
INDUSTRY OVERVIEW

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Overview of the PRC Economy and the PRC Power Industry

The PRC is one of the fastest growing economies in the world. Between 2001 and 2009, its real GDP grew at a CAGR of 10.4%. According to the Eleventh Five Year Plan for National Economy and Social Development (the “Eleventh Five-Year Plan”), the PRC government expects to achieve an average 7.5% annual GDP growth during the period from 2006 to 2010. And it has already surpassed this target so far from 2006 to 2009.

Since 2001, the growth of power generation in the PRC has been at a rate higher than the GDP growth in most years. From 2001 to 2009, power generation in the PRC grew at a CAGR of approximately 12.2%, faster than the PRC’s real GDP CAGR over the same period. The faster growth of power generation since 2001 has largely been driven by rapid industrialization and also by rising residential power demand as per capita income increased. According to China Electricity Council (“CEC”) and China National Bureau of Statistics, power consumption by the industrial sector of the economy increased from 1,044.5 TWh in 2001 to 2,699.3 TWh in 2009, representing a CAGR of 12.6%.

Year	Real GDP Growth Rate Over Preceding Year	Power Generation Growth Rate Over Preceding Year
	(%)	(%)
2001	8.3	9.2
2002	9.1	11.7
2003	10.0	15.5
2004	10.1	15.3
2005	10.4	13.5
2006	11.6	14.6
2007	13.0	14.5
2008	9.6	6.5
2009	9.1	6.6

Sources: International Monetary Fund, World Economic Outlook Database, April 2009; BP Statistical Review of World Energy, June 2010; China National Bureau of Statistics.

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The following table shows that despite the PRC had higher annual economic growth rate and per capita power generation growth rate than G7 countries from 2005 to 2009, it had lower per capita power generation than G7 countries.

Countries	2009 Per Capita Power Generation (kWh)	Real GDP Growth Rate					Per Capita Power Generation Growth				
		2005	2006	2007	2008	2009	2005	2006	2007	2008	2009
G7 countries ⁽¹⁾	10,477	2.4	2.6	2.2	0.2	(3.4)	1.6	(0.2)	1.0	(0.5)	(5.4)
PRC	2,791	10.4	11.6	13.0	9.6	9.1	12.8	14.0	13.9	5.9	6.1

Sources: BP Statistical Review of World Energy, June 2010; International Monetary Fund, World Economic Outlook Database, April 2009; China National Bureau of Statistics

(1) G7 countries include Canada, France, Germany, Italy, Japan, United Kingdom, and United States

Supply and Demand for Power in the PRC

The PRC had a total installed capacity of approximately 874 GW at the end of 2009. As shown in the following table, the PRC's total power generation grew faster than its total installed capacity since 2001, resulting in increasing average utilization hours from 2001 to 2004. However, starting in 2005, installed capacity growth began to outpace demand for power throughout the PRC. This trend has caused average utilization hours to decrease from 2005 to 2009.

Year	Total Installed Capacity (GW)	Total Power Generation (TWh)	Average Utilization Hours ⁽¹⁾ (hours)
2001	338.6	1,480.8	4,501.6
2002	356.6	1,654.0	4,758.3
2003	391.4	1,910.6	5,108.5
2004	442.4	2,203.3	5,285.0
2005	517.2	2,500.3	5,211.0
2006	623.7	2,865.7	5,023.6
2007	713.3	3,281.6	4,908.8
2008	792.5	3,494.5	4,641.4
2009	874.1 ⁽²⁾	3,725.1	4,470.3

Sources: China Electric Power Yearbook 2008; China Electricity Council; BP Statistical Review of World Energy, June 2010

(1) Total power generation in a year divided by the average amount of the total installed capacity for the same year and the previous year multiplied by 1,000

(2) Based on CEC's 2009 National Power Industry Statistics Report

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The following table sets out, as of the end of 2009 and in each province, municipality and autonomous region in the PRC, the total power installed capacity, wind power grid-connected installed capacity, and percentage of gross power generation by all energy sources.

	Total Power Installed Capacity	Wind Power Grid- connected Installed Capacity	Gross Power Generation By All Energy Sources
	(MW)	(MW)	(%)
Guangdong	64,069	557	7.2%
Shandong	60,786	865	7.8%
Jiangsu	56,623	945	8.1%
Zhejiang	56,104	227	6.1%
Inner Mongolia	55,555	6,422	6.1%
Henan	46,798	49	5.6%
Hubei	45,689	14	4.9%
Shanxi	40,885	125	5.1%
Hebei	38,292	1,358	4.8%
Sichuan	38,080	—	3.9%
Yunnan	31,691	79	3.2%
Guizhou	30,912	—	3.7%
Fujian	30,358	457	3.2%
Anhui	28,411	—	3.6%
Hunan	27,359	2	2.6%
Liaoning	25,768	1,739	3.2%
Guangxi	25,524	—	2.5%
Shaanxi	21,814	—	2.3%
Heilongjiang	18,861	1,202	2.0%
Gansu	17,672	747	1.9%
Shanghai	16,577	39	2.1%
Jilin	15,934	1,477	1.5%
Jiangxi	15,326	63	1.4%
Xinjiang	12,804	862	1.5%
Chongqing	11,338	13	1.2%
Qinghai	10,670	—	1.0%
Tianjin	10,037	—	1.1%
Ningxia	9,520	251	1.3%
Beijing	6,220	50	0.7%
Hainan	3,852	58	0.4%
Tibet	567	—	0.0%
Total	874,097	17,599	100.0%

Source: China Electricity Council

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Energy Sources

The PRC is a country with abundant coal resources, but relatively limited oil and gas resources. As such, coal power generation units have accounted for the majority of power generation installed capacity in the PRC. In addition to coal power generation, significant new power generation projects that utilize hydroelectric, natural gas, wind and nuclear energy as energy sources are under development. The following table sets forth total installed power generation capacity in the PRC by energy source by the end of 2008 and 2009. In particular, percentage of wind power total grid-connected installed capacity in total installed capacity by all energy sources increased from 1.1% by the end of 2008 to 2.0% by the end of 2009.

