

INDUSTRY OVERVIEW

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OVERVIEW OF THE PRC ECONOMY AND POWER INDUSTRY

The PRC's real gross domestic product, or real "GDP," grew at a CAGR of 10.8% from 2006 to 2010 during the 11th Five-Year Plan period, making it one of the fastest growing economies in the world. Despite the global macroeconomic slowdown since 2008, the PRC's economy maintained high growth over the period, partially due to the PRC government's economic stimulus measure. According to the 12th Five-Year Plan, the PRC's real GDP growth is expected to achieve a CAGR of 7.0% from 2011 to 2015.

The following table shows that despite the PRC having a higher annual economic growth rate and per capita power generation growth rate than G7 countries from 2006 to 2010, it had lower per capita power generation than G7 countries.

Countries	2010 Per Capita Power Generation (kWh)	Real GDP Growth Rate (%)						Per Capita Power Generation Growth (%)				
		2006	2007	2008	2009	2010	2011	2006	2007	2008	2009	2010
G7 Countries ⁽¹⁾	10,795	2.6	2.2	(0.4)	(4.0)	3.0	1.4	(0.2)	(1.0)	(0.5)	(5.4)	3.0
The PRC	3,152	12.7	14.2	9.6	9.2	10.4	9.2	14.7	15.1	5.2	6.6	13.2

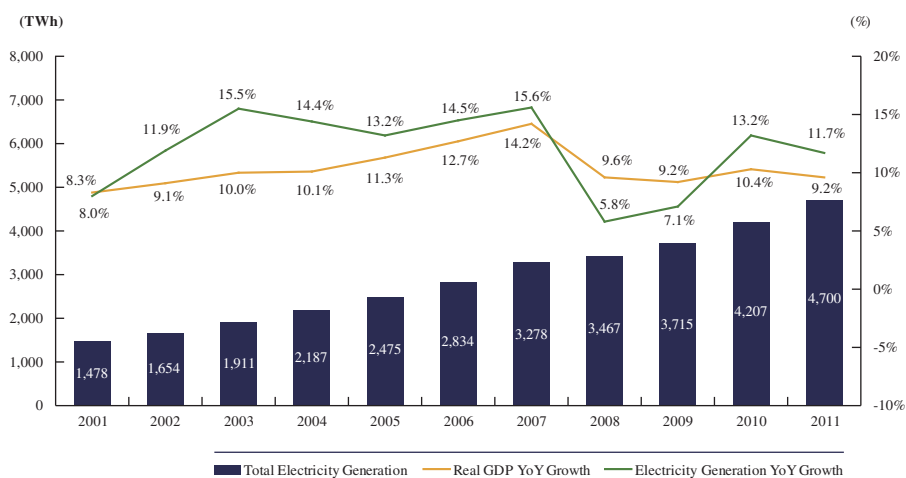
Source: BP statistics review June 2011; International Monetary Fund, World Economic Outlook Database, April 2012; China Electricity Council.

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

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As shown in the chart below, electricity generation in the PRC has been growing at a faster rate than real GDP from 2000 to 2007. In the years of 2008 and 2009, the growth rate of electricity generation was lower than real GDP growth, mainly due to the global financial crisis in these two years, which slowed down electricity demand growth in the PRC. In 2010 and 2011, electricity generation growth has recovered significantly and experienced an increase of 13.2% in 2010 and an increase of 11.7% in 2011 as the PRC's macroeconomic environment improved from 2009.

PRC Total Electricity Generation, Electricity Generation Growth and Real GDP Growth, 2000-2011



Source: PRC electricity generation data: 2001-2004 figures from China Electricity Power Yearbook; 2005-2011 figures from National Bureau of Statistics, Real GDP data from International Monetary Fund; World Economic Outlook Database, April 2012; Frost & Sullivan.

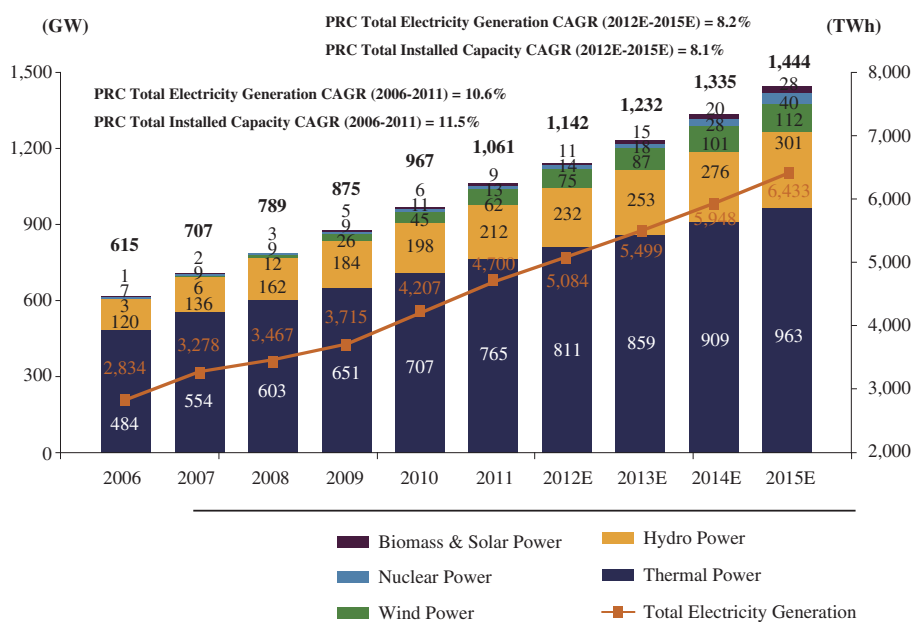
The PRC has surpassed the United States and become the world's largest primary energy user according to a BP Statistics review in 2011. The PRC power industry has experienced significant development and expansion, which was mainly driven by rapid industrialization, accelerating fixed assets investment and rising residential electricity demand due to increased per capita income.

