

# Research Report of Chinese Wind Power Industry, 2009

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## Abstracts

The wind energy is the kinetic energy producing by the flows of mass air in the surface of the earth. Due to the different temperature changes of the earth after the solar irradiation and the different steam contents in the air, the air pressure is different in various regions. In the horizontal direction, the high pressure air flows to the low air pressure areas and then forms the wind.

The wind energy resources are determined by the wind energy density and the available annual accumulative hours of the wind.

The wind energy density refers to the wind power retainable at unit area, in direct proportion to the relationship between the cubic wind speed and the air density. The wind energy resources are greatly affected by the terrain. In the world, the wind energy resources mainly center on the coastal areas and the contraction zones of the broad continents, such as the coastal areas in California of America; some European countries; the southeastern coastal areas, and Inner Mongolia, Xinjiang and Gansu areas in China.

In the southeastern coastal areas and nearby islands in China, the wind energy density reaches 300 W/m<sup>2</sup> and the annual accumulative wind at speed of 3 to 20 m/s exceeds 6 thousand hours. The best inland wind energy resources lie along Inner Mongolia and Xinjiang, where the wind energy density is between 200 to 300 W/m<sup>2</sup> and the annual accumulative wind at speed of 3 to 20 m/s exceed 5 to 6 thousand hours.

The wind power generation refers to turning the wind power into electricity power directly used the wind power generating units. Among the various utility forms of the wind power, the wind power generation is the major utility form, which is the most

mature and scaled development condition and commercial development perspective in the renewable energy at present.

In China, the national average wind energy density is 100 W per square meter; the total reserves of the wind power resource are 3.226 billion KW; 253 million KW wind power reserves on the land and 750 million KW wind power reserves on the inshore can be developed or made the most uses, which totals about 1 billion KW. If calculating by the 2000 hours at full capacity, the land-based wind power grids can provide 500 billion KW per hour annually. If calculating by the 2500 hours at full capacity, the onshore wind power grids can provide 1.8 trillion KW per hour annually, totaled 2.3 trillion KWh. China, rich in the wind power resources and huge development potential, will become an important part of the energy structures in the future.

By the end of 2008, China had 11.6 thousand of the wind power units, 12.153 million KW of the installed capacity and distributed in 24 provinces or municipalities, Chongqing, Jiangxi and Yunnan more over the previous year, in which the installed capacity exceeded the 1 million KW, including Inner Mongolia, Liaoning, Hebei and Jilin. Compared with the installed capacity of 5.906 million in the end of 2007, the accumulative growth rate of the installed capacity was 106% in 2008. The electricity volumes of the grids will be 12 billion KW in 2009 in China, accounting for 0.04% of the total electric power production.

The wind power farms in China mainly concentrate in the north and southeastern coastal areas and few in the west regions, where are abundant in the wind power resources. And these areas are in remote mountainous areas, away from the power plants, power transmission is more inconvenient, where have large development perspectives for the wind power market.

At present, three local large electricity generating manufacturers have entered the wind power equipment industry and major foreign wind power unit manufacturers have also set up their factories in China. Due to the fast development of Chinese wind power industry and the rapid growth in the wind power set manufacture, many other enterprises are willing to enter the wind power manufacture on basis of its promising perspectives. However, there are high technical and policy barriers in Chinese wind power set manufacture

At present, the investment subjects in Chinese wind power farms major in the state owned large electricity groups and in diversity, many investors of which are low in the ability of sustainable development. Owning to the wind power sets accounting for 70%

of the total investments, the investors are very sensitive to the prices of the wind power sets.

In China, there are more than 70 complete wind power set manufacturers, more than 50 blade manufacturers and near 100 tower tube manufacturers. The yield capacity has been far beyond the market capacity if calculating by the yield capacity of the companies. In China, the wind power equipment manufacture is just raised, the development of the industrial chains is not very perfect and the complete wind power set manufacture is serious retrained from the bottleneck in the crucial accessories. The localization of the major accessories of the wind power generating sets below MW-class has been a reality, which can be supplied in bulk. However, there are still large gaps in the corn accessories of the wind power generating sets above MW-class; the quality of the accessories produced in the local enterprises is not very reliable.

In order to cope with the influences of international financial crisis, Chinese government has taken the development of the wind power as one of the crucial economic growth points. It is predicted that the newly added installed capacity of the wind power in China will be doubled in 2009. On that occasion, the new added installed capacity of the wind power in China will account for one third or even more of the world's new added installed capacity of the wind power.

More following information can be obtained in this report:

- Present Development Situation of Chinese Wind Power Industry
- Present Development Situation of Chinese Wind Power Equipment Industry
- Present Construction Situation of Chinese Wind Power Farms
- Factors affecting Chinese Wind Power Price
- Policy Environments of Chinese Wind Power Industry
- Development Perspectives of Chinese Wind Power Industry

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