Energy Source ⁽¹⁾	As of December 31, 2008	As of December 31, 2009
	Installed Capacity by Energy Source (%)	Installed Capacity by Energy Source (%)
Thermal	76.0	74.5
Hydro	21.8	22.5
Wind	1.1	2.0
Nuclear	1.1	1.0
Total	100.0	100.0

Source: China Electricity Council

(1) Exclude smaller energy sources such as solar power and tidal power

The PRC's Energy and Environment Related Targets

Energy scarcity and environmental deterioration are major global concerns. Due to rapid economic development, rising living standards and continuous increase in per capita energy consumption in the PRC, energy shortage has been a limiting factor for the PRC's economic development. As such, in the outline of the Eleventh Five Year Plan published in 2005, the PRC government set a target for reducing energy consumption per unit of GDP by 20% by 2010 compared to the level in 2005. On November 25, 2009, the Chinese State Council announced at their executive meeting that the PRC would commit to reducing carbon dioxide emissions per unit of GDP by 40% to 45% by 2020 compared with its 2005 level.

In order to speed up the development of renewable energy, promote energy conservation and reduce pollution, mitigate climate change, and better meet the requirements of sustainable social and economic development, the PRC published the Medium- and Long-term Development Plan for Renewable Energy in September 2007. In this plan, the PRC set a target to raise the share of renewable energy in total primary energy consumption to 10% by 2010, and 15% by 2020.

Background and Restructuring of the PRC Power Industry

In January 1997, the State Power Corporation was established to take ownership of state-owned power generation assets and virtually all of the high voltage power transmission grids and local power distribution networks in the PRC. The State Power Corporation was responsible for the investment, development, construction, management, operation and ownership of power plants, the inter-connections of interprovincial and interregional power grids, and the transmission of power across regions.

In March 1998, the SETC was established to assume the governmental and administrative functions in relation to the power industry. The Electric Power Bureau was established within the SETC and given the responsibility of promoting reform policies and regulations, formulating development strategies, specifying technical requirements and industry practice and supervising the operation of the power industry.

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As a result of further restructuring of the PRC power industry, in December 2002, the State Power Corporation was reorganized into two power grid companies and five large independent power generation groups. The two power grid companies are State Grid and Southern Grid. The State Grid owns and manages six regional power grid companies, namely, northeast China, north China, east China, central China and northwest China power grids and Tibet Power Grid, which in turn own and operate interprovincial high voltage power transmission grids and local power distribution networks in 26 provinces, autonomous regions and municipalities. Southern Grid owns and manages interprovincial high voltage power transmission grids and local power distribution networks in five provinces and autonomous region including Guangdong, Guizhou, Yunnan and Hainan provinces, and Guangxi Zhuang Autonomous Region.

In addition to State Grid and Southern Grid, Inner Mongolia power grid consists of the Western Inner Mongolia power grid and the Eastern Inner Mongolia power grid. In order to ensure the security and stability operation of the power system, the Eastern Inner Mongolia power grid is operated by State Grid and the Western Inner Mongolia power grid is operated by Inner Mongolia Grid Company, an independent provincial grid corporation.

As of the end of 2009, the five largest power generation groups owned and managed approximately 50% of the total installed power generation capacity available in the PRC. The remaining 50% was primarily owned by provincial, local and other power companies. The table below sets out the approximate installed capacity in the PRC controlled by the five large independent power generation groups.

Power Generation Groups	2009 Installed Capacity
	(GW)
Huaneng Group ⁽¹⁾	104.4
China Datang Corporation ⁽²⁾	100.2
China Guodian Corporation ⁽¹⁾	82.0
China Huadian Corporation ⁽²⁾	75.5
China Power Investment Corporation ⁽¹⁾	60.0
Others	452.0
Total	<u>874.1</u>

Source: China Electricity Council, Information from Companies' Websites

- (1) Using consolidated installed capacity for the independent power generation groups
- (2) Data source does not specify whether installed capacity is consolidated or total

Pursuant to the on-going reform of the electric power industry, a new industry regulator, the SERC, was established under the State Council in 2002. The main responsibilities of the SERC include ensuring fair competition in the electric power industry, monitoring the quality and standard of power plant production, administering electric power business permits and handling electric power market disputes.

In July 2004, the State Council issued further guidance on approval requirements for different types of power plants. For example,

- wind farms with installed capacity of 50 MW or above need approval from the NDRC; others need approval from regional development and reform commissions or other equivalent authorities. See “Regulatory Environment — Laws and regulations in the PRC wind power industry and renewable energy — Approval of wind power projects” for further details;
- coal power plants need approval from the NDRC; and

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- hydropower plants on major rivers at or above 250 MW in installed capacity need approval from the NDRC; others need approval from regional development and reform commissions or other equivalent authorities.

Transmission and Dispatch

All electricity generated in the PRC is dispatched by power grid companies, except for electricity generated by power plants which are not connected to a grid. Power plants liaise with the relevant power grid companies annually to determine the volume of output to be dispatched. The power dispatched to each grid is administered by dispatch centers owned and operated by the power grid companies.

The main system for the transmission and distribution of power in the PRC consists of the six interprovincial power grids owned by State Grid and five power grids owned by Southern Grid. The table below shows the total installed capacity of the power plants connected to the power grids as a percentage of the total installed capacity in the PRC, and the total power generated on those grids as a percentage of the total power generated in the PRC by the end of 2008.

