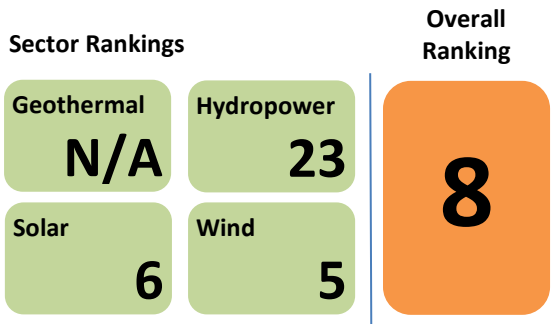
2016 Top Markets Report Renewable Energy Country Case Study

China

Type: Large Market; Small Market Share

Over the past few years, China has overtaken all other countries for installed capacity of solar, wind, and hydro power. China's unprecedented investment continues to be driven – despite slowing growth in electricity demand – by the policy consensus in support of clean energy within the Chinese government, which has only grown stronger in the wake of the Paris climate agreement. But, U.S. exporters often struggle to maintain even a small market share and, as a result, ITA expects exports to grow based only on China's sheer market size rather than U.S. export promotion activities.



China is both the world's largest producer and consumer of renewable energy technologies. In 2016-2017, its rapid capacity growth will account for over 40 percent of all renewable energy capacity installed outside the United States, with at least 100 GW added in the solar, wind, and hydropower sectors combined.

Despite the opportunity presented by China's renewables sector, U.S. exporter continues to face challenges in exporting. U.S. exporters are projected to capture less than two percent of the Chinese import market overall; and far less of the overall market, much of which will be met by domestic suppliers.

Overview of the Renewable Energy Market

A number of factors will drive renewable energy investment in China; not only is China the world's most populous country but it also has the largest installed generating capacity for electricity in general. Furthermore it has the largest electricity demand, which surged over 50 percent in just the last five years.[1] China also encourages investment by offering feed-in tariffs for wind and solar PV.

On the negative side, China also has the highest total CO_2 emissions of any country and persistent environmental challenges, which every year become more and more acute. While China has long supported clean energy development to boost its own international competitiveness in the sector, it has increasingly viewed the sector as mutually supportive of its domestic and international environmental commitments. As a result, it supercharged its investment in the sector since the 12th Five-Year Plan in 2010.[2] In December 2015, it reaffirmed its climate change targets in the United Nations COP21 dialogue, stating that it will cut pollution from coal-fired power facilities by 60 percent by 2020.[3] Moreover, a national carbon cap-and-trade program is set to begin in 2017, which will encourage the greater use of renewables.[4]

Coal, the traditional backbone of China's power mix, still accounts for 64 percent of primary energy consumption.[5] At 884 GW, coal-fired electricity capacity in China is formidable but has been slowly decreasing in its share of the overall energy supply in recent years. Also, as electricity growth slows down, particularly in the manufacturing sector, the timing is convenient for China to embrace clean energy.[6] Today, renewable energy alone accounts for the majority of all new capacity additions.[7] According to industry sources, the industry cleared $116 billion in renewable energy investment transactions in 2015, the most of any country in the world.[8]

In March 2015, China unveiled its 13th Five-Year Plan, further enshrining the country's turn from coal-hungry industry to sustainability, environmental technologies and renewable energy sources.[9] The plan's focus on energy is centered on expansion in wind and solar power generation, doubling wind's level and quintupling solar's level from the previous Five-Year Plan. The move follows the Chinese Government's attempts to diversify its energy mix, particularly in light of environmental concerns.

Increased capacity has not always led to increased power generation from renewables. Some clean power has been left idle due to transmission bottlenecks, particularly in the northern and western provinces. However, the Chinese Government took aggressive steps to remedy this in March 2016, ordering power transmission companies to provide grid connectivity for all renewable power generation sources that meet the technical standards.[10]

Challenges and Barriers to Renewable Energy Exports

Anecdotal evidence suggests that few markets are more challenging for U.S. exporters than China's. The poor intellectual property (IP) rights protection and enforcement remains a consistent deterrent for many U.S. technology suppliers, especially in light of the AMSC case. Small- and medium-sized firms are often hesitant to export to China, although it is these firms, with innovative new technologies not yet introduced to the market, which may offer the greatest opportunity for export success.

The structure of China's power sector is another deterrent. State-owned enterprises dominate the market and are highly regulated. The government directly controls wholesale and retail electricity prices and often determines which renewable energy projects go forward and which stay on the drawing board. The lack of transparency of the regulatory environment and widespread corruption, including in the tendering process, remain troublesome. U.S. developers often complain that projects developed by local companies move faster and garner more support from Chinese authorities.

Moreover, Chinese industry has been experiencing a period of intense restructuring, as demand for products reaches the availability of supply. Many Chinese solar manufacturers, for example, carry large amounts of debt and have exhibited poor capital control, making volatility in the sector all the more likely. Larger players may well be able to purchase the assets of debt-ridden firms at discount prices, if the market continues on its current path. These mergers could leave a few, very powerful Chinese manufacturers able to dominate the Chinese market, while also competing even more effectively in third-country markets around the world.