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Power Supply and Demand in the PRC

In terms of power supply, the PRC's power sector has experienced a significant increase in installed capacity and electricity generation in recent years. Installed capacity grew at a CAGR of 11.5% from 615 GW in 2006 to 1,061 GW in 2011, while electricity generation grew at a CAGR of 10.6% from 2,834 TWh in 2006 to 4,700 TWh in 2011. According to Frost & Sullivan, total installed capacity in the PRC is expected to grow at a CAGR of 8.1% between 2012 and 2015 and reach 1,444 GW in 2015. Similarly, total electricity generation is expected to grow at a CAGR of 8.2% and reach 6,433 TWh in 2015. The following chart shows data on installed capacity and the total electricity generation in the PRC from 2006 to 2015.

Total Installed Capacity and Electricity Generation in the PRC, 2006-2015

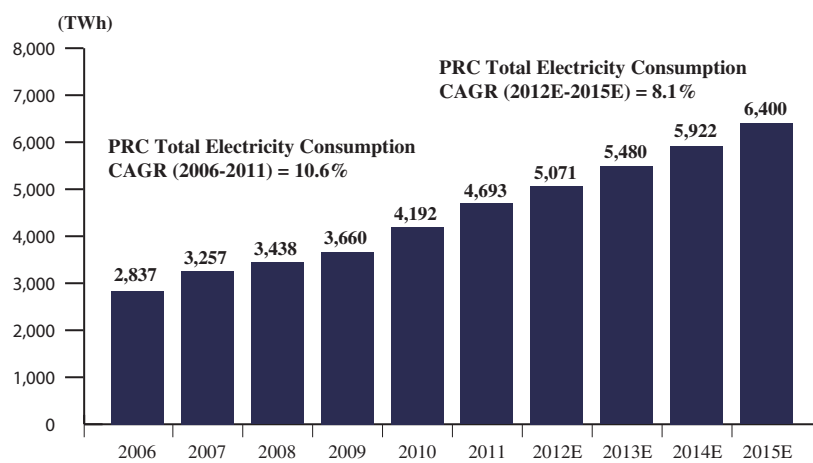


Source: PRC electricity generation data from National Bureau of Statistics of China; China Wind Energy Council; Frost & Sullivan.

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In terms of power demand, electricity consumption in the PRC experienced significant growth in recent years driven by strong GDP growth, increasing industrial output and rising fixed asset investment. The following chart sets forth the volume and percentage growth rates of electricity consumption in the PRC for the periods indicated. Electricity consumption in the PRC has experienced significant CAGR of 10.6% from 2006 to 2011 and the growth trend is expected to continue at a CAGR of 8.1% between 2012 and 2015. Total electricity consumption is expected to reach 6,400 TWh by 2015.

Total Electricity Consumption in the PRC, 2006-2015



Source: PRC electricity consumption data: 2006-2009 figures from China Electricity Council; 2010 & 2011 figure from China Electricity Council Express Report (中電聯電力快報); Frost & Sullivan.

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The following table summarizes the PRC's electricity consumption and electricity generation by region in 2011.

Region	2011 Electricity Generation	2011 Electricity Consumption
	(TWh)	(TWh)
Jiangsu.	394	429
Guangdong	371	440
Shandong	318	364
Inner Mongolia.	316	188
Zhejiang	279	312
Henan	260	266
Shanxi	234	165
Hebei.	222	298
Hubei	207	145
Sichuan	184	175
Anhui	166	122
Fujian	158	151
Yunnan.	154	119
Liaoning.	142	186
Guizhou	135	94
Hunan	119	128
Shaanxi	118	97
Gansu	107	92
Guangxi	106	111
Shanghai.	102	134
Ningxia	100	73
Xinjiang	88	83
Heilongjiang	83	79
Jiangxi	74	83
Jilin.	71	63
Tianjin	61	69
Chongqing	54	72
Qinghai	50	56
Beijing.	27	82
Hainan	19	19
Tibet	2	2
National Total	4,722	4,693

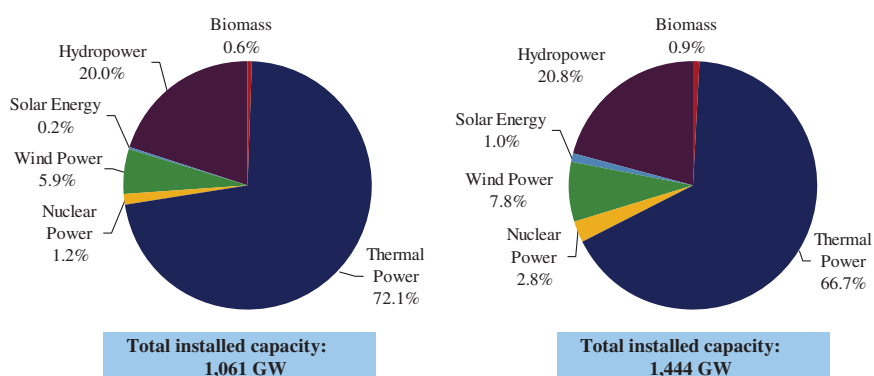
Source: *China Electricity Industry Statistics Report 2011*.