Power Grid	2008	
	Installed Capacity (%)	Power Generation (%)
State Grid		
East China Power Grid	22.4	23.2
Central China Power Grid	21.9	19.5
North China Power Grid	17.6	19.5
Northeast Power Grid ⁽¹⁾	8.0	8.2
Northwest Power Grid	7.6	7.8
Tibet Power Grid	0.1	0.0
Southern Grid		
Guangdong Provincial Grid	7.6	7.8
Guizhou Provincial Grid	3.0	3.0
Yunnan Provincial Grid	3.3	3.0
Guangxi Provincial Grid	3.1	2.5
Tianshengqiao Plant	0.3	0.4
Hainan Provincial Grid	0.4	0.4
Western Inner Mongolia Power Grid	4.9	4.7
Nationwide Total	100.0	100.0

Source: China Electric Power Yearbook 2009

(1) The Eastern Inner Mongolia power grid is operated by Northeast Power Grid

The PRC's energy sources, such as coal and hydroelectric resources, are principally located in the northern, central and south western inland provinces, but the provinces with the highest power consumption are located in the eastern and southern coastal areas of the PRC. As a result of plans to develop large power plants in areas with abundant energy sources, the expansion of the PRC's power transmission capabilities is of major importance. The PRC plans to expand the interconnected power grids to enable the transmission of power generated by mine-mouth power plants and hydroelectric power plants over long distances to areas of high consumption.

According to the Eleventh Five-Year Plan, the total investment in power grid construction, expansion and upgrade will be over RMB1 trillion during this period. According to State Grid's Eleventh Five-Year Development Plan, State Grid will invest approximately RMB850 billion in grid construction. In particular, in inter-regional grid construction, Ultra High Voltage Alternating Current ("UHVAC") transmission lines are expected to reach 4,200km by 2010, substation capacity is expected to reach 39 million kVA, and inter-regional transmission capacity is expected to reach 70 GW. In terms of grid construction at the county level, 220 kV and

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above Alternating Current (“AC”) and Direct Current (“DC”) transmission lines are expected to reach over 340,000 km, and AC substation capacity is expected to reach over 1.3 billion kVA.

During the Eleventh Five-Year Plan, Southern Grid plans to invest RMB234 billion in grid construction. According to the target of the West-East power transmission project, there will be 11.5-13.5 GW additional transmission capacity added to Guangdong province. Pursuant to the plan, Southern Grid targets to construct 15,600 km of 500 kV AC transmission lines with substation capacity of 61.57 million kVA, 1,225km of ± 500 kV DC transmission line with converter capacity of 6 GW, and 1,438km of ± 800 kV DC transmission line with converter capacity of 10 GW.

THE RENEWABLE POWER GENERATION INDUSTRY

Renewable power generation technologies include, among others, wind, solar (thermal and photovoltaic), mini-hydro, biomass, wave and tidal. According to Renewables 2010 Global Status Report, a report issued by Renewable Policy Network, global renewable energy accounted for 19% of the world power generation in 2008, and is forecasted to reach 23% in 2030 according to World Energy Outlook 2009, a report issued by the International Energy Agency (“IEA”). The principal factors which contribute to increasing demand for renewable energy include:

- concern over the security of energy supply in developed countries;
- increasing worldwide environmental awareness and concern for environmental sustainability; and
- renewable energy technologies becoming more economically efficient.

Global Wind Power Industry

Wind power is the fastest growing renewable energy in the world due to its cost efficiency, resource availability and the maturity of the technology in comparison to other types of renewable energy technologies. According to BTM, global wind installed capacity grew at a CAGR of 26.2% from 2001 through 2009, bringing total installed capacity to 160,084 MW as of December 31, 2009. The top five countries in terms of total wind installed capacity by the end of 2009 were United States, China, Germany, Spain, and India. From 2001 to 2009, total wind installed capacities of these five countries grew at CAGRs of 30.1%, 68.3%, 14.5%, 24.1%, and 28.5% respectively. The 38,103 MW of newly installed capacity in 2009 globally (an increase in the total installed capacity of 31% as compared with the total installed capacity of 2008) set an industry record in spite of the global financial crisis. The strongest growth took place in the United States and in the PRC. In the United States the growth was encouraged by a stimulus package launched by the government in February 2009.

BTM expects that global wind installed capacity will increase at a CAGR of 22.8% between 2009 and 2014, reaching 447,689 MW in 2014. The following table sets forth BTM’s global and regional wind installed capacity in 2009 and expectations for 2010 through 2014.

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Forecast For Wind Power Development 2009-2014

Year End Installed Capacity (MW)

Region	2009	2010E	2011E	2012E	2013E	2014E	09-14E CAGR
Europe	76,553	89,858	105,858	123,883	144,383	165,633	16.7%
Americas	40,351	50,351	62,951	81,351	100,251	122,351	24.8%
South & East Asia	37,147	53,847	71,697	91,297	112,597	135,697	29.6%
The PRC	25,853	39,853	54,853	70,353	86,853	104,853	32.3%
OECD-Pacific ⁽¹⁾	4,873	6,073	7,573	9,423	11,773	14,223	23.9%
Other Areas	1,161	1,986	3,086	4,686	7,036	9,786	53.2%
Total	160,084	202,114	251,164	310,639	376,039	447,689	22.8%

Source: International Wind Energy Development, March 2010 (BTM)

(1) Organization for Economic Co-operation and Development in Pacific region, includes Australia, New Zealand and Japan

At the end of 2009, Europe represented 47.8% of global wind installed capacity. However, according to BTM, the global wind power market will continue to diversify geographically from Europe to the Americas and the PRC in the future. BTM expects the Americas and the PRC to experience greater growth in relative terms than Europe; from 2009-2014, wind installed capacity in the Americas and the PRC are projected to grow at 24.8% and 32.3% respectively while Europe's is projected to grow at only 16.7%.

Regional Wind Power Markets

Europe

Europe is the largest wind power market in terms of installed capacity, with 76,553 MW at the end of 2009. Within Europe, Germany and Spain are the two largest wind markets, with 25,813 MW and 18,784 MW at the end of 2009. The following table sets forth BTM's wind installed capacity growth expectations for Europe on a national basis from 2009 through 2014.