Opportunities for U.S. Companies

Although relatively high transportation costs make manufactured goods exported from the United States to China more expensive, U.S. companies can find success exporting high value-added products. As products are commoditized, the opportunity to export from the United States decreases substantially.[11] U.S. exporters are encouraged to view the Chinese renewable energy market by region or province, with each distinct location offering different opportunities. The resource-rich west, including Xinjiang, Qinghai, and Gansu, has been targeted by the Chinese Government for increased renewable energy development and will likely be the location of many projects going forward.[12]

The eastern and southern manufacturing centers, while not the location of most renewable energy projects, are often where component manufacturers and developers can find buyers for their products and services. The third region, the transmission-constrained north, may be an area for distributed generation, but at this point should not be targeted as a region of particular potential for U.S. exporters.

Solar

China is already the largest producer of solar technologies globally, supplying not only its own market, but roughly 70 percent of global PV cell and module demand.[13] It became the world's largest consumer of solar products as well in 2013, with continued growth projected well into the future.

With regards to its own fast-growing solar development, China installed over 15 GW of new photovoltaic capacity in 2015, accounting for quarter of global solar installation. It is reported that during the 13th Five-Year Plan (2016-2020), the average annual new PV installed capacity will reach 20 GW for a total new installed capacity of 150 GW.

China is also very ambitious in developing Concentrated Solar Power (CSP) and established a 10 GW target during the 13th Five-Year Plan period. China's National Development and Reform Commission is expected to announce a Feed-in-Tariff rate for CSP in 2016, which should drive investment.

Wind

China's vast wind market and an unprecedented investment in the sector should support a reasonable amount of exports from the United States. The country maintains a complete wind supply chain, and ITA's 2016-2017 ranking reflects the fact that imports of the main system component have not significantly increased in recent years. However, China often imports or licenses critical components for the wind industry.

As the country shifts towards small- and medium-sized wind farms, increased technical and safety standards, and newer technologies, the demand for innovative products and technical components may provide opportunities for U.S. exporters, although competition will be fierce.[14] Chinese buyers often base their purchasing decisions on upfront price, reducing the competitive position of U.S. suppliers, which win based on long-term quality and lifetime cost.

Despite initial industry excitement over a potential Chinese offshore wind market, ITA does not expect large-scale development in the short term, due to opaque offshore regulations, high development costs and lower returns, and grid limitations. In fact, China missed its 12th Five-Year Plan target of 50 GW for offshore wind projects. In June 2014, China's National Development and Reform Commission (NDRC) released its long-awaited feed-in-tariff for offshore wind, but the new NDRC scheme offered prices that were the lowest in the world, making other offshore markets far more attractive.[15] Moreover, foreign developers remain limited in the market, as they may only take a minority share (up to 49 percent) in a Chinese offshore project.

Hydropower

Hydropower has always been a priority for China's infrastructure investment funds, and approval for projects is relatively easy compared to other markets. China will continue to increase its hydropower capacity. By the end of 2015, China's hydropower installed capacity reached 319 GW, with an annual generating capacity of 1.11 trillion kWh. The volume of China's installed capacity and power generation rank first in the world. While China's domestic companies should dominate its main component market, U.S. exporters should find opportunities selling expertise (design, engineering, and development), control systems, and environmental consultancy services.

[1] Bloomberg New Energy Finance, "Power Demand Means $65 Billion a year Task for China State Grid" 04 December 2014.
[2] Bloomberg New Energy Finance, "Onwards and upwards: China's renewable targets for 2013," 23 January 2013.
[3] Business Monitor International, "China Renewables Report Q1 2016," December 2015.
[4] Business Monitor International, "China Renewables Report Q1 2016," December 2015.
[5] U.S. Energy Information Administration, China Energy Overview, March 2015
https://www.eia.gov/beta/international/analysis.cfm?iso=CHN
[6] "China's Slowing Power Consumption Highlights Clean Energy Gains," Bloomberg News, January 19, 2016
http://www.bloomberg.com/news/articles/2016-01-19/china-s-slowing-power-consumption-highlights-clean-energy-gains
[7] Bloomberg New Energy Finance, "H2 2014 China Market Outlook," 28 August 2014.
[8] Bloomberg New Energy Finance, China country profile
[9] Foreign Policy, "China's Leaner and Greener 5-Year Plan," 30 October 2015. http://foreignpolicy.com/2015/10/30/chinas-leaner-and-greener-5-year-plan/
[10] Reuters, "China pushes for mandatory integration of renewable power," March 28, 2016. http://uk.reuters.com/article/us-china-power-renewables-idUKKCN0WU0RF
[11] Bloomberg reference in 2012 study.
[12] Bloomberg New Energy Finance, "Climatescope 2014: China."
[13] Bloomberg New Energy Finance, "Climatescope 2014: China."
[14] Global Wind Energy Council, "Global Wind Energy Outlook 2012," November 2012.
[15] Bloomberg New Energy Finance, "H2 2014 China Market Outlook," 28 August 2014.