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Sources of Energy in the PRC

Accompanying the increase in total power generation capacity, the energy sources of PRC's power generation are also expected to undergo transformation, shifting from heavier reliance on traditional thermal power to increasing diversification into various forms of clean energies. As of the end of 2011, 72.1% of the installed capacity in the PRC is thermal, 20.0% is hydro, 5.9% is wind, 1.2% is nuclear, 0.6% is biomass and 0.2% is solar. Thermal power generating units have accounted for the majority of power generation installed capacity in the PRC. However, clean energies are expected to account for an increasing proportion of the total installed capacity going forward.

PRC Energy Structure by Energy Sources, 2011 (Left) & 2015E (Right)



Source: China Electricity Council; China Wind Energy Council; Frost & Sullivan.

Energy and Environment Related Targets in the PRC

Due to rising living standards and continuous increase in per capita energy consumption in the PRC, energy shortage has become a limiting factor for the PRC's economic development. In September 2007, the PRC published the Medium- and Long-Term Development Plan for Renewable Energy that sets to raise the share of renewable energy to 15% of total primary energy consumption by 2020. On November 25, 2009, the Chinese government announced its intention to reduce CO₂ per unit GDP by 40.0% to 45.0% from the 2005 level by 2020, which implies sustained governmental support to develop clean energies in the PRC.

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Background and Restructuring of the PRC Power Industry

Since 1997, the PRC's power industry has experienced a restructuring phase pursuant to the government's policy to separate governmental functions from enterprises. The State Power Corporation was established in January 1997 to take ownership of state-owned power generating assets and virtually all of the high voltage power transmission grids and local power distribution networks in the PRC. The State Economic and Trade Commission ("SETC") was established in March 1993 to assume governmental and administrative functions in relation to the power industry, while the Electric Power Bureau within SETC was responsible for formulating and implementing policies and regulations of the power industry. In December 2002, the State Power Corporation was reorganized into five large independent power generation groups and two power grid companies. The five independent large power generation groups were China Huaneng Group, China Datang Corporation, China Huadian Corporation, China Guodian Corporation and China Power Investment Corporation. The two power grid companies were the State Grid Corporation of China ("State Grid") and China Southern Power Grid Company ("Southern Grid").

For power generation, as shown in the table below, the five largest generation groups continue to own and manage approximately one-half of the total installed power generation in the PRC as of December 31, 2011, while the remaining capacity is primarily owned by provincial, local and other power companies.

Five Largest Independent Power Generation Groups

<u>Power Generation Groups</u>	<u>2011 Year-end Installed Capacity</u>
	(GW)
China Huaneng Group ⁽¹⁾	125
China Datang Corporation ⁽¹⁾	111
China Huadian Corporation ⁽¹⁾	95
China Guodian Corporation ⁽¹⁾	106
China Power Investment Corporation ⁽¹⁾	77
Others	542
Total	<u>1,056</u>

Source: China Electricity Council.

(1) 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 State Electricity Regulatory Commission of the PRC ("SERC"), was established under the State Council in 2003. 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.

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In March 2003, the State Development and Planning Commission was reorganized as the newly formed National Development and Reform Commission of the PRC (“NDRC”). In July 2008, the National Energy Administration was established under the management of NDRC pursuant to the resolutions passed by the Eleventh National People’s Congress. The National Energy Administration’s responsibilities include regulating the coal, oil, natural gas, electricity, clean energies industries, formulating industry standards and development plans, supervising energy development, balancing production-construction and supply-demand relations, as well as encouraging energy infrastructure development in rural areas.

Transmission and Dispatch

The major electric transmission and dispatch systems in the PRC include the State Grid and the Southern Grid. State Grid, through its five regional power grid companies (Northeast China, North China, East China, Central China and Northwest China power grids), owns and operates interprovincial high-voltage power transmission grids and local power distribution networks in 26 provinces, municipalities and autonomous regions. Southern Grid owns and manages interprovincial high voltage power transmission grids and local power distribution networks in five provinces and autonomous regions including Guangdong, Guizhou, Yunnan, Hainan provinces and the Guangxi Zhuang Autonomous Region.

Regional power grid companies that are owned by the State Grid and Southern Grid are responsible for the sale, distribution and transmission of electricity in their respective regions. In 1993, the State Council issued the Regulations on the Administration of Electric Power Dispatch to Networks and Grids (“Dispatch Regulations”) according to which, electricity dispatch centers, which are subsidiaries of power grid companies, have been established at various levels (national, inter-provincial, provincial, municipal and county) to manage the power generation resources within their respective regions in China.

