

**CHINA'S WIND POWER INDUSTRY:
FROM INFANT STAGE TO GROWTH STAGE**

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Executive Summary

1. Ahead of the 2009 Copenhagen summit, China made a hefty promise to reduce 40-45 percent of carbon emissions per unit of GDP by the year 2020. To meet the official target, China is taking concrete steps to promote strategic emerging industries. Wind power is one of the strategic energy industries with great potential to facilitate a shift to low-carbon economy.
2. Wind energy could contribute up to 65 percent of the emission pledges made by industrialized countries during the Copenhagen summit. By 2020, wind energy in China is likely to contribute 18.6 percent of the world annual emission reduction resulting from the increase in wind power capacity.
3. Compared to other new energy industries, wind power is relatively mature in technology and is China's fastest developing industry. China's total installed wind power capacity more than doubled from 2006 to 2009, reaching 25,104 megawatts by the end of 2009. In 2008 and 2009, China had also overtaken India and Spain respectively to become the world's third largest wind power producer.
4. China's on-grid wind power generation has gone through roughly three stages and is now in a transition from infant stage to the stage of growth. China's installed capacity increased at a much lower speed than the world's average level in the first two stages (1986-1993; 1994-2003), but it has witnessed a much higher growth rate since 2004.
5. China is rich in onshore and offshore wind energy resource and wind farms are distributed in line with the wind belts. After years of development in land wind power generation, China is now speeding up its establishment of offshore wind farms.

6. China's in-house R&D on grid-connected wind turbine units are underdeveloped. In the two early stages, almost all equipment was imported. Between 2004 and 2009, acquirement of technologies in China was mostly through collaborative design or establishment of joint ventures.
7. On the other hand, China's protective policies and its requirement of 70 percent import substitution rate for wind power equipment have stimulated the localization of wind turbine production, resulting in a greater market share for its domestic manufacturers. In 2009, China overtook its major competitors to become the world's largest producer of wind turbines.
8. However, in terms of independent innovation, large gap still remains between China and world leaders of wind turbine manufacture. Local Chinese wind turbine components suppliers are still weak in proprietary technology. It is imperative for China's manufacturers to cultivate in-house research groups and encourage local innovation.
9. China's wind power industry is also confronted with three major problems. The first two are related to power transmission: access to power grid and power feed-in, which now become the bottleneck of further development. The third problem is rampant "overinvestment" and blind expansion which led to serious "overcapacity" in wind farm construction and turbine manufacturing.
10. The three challenges reflect a structural problem in China's wind power industry: the mismatch between under-developed infrastructure (power grid and power feed-in) and "overcapacity" in production. Therefore, a realist general plan, accompanied by well designed incentives for innovations, is indispensable to the sustainable development of wind power industry in China.