Forecast For Europe Wind Power Development 2009-2014

Year End Installed Capacity (MW)

Region	2009	2010E	2011E	2012E	2013E	2014E	09-14E CAGR
Germany	25,813	27,813	30,213	32,713	35,713	39,213	8.7%
Spain	18,784	20,784	23,284	25,284	27,784	29,784	9.7%
Italy	4,845	6,145	7,645	9,145	10,645	12,145	20.2%
France	4,775	6,375	8,475	10,975	13,675	16,675	28.4%
UK	4,340	5,940	8,140	10,640	13,640	16,140	30.0%
Portugal	3,474	4,474	5,474	6,474	7,674	8,674	20.1%
Denmark	3,403	3,753	3,853	4,353	4,503	4,653	6.5%
Netherlands	2,226	2,526	2,776	3,176	3,576	4,076	12.9%
Sweden	1,537	2,137	2,887	3,637	4,537	5,737	30.1%
Greece	1,198	1,398	1,598	1,848	2,148	2,448	15.4%
Rest of Europe	6,158	8,513	11,513	15,638	20,488	26,088	33.5%
Total Europe	76,553	89,858	105,858	123,883	144,383	165,633	16.7%

Source: International Wind Energy Development, March 2010 (BTM)

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Americas

The Americas is the second largest wind power market in terms of installed capacity, with 40,351 MW at the end of 2009. Within the Americas, the United States is the largest wind market, with 35,159 MW at the end of 2009. The following table sets forth BTM's wind installed capacity growth expectations for the Americas from 2009 through 2014.

Forecast For Americas Wind Power Development 2009-2014

Year End Installed Capacity (MW)

Region	2009	2010E	2011E	2012E	2013E	2014E	09-14E CAGR
USA	35,159	43,159	53,159	68,159	83,159	100,159	23.3%
Canada	3,321	4,521	6,021	8,021	10,521	13,521	32.4%
Rest of Americas	1,871	2,671	3,771	5,171	6,571	8,671	35.9%
Total Americas	40,351	50,351	62,951	81,351	100,251	122,351	24.8%

Source: International Wind Energy Development, March 2010 (BTM)

Asia

Asia is the third largest wind power market in terms of installed capacity, with 37,147 MW at the end of 2009. Within Asia, the PRC is the largest wind power market, with 25,853 MW at the end of 2009. The following table sets forth BTM's wind installed capacity growth expectations for South and East Asia on a national basis from 2009 through 2014.

Forecast For Asia Wind Power Development 2009-2014

Year End Installed Capacity (MW)

Region	2009	2010E	2011E	2012E	2013E	2014E	09-14E CAGR
The PRC	25,853	39,853	54,853	70,353	86,853	104,853	32.3%
India	10,827	13,327	15,827	19,327	23,327	27,327	20.3%
Rest of Asia	467	667	1,017	1,617	2,417	3,517	49.8%
Total Asia	37,147	53,847	71,697	91,297	112,597	135,697	29.6%

Source: International Wind Energy Development, March 2010 (BTM)

PRC

In the PRC, wind power total installed capacity for the eight years from 2001 to 2008 was 402 MW, 473 MW, 571 MW, 769 MW, 1,264 MW, 2,588 MW, 5,875 MW, and 12,103 MW respectively. The newly installed capacity during 2009 reached 13,750 MW, increasing its total installed capacity to 25,853 MW. The total grid-connected installed capacity at the end of 2009 reached 17,599 MW.

In September 2007, the NDRC released its Medium and Long-Term Development Plan for Renewable Energy. This sets out targets for renewable energy up to 2020, with a 10% contribution to total energy consumption by 2010 and 15% by 2020. The Medium and Long-Term Development Plan also sets a target for

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wind installed capacity to reach 30 GW in 2020. To meet its commitment, the PRC government has announced its intention to invest about RMB2 trillion in the development of renewable energy. In addition, this plan also includes a “mandated market share” policy, which sets targets for power generated from non-hydro renewable sources at 1% by 2010 and 3% by 2020. Given that power generated from photovoltaics and biomass is likely to be modest given its current rate of development, achievement of this target will likely rely heavily on wind power. However, because of the recent and forecasted high growth rate in wind energy market, wind power installed capacity at the end of 2009 has exceeded the PRC government’s original short term target for 5GW by 2010 and represents substantial progress towards the NDRC’s 2020 targeted wind installed capacity of 30 GW set in September 2007. The latest projection is that wind installed capacity is expected to reach 150 GW in 2020, according to the Draft of the Twelfth Five-Year Plan for Renewable Energy Development, exceeding the original target by over 70 GW.

In terms of industrialization of the domestic wind power industry, the PRC now has more than 70 local turbine manufacturers with turbines either in operation or under testing. China is also building its own supply chain. The PRC government plans to have the vast majority of wind equipment used in wind farms in the PRC made by domestic suppliers by 2010 and to encourage the development of large-scale wind farms.

With a land mass of 9.56 million square km and 32,000 km of coastline (including islands), the PRC has abundant wind energy resources with significant development potential. According to Global Wind Energy Council (GWEC), at the end of 2009, the China Meteorological Administration published a new wind assessment based on measurements at a hub height of 50 meters. This assessment shows that the PRC has an onshore potential to develop 2,380 GW of class 3 wind power (average wind power density >300 W/m²) and 1,130 GW for class 4 wind power (average wind power density >400W/m²), while the offshore potential (water depth of 5-25 meters) reaches 200 GW for class 3 wind power.

The PRC government believes the areas with high potential for wind power development in the PRC are Northern China and the South-Eastern coastal areas. Additionally, some parts of inland China influenced by lakes or other special topographic conditions also have abundant wind energy resources. The most abundant wind resources in Northern China include the regions of Inner Mongolia, Jilin, Liaoning, Heilongjiang, Gansu, Ningxia, Xinjiang and Hebei. The most abundant wind resources along the coastal areas and offshore are found in Shandong, Jiangsu, Zhejiang, Fujian, Guangdong, Guangxi and Hainan.