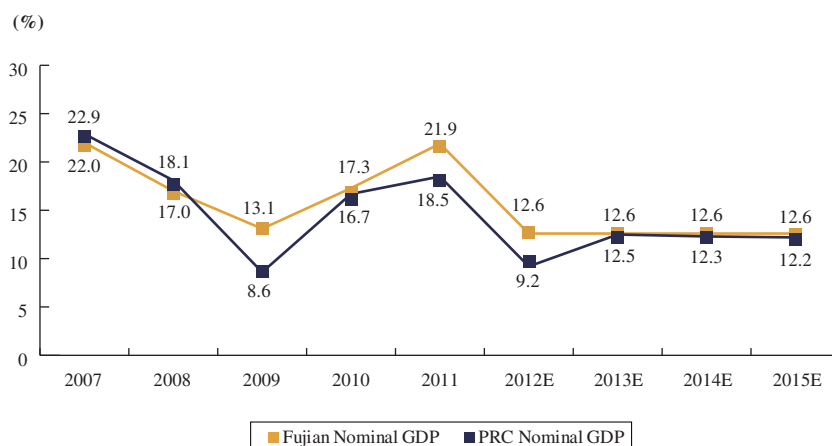
Dispatch centers determine the amount of electricity to be produced by each power plant within their jurisdiction to help ensure a cost-efficient and reliable power supply system by managing the mix of the types of fuel and technology being used. According to the Dispatch Regulations, dispatch centers must carry out the output plan made by the government authorities. Each year the NDRC issues a power supply plan for the entire nation for the following year. Based on the national plan, provincial offices of the NDRC then issue annual planned output guidelines to each of the power plants operating within their respective regions and approve new projects accordingly. The plan issued by provincial offices of the NDRC sets forth the utilization hour targets of different types of power plants. In practice, dispatch centers of power grid companies may adjust the daily planned output allocated to power plants based on the actual electricity demand at the time, the stability of the power grid and weather conditions. Dispatch centers monitor power generation companies closely to ensure that they are able to fulfill the planned output originally allocated to them each year.

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Power Supply and Demand in Fujian

Fujian's nominal GDP has increased from RMB758 billion to RMB1,750 billion from 2006 to 2011, representing a CAGR of 18.2%, and is expected to reach RMB2,813 billion in 2015. PRC's nominal GDP has increased from RMB21,631 billion to RMB47,156 billion from 2006 to 2011, representing a CAGR of 16.9%, and is expected to reach RMB72,999 billion in 2015. According to Frost & Sullivan, Fujian's nominal GDP is expected to grow at a faster rate of 12.6% from 2012 to 2015 compared to the PRC's nominal GDP, which is expected to grow at a slightly slower rate of 12.3%.

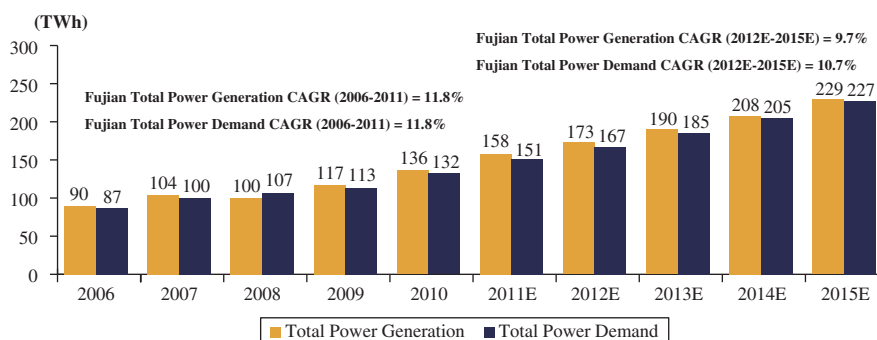
Nominal GDP and Nominal GDP Growth of the PRC and Fujian province, 2007-2015E



Source: Fujian Yearbook; International Monetary Fund; World Economic Outlook Database, September 2011; Frost & Sullivan.

As shown in the chart below, electricity generation in Fujian has reached 158 TWh in 2011. Fujian's power generation and demand have grown steadily both at a CAGR of 11.8% from 2006 to 2011. Power generation and demand in Fujian are expected to continue to grow at a CAGR of 9.7% and 10.7%, respectively, from 2012 to 2015.

Total Power Generation and Demand in Fujian, 2006-2015E



Source: Fujian Yearbook; Fujian electric power company website; 12th Five-Year Plan of Energy Development in Fujian; Frost & Sullivan.

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The power structure of Fujian is comparatively simple to that of the PRC as a whole. The primary source of Fujian's power supply is from thermal and hydro, which account for 66.9% and 30.8%, respectively, of the total installed capacity in 2011.

Fujian Power Grid has been upgraded to 500 kV for all its major networks of the power system in 2009, connecting 14 ultra high 500 kV substations in nine cities (Fuzhou, Putian, Quanzhou, Xiamen, Zhangzhou, Longyan, Sanming, Nanping, and Ningde).

OVERVIEW OF THE GLOBAL AND PRC CLEAN ENERGY INDUSTRY

The Global Clean Energy Industry

Clean energy technologies include hydro, wind, distributed energy, nuclear, solar, biomass, wave and tidal. According to the U.S. Energy Information Administration ("EIA")'s "International Energy Outlook 2011," the share of clean energy in the world electricity generation market was 19.0% in 2008, and is expected to grow to 23.0% by 2035.

