expensive transportation costs. Heavy marketing was another major cost for the brand.

For JDB — which also produces the popular herbal tea Wanglaoji, with more than 18 billion yuan in sales last year — the huge investment in Kunlun Mountains water is bearable, at least for now. JDB said it has hopes of making a profit due to economies of scale, by expanding production capacity.

But finding a way to develop the brand in a competitive niche market — like its rival Tibet 5100 — is perhaps a more important question.