According to BTM, of the global total wind installed capacity of 160,084 MW at the end of 2009, the PRC accounted for approximately 16% and was ranked the second largest country in terms of total wind installed capacity at the end of 2009. BTM estimates that by the end of 2011, the PRC’s total wind installed capacity will increase to 54,853 MW, accounting for approximately 22% of the global total wind installed capacity at that time and will become the largest country in terms of total wind installed capacity. BTM also expects that the PRC will have the highest wind installed capacity CAGR from 2009-2014 among the top 10 countries in terms of total wind installed capacity at the end of 2009, including U.S., China, Germany, Spain, India, Italy, France, UK, Portugal and Denmark (in descending order of their total installed capacity at the end of 2009).

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The following table sets forth the estimated total installed capacity during the period from 2009 to 2014 and the wind installed capacity penetration rates in selected countries in 2009. Despite experiencing fast growth, the PRC's Wind Power penetration rate is still relatively low.

Country	2009 Year End Total Wind Installed Capacity	2014 Year End Expected Total Wind Installed Capacity	2009-2014 Expected Wind Installed Capacity CAGR	2009 Year End Total Power Installed Capacity	2009 Penetration Rate⁽¹⁾
	(MW)	(MW)	(%)	(MW)	(%)
USA ⁽²⁾	35,159	100,159	23.3%	1,131,585	3.1%
PRC	25,853	104,853	32.3%	874,097	3.0%
Germany	25,813	39,213	8.7%	127,701	20.2%
Spain	18,784	29,784	9.7%	90,817	20.7%
India	10,827	27,327	20.3%	156,092	6.9%

Source: International Wind Energy Development, March 2010 (BTM), China Electricity Council, Central Electricity Authority of India, US Energy Information Administration (EIA), and Platts

- (1) Wind installed capacity divided by the national total installed capacity in each country
- (2) U.S. year-end total power installed capacity in 2009 is estimated based on U.S. year-end total installed capacity in 2008 and planned capacity addition in 2009 from EIA

The following table sets forth the China Wind Power Report's estimate of China's onshore wind resources in selected provinces with technically exploitable wind resource of more than 10 GW.

Province/Autonomous Region	Technically Exploitable Wind Resources
	(GW)
Inner Mongolia	~150
Xinjiang	>100
Gansu	>100
Hebei	>40
Jiangsu	>10
Jilin	>10

Source: China Wind Power Report 2008

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The uneven distribution of wind resources in the PRC influences where wind power capacity will be installed in each province. Although the coastal and offshore areas have abundant wind resources, wind power production capacity has so far been located mainly in North China. As shown in the table below, Inner Mongolia, Liaoning, Jilin, Hebei are the most developed areas. The following table sets forth the PRC's total wind power grid-connected installed capacity by province, total wind power grid-connected installed capacity by province as a percentage of the PRC total and gross wind power generation by province as of December 31, 2009.

Regions	Wind Power Grid-connected Installed Capacity (MW)	Wind Power Grid-connected Installed Capacity as % of the PRC Total (%)	Gross Wind Power Generation (GWh)
Inner Mongolia	6,422	36.5%	9,738
Liaoning	1,739	9.9%	2,682
Jilin	1,477	8.4%	2,170
Hebei	1,358	7.7%	2,377
Heilongjiang	1,202	6.8%	1,992
Jiangsu	945	5.4%	1,446
Shandong	865	4.9%	1,202
Xinjiang	862	4.9%	1,475
Gansu	747	4.2%	1,190
Guangdong	557	3.2%	766
Fujian	457	2.6%	877
Ningxia	251	1.4%	393
Zhejiang	227	1.3%	352
Shanxi	125	0.7%	205
Yunnan	79	0.4%	209
Jiangxi	63	0.4%	109
Hainan	58	0.3%	86
Beijing	50	0.3%	137
Henan	49	0.3%	103
Shanghai	39	0.2%	75
Hubei	14	0.1%	24
Chongqing	13	0.1%	6
Hunan	2	0.0%	2
Total	17,599	100%	27,615

Source: China Electricity Council

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The Leading Wind Farm Operators in the PRC

The following table sets forth the PRC's leading wind farm operators, their total installed capacities by the end of 2009, percentage of the PRC's total wind installed capacity, and gross wind power generation in 2009.

Company	Total Wind Installed Capacity	Percentage of China Wind Power Capacity	Gross Wind Power Generation
	(MW)	(%)	(GWh)
China Longyuan Power Group Corporation Limited ⁽¹⁾	4,842	18.7	6,211
China Datang Corporation	3,023 ⁽²⁾	11.7	3,650 ⁽³⁾
Huaneng Renewables Corporation Limited ⁽⁴⁾	1,550	6.0	1,885
Shenhua Guohua Energy Investment Co ⁽³⁾	1,230	4.8	1,930
Beijing Energy Investment Co ⁽³⁾	940	3.6	1,010
China Power Investment Corporation ⁽³⁾	890	3.4	1,190
China Huadian Corporation ⁽³⁾	750	2.9	980
China Guangdong Nuclear Power Holding Co., Ltd. ⁽³⁾	700	2.7	970
China Windpower Group Limited ⁽⁵⁾	566	2.2	296

Source: Company information, International Wind Energy Development, March 2010 (BTM), China Electricity Council

- (1) China Longyuan Power Group Corporation Limited's 2009 Annual Report
- (2) International Wind Energy Development, March 2010 (BTM), total installed capacity
- (3) China Electricity Council, data source does not specify whether installed capacity is consolidated or total and all numbers include the numbers of the parent group
- (4) Information provided by the Company
- (5) China Windpower Group Limited's 2009 annual report, total installed capacity in operation and total gross generation

The Leading Wind Farm Operators Globally

The following table sets out the top 15 global wind power generation companies by total installed capacity by the end of 2009 and percentage of the total global wind power installed capacity.