The Clean Development Mechanism ("CDM"), an arrangement under the Kyoto Protocol under the United Nations Framework Convention on Climate Change ("UNFCCC"), is designed to reduce the emission of greenhouse gas through international cooperation. It allows industrialized countries with a greenhouse gas emission reduction commitment to invest in emission reducing projects in developing countries in order to earn Certified Emission Reductions ("CERs"). These CERs can be used by investors from industrialized countries to compensate their domestic emission reduction commitment or sold to others, and, therefore, provides an alternative to more expensive emission reductions in their own countries. The close of the United Nations Climate Change Conference in Durban, South Africa on December 11, 2011 witnessed the passage of four key conclusions including the Kyoto Protocol II commitment period, the long-term cooperation plan, the Green Climate Fund and the arrangement of emissions reduction after 2020. The Durban Platform extended the Kyoto Protocol commitment by at least five years from 2013 to 2017 and possibly to 2020.

Other forms of carbon trading units include Voluntary Emission Reductions (VERs) and Emission Reduction Units (ERUs). VERs are carbon credits, which are not mandated by any law or regulation, but originate from an organization's desire to take an active part in climate change mitigation efforts. ERUs are project-based carbon credits generated by a Joint Implementation project and allow countries to claim credit for investment in other developed countries.

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The PRC Clean Energy Industry

The PRC government sees clean energy sources as a long-term solution to the country's energy and environmental protection needs. A number of factors are driving the growth of the PRC's clean energy market:

- **Growing demand for power:** Traditional thermal sources for electricity generation such as coal, oil and natural gas are limited in supply. To meet the growing power demand, the PRC is expected to rely more on clean energy sources in the future. As a result, the PRC government is prioritizing the development of clean energy industries such as wind, solar and biomass energy.
- **Government incentives and subsidies to promote the clean energy market:** The PRC government is implementing multiple policies to promote clean energy. The Renewable Energy Law (可再生能源法) effect in 2006 explicitly requires grid companies to purchase all electricity generated from renewable energy projects within their coverage. The Chinese government aims to restructure new energy policies on hydro and wind power and steadily increase the proportion of renewable energy through the implementation of the 12th Five-Year Plan on Energy Development (能源發展戰略十二五規劃). The Development Plan on Emerging Energy Industry (新興能源發展戰略) released in 2010 calls for a direct investment of RMB5 trillion in improving wind, nuclear, solar and biomass energy utilization as well as clean coal, smart grid and new energy vehicles. Renewable energy also enjoys priority in dispatch per the dispatch priority list of different power sources below:

Power Dispatching Priority List

Priority Order	Source of Power
1	Non-adjustable renewable energy such as wind, solar, ocean and hydropower, etc.
2	Adjustable renewable energy such as hydropower, biomass and geothermal energy, as well as environmental friendly garbage incineration power generating units
3	Nuclear power generating units
4	Coal-fired cogeneration units with heat load, power generating units utilizing integrated resources including residual heat, gas and pressure, coal gangue, coal mine methane, etc.
5	Gas-fired power generating units
6	Other coal-fired power generating units, including cogeneration units without heat load

Source: CEC, CEB.

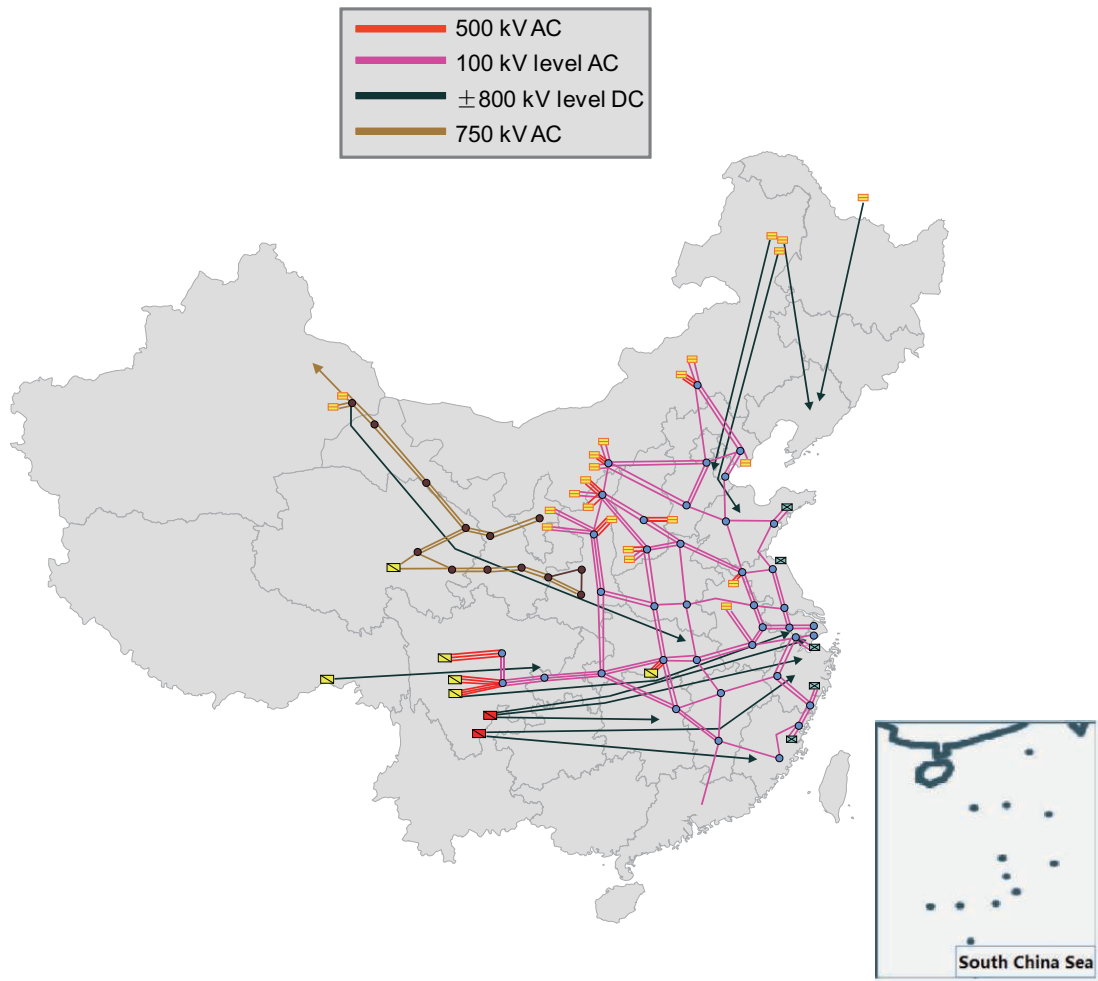
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- **Increasing awareness of a more diversified energy structure:** The PRC's traditional energy structure, which is dominated by coal, has brought great challenges to energy conservation and environment protection. One of the focuses of the 12th Five-Year Plan is to optimize the PRC's energy structure by moving toward a resource-conserving and environmentally friendly society to support economic growth. 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 government published the Medium- and Long-Term Development Plan for Renewable Energy in September 2007, setting a target to raise the share of renewable energy in total primary energy consumption to 10.0% by 2010, and to 15.0% by 2020.
- **Improvement in grid infrastructure and network connection:** The PRC government has implemented several measures to invest in the construction of ultra high voltage transmission infrastructure and the set-up of a smart grid featuring a distributed power supply and storage system in state-owned grids. The Construction Development of the National Grid (國家電網建設發展戰略) released in 2010 expects ultra high voltage transmission line investment to reach RMB500 billion in the 12th Five-Year Plan and total investment in grid construction to exceed RMB2,000 billion by 2015. In addition, on April 19, 2010, the State Grid issued the White Paper Green Development by the State Grid Corporation (綠色發展白皮書), setting out its strategic mission to promote extensive and intensive development of clean energy through establishing a strong smart grid.

The State Grid will invest US\$250 billion in the next five years to complete the fundamental construction of a nationwide smart grid network. As shown on the map below, by 2020 the ultra high voltage transmission lines are expected to consist of five East-West lines and six North-South lines that will be able to effectively transmit the power generated from newly installed wind farms and coal-fired power bases. The establishment of such a large scale smart grid network is expected to improve power supply stability, enhance power usage efficiency and promote energy conservation.

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Nationwide Smart Grid System Development Plan by 2020



Source: Frost & Sullivan.

- **Development and improvement of domestic clean energy generation equipments:** The increasing number of domestic equipment manufacturers will satisfy the local market demand for new clean energy equipments and also lower the development cost of new clean energy projects. In addition, the improvement in domestic R&D capacity will enable greater and faster growth of the PRC's clean energy market.

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THE GLOBAL HYDROPOWER GENERATION INDUSTRY

Hydropower generation constitutes an important part of the world's clean energy sector.

Major Hydropower Countries in the World

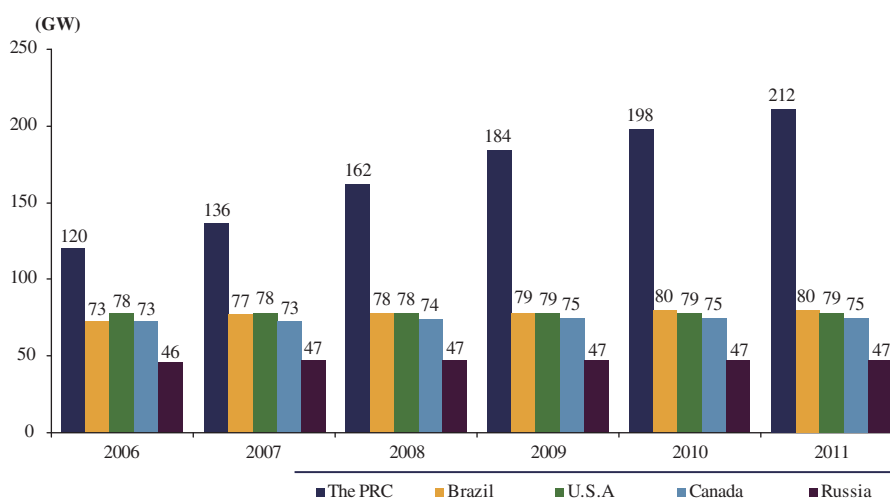
Top Five Hydro Countries by Cumulative Installed Capacity, 2011

	GW	%
The PRC.	212	22.4
Brazil	80	8.5
U.S.A.	79	8.3
Canada.	75	7.9
Russia	47	5.0
Total Top 5	493	52.1
Rest of the World	453	47.9
World Total	946	100.0

Source: Frost & Sullivan.

The chart below shows the total hydropower installed capacity of the top five countries for the years from 2006 to 2011. The PRC almost doubled its hydropower installed capacity from 120 GW in 2006 to 212 GW in 2011, achieving a CAGR of 12.0%. In 2011, the PRC added another 14 GW of hydropower capacity, securing its position as the world's largest hydropower country with 22.4% of the world's total hydropower capacity. The PRC's newly installed capacity in 2011 accounted for 48.2% of all the new capacity installed globally that year.