Company	Total Installed Capacity	Percentage of Total Global Wind Power Installed Capacity
	(MW)	(%)
Iberdrola Renovables	10,350	6.5
NextEra Energy Resources (formerly FPL Energy)	7,544	4.7
Acciona Energy	6,230	3.9
EDP Renováveis	6,227	3.9
China Longyuan Power Group Corporation Limited	4,842	3.0
China Datang Corporation	3,023	1.9
E.ON Climate and Renewables	2,873	1.8
EDF Energies Nouvelles	2,650	1.7
Invenergy	2,018	1.3
Eurus Energy Holding	1,903	1.2
Infigen Energy (formerly BBW)	1,739	1.1
RWE Innogy	1,568	1.0
Huaneng Renewables Corporation Limited	1,550	1.0
Enel	1,510	0.9
GDF Suez	1,492	0.9
Total of the above companies	<u>55,519</u>	<u>34.7</u>

Source: Company Information, International Wind Energy Development, March 2010 (BTM)

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As can be seen in the table above, the global wind power market is relatively fragmented. According to BTM, at the end of 2009, the combined total installed capacity of the top 15 wind generation companies was 55,519 MW, or approximately 34.7% of the global total installed capacity.

Offshore versus Onshore

The development of offshore wind power projects globally has evolved relatively slowly compared with onshore projects due to higher operation and maintenance costs, larger required capital expenditures and larger minimum investment sizes required to compensate for the associated larger fixed costs. However, offshore wind energy technology continues to mature.

The table below sets forth BTM's estimation of total offshore wind installed capacity from 2009 to 2014.

Year End Installed Capacity (MW)

Country	2009	2010E	2011E	2012E	2013E	2014E	09-14E CAGR
UK	894	1,194	2,312	3,532	4,982	6,082	46.7%
Denmark	626	833	833	1,233	1,233	1,233	14.5%
Netherlands	247	247	247	247	247	247	0.0%
Sweden	163	163	313	313	403	1,043	45.0%
PRC	63	165	165	365	365	565	55.1%
Germany	60	460	460	1,080	1,810	2,610	112.7%
Rest of the World	57	422	572	1,657	2,603	3,818	131.8%
Total	2,110	3,484	4,902	8,427	11,643	15,598	49.2%

Source: International Wind Energy Development, March 2010 (BTM)

According to BTM, the total offshore wind installed capacity globally is expected to reach 15,598 MW by 2014 from 2,110 MW in 2009, representing a CAGR of 49.2%, much higher than that of total onshore wind installed capacity. In particular, total offshore wind installed capacity in the PRC is expected to reach 565 MW by 2014 from 63 MW in 2009, representing a CAGR of 55.1%.

Overview of a Wind Farm

The principal component of a wind farm is the wind turbines. Each wind turbine typically comprises three blades, a nave, a gearbox, a generator, a cabin, a supporting tower and certain other secondary support systems. The remainder of the wind farm infrastructure includes access roads, concrete foundations, an electrical collection system, a step-up substation, and a box-type transformer as well as a control building.

Wind causes the blades to rotate and the energy generated by this rotor is then transmitted to a generator that produces electric currents. Through the electrical collection system, electric power feeds into a step-up substation, which allows the power to flow to the grid at a pre-determined voltage.

The total installed capacity of a wind farm varies from project to project, driven largely by the site characteristics, available land, grid connection and limits imposed by the relevant planning consent and other government permits and approvals governing the project's construction.

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Overview of The PRC Wind Turbine Supply

The PRC wind turbine supply has increased dramatically over the past several years as new manufacturers have entered the market. According to BTM, there are currently more than 70 local manufacturers with turbines either in operation or under testing. The PRC domestic wind turbine manufacturers took full advantage of the domestic wind power market and covered about 87.8% of the total demand, where foreign companies established in the PRC with wholly owned subsidiaries together only accounted for 12.2% of the market in 2009. Sinovel, Goldwind, and Dongfang Electric also joined the list of the world's top ten largest turbine suppliers. The following table sets out the top ten wind turbine manufacturers in the PRC, their respective newly installed capacity, market share in terms of newly installed capacity and total installed capacity in the PRC as of the end of 2009.

Wind Turbine Manufacturer	2009 Newly Installed Capacity in the PRC	Market Share as % of 2009 the PRC Newly Installed Capacity	Market Share as % of 2009 the PRC Total Installed Capacity
	(MW)	(%)	(%)
Sinovel	3,495	25.3	21.9
Goldwind	2,722	19.7	20.7
Dongfang Electric	2,036	14.8	12.9
United Power	768	5.6	3.1
Mingyang	749	5.4	3.5
Vestas	609	4.4	7.8
HARA XEMC	454	3.3	2.3
GE Wind	323	2.3	3.7
Suzlon	293	2.1	2.3
Gamesa	276	2.0	7.1

Source: Chinese Wind Energy Association (CWEA)

The average size of wind turbines installed in the PRC is also increasing. It is clear that the size of wind turbines installed in the PRC has dramatically increased above 1 MW, with this segment accounting for over 50%, 70%, and 85% in terms of newly installed capacity in 2007, 2008, and 2009 respectively, according to CWEA.

Due to the rapid expansion of the wind turbine sector, the advancement of wind turbine technology and emergence of more manufacturers, coupled with the global economic downturn, wind turbine prices have declined since the end of 2008. According to BTM, in the PRC wind turbine market, the average price (including VAT) for 1.5 MW wind turbine from the PRC leading wind turbine manufacturers decreased from RMB6,300/kW in 2008 to RMB5,514/kW in 2009 and further to RMB4,850/kW in the first quarter of 2010. The average price (including VAT) for 1.5 MW wind turbine from foreign wind turbine manufacturers decreased from RMB7,560/kW in 2008 to RMB6,938/kW in 2009 and further to RMB5,550/kW in the first quarter of 2010.

Overview of Policies and Incentives for The PRC Wind Power Industry

Several favorable policies and incentives have been set out by the PRC government to encourage the development of the wind power industry.