Hydropower Installed Capacity of the Five Largest Hydropower Countries, 2006-2011

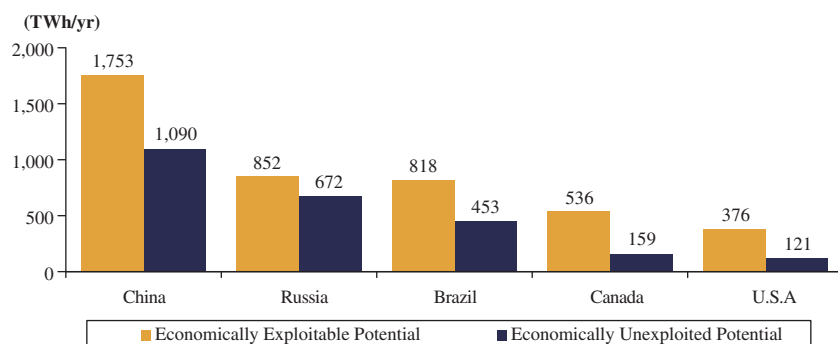


Source: China Electricity Council; U.S. Energy Information Administration; Frost & Sullivan.

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Despite its leading hydropower position in the world, the PRC still has a high potential for economically exploitable hydropower. As of the end of 2011, the PRC's economically exploitable hydropower potential ranks the highest amongst the top five hydropower countries in the world with a total unexploited hydropower potential of 1,090 TWh per year, 418 TWh per year higher than Russia and 637 TWh per year higher than Brazil, the second and third countries in the world in terms of unexploited hydropower potential.

Economically Exploitable Hydropower Potential for the Top Five Hydropower Countries in the World,⁽¹⁾ 2011



Source: China Electricity Council; U.S. Energy Information Administration; World Energy Council; Frost & Sullivan.

- (1) Economically exploitable potential (TWh/Yr) refers to the amount of hydropower generation which, if generated, has an on-grid tariff higher than generation cost, thereby offering a positive economic return.

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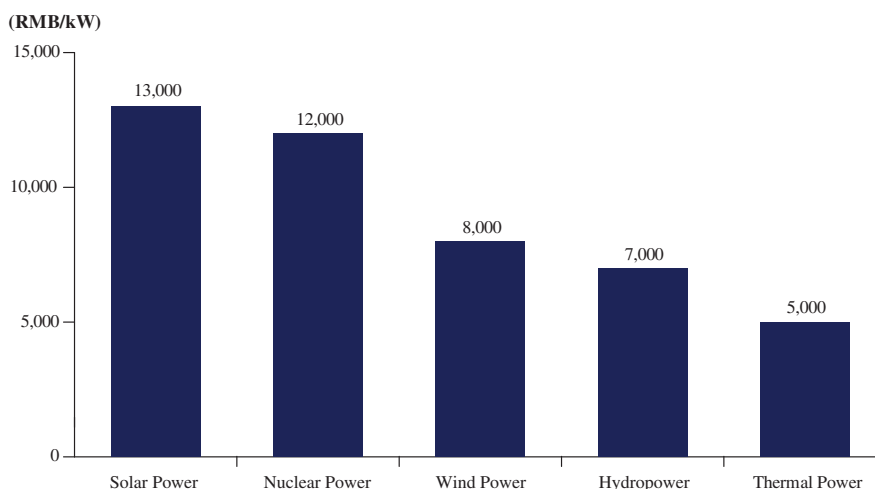
THE PRC HYDROPOWER INDUSTRY

The PRC has a vast territory with abundant water resources for hydropower development. It is the largest hydropower market in the world in terms of total installed capacity.

The PRC's hydropower developments is mainly driven by the following factors:

- **Favorable national policies:** The PRC government strongly supports the development of the hydropower industry. According to China Electricity Council, the total conventional hydropower installed capacity is planned to achieve 301 GW in 2015, with a CAGR of 9.1% from 232 GW in 2012. Since the announcement of carbon reduction commitment by the PRC government, the hydropower sector has started to see increasing developments of new projects as well as continued refurbishment and upgrades of existing facilities.
- **Lower construction cost on a per unit basis compared to other clean energy:** The PRC has a relatively low-cost engineering, design and construction capability, as well as relatively low-cost equipment supplies. According to Frost & Sullivan, the construction cost of different power generation types varies from RMB5,000/kW for thermal to RMB13,000/kW for solar. As shown in the chart below, the average per unit construction cost of hydropower is 12.5% lower than that of wind power, 41.7% lower than that of nuclear power, and 46.2% lower than that of solar power.

**Comparison of Average per Unit Construction Cost of
Different Power Generation Types in the PRC, 2011**

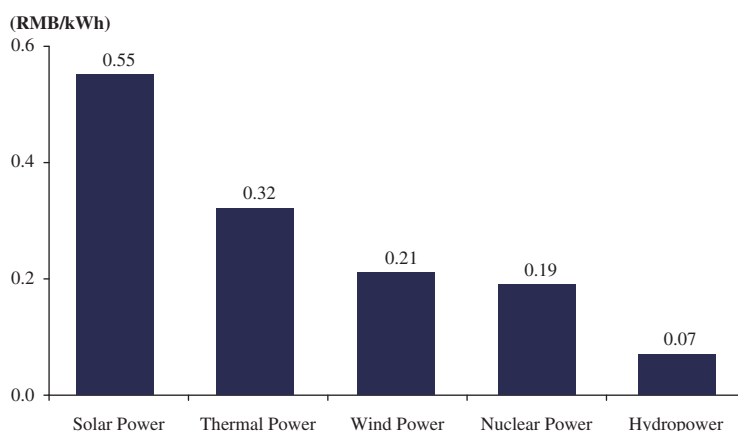


Source: Frost & Sullivan.