Mandatory Purchase and Dispatch Priority

The Renewable Energy Law provides that all electricity power generated from renewable energy shall be purchased in full amount. Grid companies shall purchase the full amount of on-grid electricity generated by

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approved renewable energy plants whose power generation projects meet the grid connection technical standards in the areas covered by the grid companies' power grids, and provide grid-connection services and related technical supports. For details on the policies of mandatory purchase of the renewable energy, please refer to "Mandatory Purchase, Tariffs and Cost Compensation Program of the Renewable Energy" in the "Regulatory Environment" section in this prospectus.

On August 2, 2007, the Provisional Measures on the Dispatch of Energy Saving Power Generation provides that power producers are able to enjoy the highest dispatch priority if they use renewable energy including wind, solar and tidal power. For details on the policies of dispatch priority of renewable energy generation in the PRC, please refer to "Dispatch Priority of Renewable Energy Generation" in the "Regulatory Environment" section in this prospectus.

Taxation

The wind power projects which have obtained government approval on or after January 1, 2008 are fully exempted from enterprise income tax for three years starting from the year when operating income is first derived from the sales of wind electricity, and is 50% exempted from enterprise income tax for three years thereafter. The wind power projects are also entitled to a tax rebate equivalent to 50% of the VAT payable by the wind power business. In addition, under the Interim Regulation of the PRC on Value Added Taxes, effective from January 1, 2009, general VAT payers are allowed to credit against output VAT in respect of input VAT on fixed assets purchased or self-manufactured. For details on the taxation of renewable energy industry in the PRC, please refer to "Taxation" in the "Regulatory Environment" section in this prospectus.

On-Grid Tariffs

The on-grid tariff of renewable energy power generation projects in the PRC are determined by the price authorities of the State Council on the basis of being beneficial to the development of renewable energy and being economic and reasonable. For wind, in particular, the PRC government announced a tariff setting mechanism in 2009 that sets tariffs according to regions and wind resources. The on-grid tariffs apply for all onshore wind power projects approved on or after August 1, 2009. For details on the policies of on-grid tariffs in the PRC, please refer to "Mandatory Purchase, Tariffs and Cost Compensation Program of the Renewable Energy" in the "Regulatory Environment" section in this prospectus.

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The following table sets forth the comparison of the wind power tariff and the coal-fired power tariff by provinces.

Area	Wind Power Tariff	Benchmark Tariff for FGD*-equipped Coal-fired Generation
	RMB/kWh (incl. VAT)	RMB/kWh (incl. VAT)
Guangdong	0.61	0.50
Zhejiang	0.61	0.46
Shanghai	0.61	0.46
Hunan	0.61	0.44
Hainan	0.61	0.44
Guangxi	0.61	0.44
Jiangsu	0.61	0.43
Hubei	0.61	0.43
Jiangxi	0.61	0.42
Fujian	0.61	0.41
Anhui	0.61	0.40
Shandong ⁽¹⁾	0.61	0.40
Sichuan	0.61	0.39
Henan	0.61	0.39
Liaoning	0.61	0.39
Hebei ⁽²⁾		
Zone 2	0.54	0.39
Zone 4	0.61	0.39
Chongqing	0.61	0.39
Tianjin	0.61	0.38
Beijing	0.61	0.38
Heilongjiang ⁽³⁾		
Zone 3	0.58	0.38
Zone 4	0.61	0.38
Jilin ⁽⁴⁾		
Zone 3	0.58	0.37
Zone 4	0.61	0.37
Shaanxi	0.61	0.34
Guizhou	0.61	0.33
Shanxi	0.61	0.33
Yunnan	0.61	0.32
Qinghai	0.61	0.29
Inner Mongolia ⁽⁵⁾		
Zone 1	0.51	0.28
Zone 2	0.54	0.30
Gansu ⁽⁶⁾		
Zone 2	0.54	0.28
Zone 3	0.58	0.28
Ningxia	0.58	0.27
Xinjiang ⁽⁷⁾		
Zone 1	0.51	0.22
Zone 3	0.58	0.22

Source: NDRC website (tariff information for Tibet is not available), after tariff increase in November 2009

* Flue gas desulphurization

- (1) Although the wind power on-grid tariff in Shandong province is RMB0.61/kWh, all wind projects in Shandong province enjoy a RMB0.09/kWh (including VAT) subsidy from the provincial government
- (2) Zone 2 in Hebei includes Zhangjiakou, Chengde; Zone 4 includes all areas except areas included in Zone 2
- (3) Zone 3 in Heilongjiang includes Jixi, Shuangyashan, Qitaihe, Suihua, Yichun, Da Hinggan Ling area; Zone 4 includes all areas except areas included in Zone 3
- (4) Zone 3 in Jilin includes Baicheng, Songyuan; Zone 4 includes all areas except areas included in Zone 3
- (5) Zone 2 in Inner Mongolia includes Chifeng, Tongliao, Xing'anmeng, Hulunbuir; Zone 1 includes all areas except areas included in Zone 2 in Inner Mongolia

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- (6) Zone 2 in Gansu includes Zhangye, Jiayuguan and Jiuquan; Zone 3 includes all areas except areas included in Zone 2 in Gansu
- (7) Zone 1 in Xinjiang includes Urumqi, Yili Kazak autonomous, Changji Hui autonomous prefecture, Klamyi, Shihezi; Zone 3 includes all areas except areas included in Zone 1 in Xinjiang

Solar Power Industry

Solar power is the generation of electricity from sunlight. The electricity can be generated through either concentrating solar power (“CSP”), where the sun's energy is focused to boil water which is then used to provide power, or photovoltaics (“PV”). Solar PVs are arrays of cells containing a material that converts solar radiation into electricity. Materials used include amorphous silicon, polycrystalline silicon, micro-crystalline silicon, cadmium telluride, and copper indium selenide/sulfide. A PV system consists of multiple components, including solar cells, mechanical and electrical connection and mounting systems, and inverters to convert the DC generated into the AC. PV system could be grid-connected, off-grid, or combined with another source of power, such as wind turbine, to ensure a consistent supply of electricity.

Global solar PV industry has been growing rapidly. According to European Photovoltaic Industry Association (“EPIA”), from 2001 to 2009, the total PV installed capacity grew from 1,762 MW to 22,878 MW globally, representing a CAGR of 37.8%. European countries, Japan, and U.S. accounted for 69.7%, 11.5%, and 7.2% of the total PV installed capacity, respectively. In 2009, PV newly installed capacity reached 7.2 GW globally, an increase of 17.6% over 2008. European countries accounted for 5.6 GW or 77.8% of newly installed capacity in 2009. The top three countries in Europe in terms of PV newly installed capacity in 2009 were Germany, Italy and the Czech Republic, which collectively accounted for 4.9 GW or 68.4% of the newly installed capacity. Japan and U.S. were the largest markets next to Europe, accounting for 484 MW and 477 MW of PV newly installed capacity in 2009, respectively. The PRC added 160 MW in 2009, ranked as the fifth largest market after Europe, Japan, U.S. and South Korea based on PV newly installed capacity. According to EPIA, global solar PV market is expected to reach at least 76.5 GW in 2014, representing a CAGR of 27.3% from 2009 to 2014.

The PRC Solar Power Industry

The annual average sunshine hours of two-thirds of the PRC’s territory is over 2,200 hours, with total solar radiation per unit area of over 5000 MJ/m². These regions have favorable conditions for solar energy development, with very favorable conditions found in west China.

According to NDRC’s Medium and Long-Term Development Plan for Renewable Energy issued in September 2007, the total installed capacity of solar power in the PRC is expected to reach 300 MW by the end of 2010 and 1.8 GW by the end of 2020. The following table sets out the details:

	<u>2010 Target</u>	<u>2020 Target</u>
	(MW)	(MW)
Solar PVs for remote rural areas	150	300
Grid-connected BIPVs in economically developed large and medium-sized cities	50	1,000
Grid-connected large solar thermal power stations	50	200
Other solar PV application in communication, meteorology, long-distance pipelines, railways, highways, etc.	30	100
Grid-connected large solar PV power stations	20	200
Total Solar Installed Capacity	<u>300</u>	<u>1,800</u>

However, because of the recent rapid development of solar PV market, the PRC’s total PV installed capacity in 2009 reached 305 MW, which already surpassed original 2010 target. It is believed that the NDRC

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plans to increase solar PV total installed capacity to 2 GW by 2011, and may raise the 2020 total installed capacity target to 20 GW.

The following sets forth our key sources used to prepare this “Industry Overview” section

- *BP Statistical Review of World Energy, June 2010.* The BP Statistical Review of World Energy is an annual publication authored by BP since 1951 and currently has a worldwide circulation of 60,000 printed copies. The statistics in the BP Statistical Review of World Energy are taken from government and other primary sources as well as published data
- *BTM Consult ApS.* Founded in 1986, BTM Consult ApS (“BTM”) is a private independent consultancy company based in Denmark and specializing in renewable energy, including wind energy. BTM states on its website that its staff has been working with wind energy utilization since 1979. Services provided by BTM include market assessment and business development, appraisal and due diligence investigations. It has published, among other things, International Wind Energy Development — World Market Update (“BTM Report”), a non-governmental publication, on an annual basis since 1995, which contains statistics and market updates regarding the global wind energy industry. The Company paid a total fee of €800 for the BTM report. For the information disclosed in this prospectus which is extracted from BTM Report, the Company paid a total fee of €3,000 and is disclosed with the consent of BTM. However, neither the Company (as well as its Connected Persons) nor the Joint Sponsors commissioned BTM to prepare any research report and BTM is an Independent Third Party of the Company and Joint Sponsors
- *China Electricity Council.* Founded in 1988, China Electricity Council (“CEC”) is a consolidated organization of China’s power industry enterprises and institutions and operates under the supervision of the State Electricity Regulatory Commission. The CEC publishes industry data reports such as *Power Industry Monthly Statistics, Power Industry Statistics Express, and China Electric Power Yearbook*
- *National Bureau of Statistics of China.* Directly governed by the Central Government of the PRC, the National Bureau of Statistics is responsible for the collection and coordination of national statistics
- *China Wind Power Report 2008.* Sponsored by the Chinese Renewable Energy Industries Association and published by China Environmental Sciences Press, the report reviews the latest development trends in the wind power industry in China as well as abroad
- *U.S. Energy Information Administration.* Energy Information Administration is an independent statistical agency within the Department of Energy of the United States
- *European Photovoltaic Industry Association.* The European Photovoltaic Industry Association (“EPIA”) is the world’s largest photovoltaic industry association devoted to the solar photovoltaic (“PV”) electricity market
- *International Monetary Fund (“IMF”) World Economic Outlook Database, April 2010.* The World Economic Outlook (“WEO”) database contains selected macroeconomic data series from the statistical appendix of the *World Economic Outlook* report, which presents the IMF staff’s analysis and projections of economic developments at the global level, in major country groups and in many individual countries. The database is updated biannually in April and September/October
- *National Development and Reform Commission.* The National Development and Reform Commission (“NDRC”) is a macroeconomic management agency under the State Council, and is

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responsible for studying and formulating policies for economic and social development. The NDRC sets the benchmark tariffs for power generation and grid companies in China. It is also responsible for drafting long-term development plans such as the Eleventh Five-Year Plan and the Medium and Long-term Development Plan for Renewable Energy

- *Renewable Energy Law of the PRC*. The Renewable Energy Law provides the legal framework for the development of renewable energy in the PRC. It was first passed and promulgated in 2005 by the National People's Congress. An amendment was passed in December 2009 and became effective on April 1, 2010
- *The Medium and Long-term Development Plan for Renewable Energy*. Published by the NDRC in September 2007, the Plan sets forth the long-term national targets for various renewable energy sources in 2010 and 2020