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- **Lower operating cost and immunity from fluctuations of fuel cost:** As shown in the chart below, hydropower has the lowest operating cost per unit among the different power generation types. For 2011 operating cost per unit for hydropower is only RMB0.07/kWh, 63.2% lower than that of nuclear power, 66.7% lower than that of wind power, 78.1% lower than that of thermal power and 87.3% lower than that of solar power. Hydropower is also immune from coal and natural gas price fluctuations.

Comparison of Average Operating Cost per Unit of Different Power Generation Types in the PRC,⁽¹⁾ 2011



Source: Frost & Sullivan.

- (1) Operating cost includes fuel cost, maintenance, depreciation and other operating costs, excludes financing costs.

- **Mature and proven technology with longer useful life and lower requirements for maintenance:** Hydropower has been exploited for centuries with mature and proven technology. Over one billion people around the world currently depend heavily on hydropower. According to Frost & Sullivan, hydropower plants can have a life of more than 50 years with the lowest maintenance cost compared to other energy forms. Some plants built 100 years ago are still functioning. The mature technology of hydropower makes it more favorable than other clean energies.
- **Potentials for tariff increases:** Currently different hydropower tariff schemes apply to the hydropower plant according to the capacities. The tariff for hydropower plants over 50 MW is decided by the NDRC, whereas the tariff for those under 50 MW is decided by the provincial or municipal pricing bureau under the guidance of provincial DRC. The on-grid tariff is determined based on both the fixed cost and the operating cost of each power plant on a “one price for one unit” tariff setting scheme. A benchmark on-grid tariff is set for newly built hydropower plants and provides adjustment standards for hydropower plants already in operation. The PRC is seeking to have the same tariff applied to all types of electricity dispatched on the

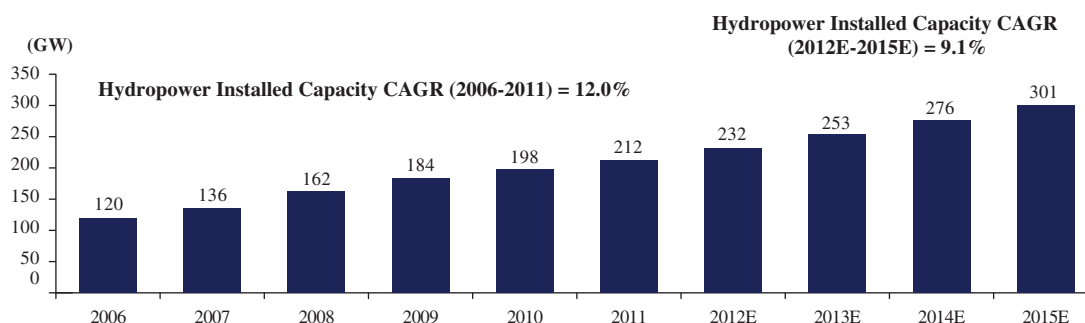
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same grid in the long term. According to Frost & Sullivan, the on-grid tariff of hydropower plants is currently lower than that of coal-fired power and other types of power generation. If this policy goal is achieved, hydropower tariffs in the PRC would reach the same level as that of coal-fired power. Recently, the on-grid tariff for new hydropower plants has been set at a similar level to that of coal-fired power due to higher construction costs of hydropower plants. The on-grid tariff for older operating hydropower plants in the PRC have also been adjusted upwards, driven by the PRC government's continued effort to promote clean energy and to reduce the tariff difference between hydropower and coal-fired power.

- **Preferred on-grid connection:** Hydropower is entitled to priority dispatch given its clean energy nature and the PRC government's continued effort to encourage hydropower generation.

According to Frost & Sullivan, total hydropower installed capacity in the PRC increased from 120 GW in 2006 to 212 GW in 2011, representing a CAGR of 12.0%. Frost & Sullivan expects total installed hydropower capacity in the PRC to increase further at a CAGR of 9.1% between 2012 and 2015, reaching 301 GW in 2015. The following chart illustrates the historical and forecast installed hydropower capacity in the PRC from 2006 to 2015.

The PRC Hydropower Industry: Total Installed Capacity, 2006-2015E



Source: China Electricity Council; Frost & Sullivan.

THE HYDROPOWER INDUSTRY IN EAST CHINA

East China (Fujian, Zhejiang, Jiangxi, Anhui, Jiangsu, Shandong and Shanghai) had an installed hydropower capacity of 23,200 MW as of December 31, 2011. Most rivers and streams are populated with hydropower plants, mostly small ones with less than 50 MW. However, potential improvements can be made to improve the operational efficiency of existing hydropower plants by upgrading existing facilities and properly organizing new capacities. Most of East China's hydropower resources are located in the Min-Zhe-Gan hydropower base, where several large rivers exist, accounting for more than three-quarters of the total technically exploitable capacity in East China.

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Leading Hydropower Operators in East China

The table below lists the leading hydropower operators in East China by total installed capacity as of December 31, 2011. Huadian Fuxin Energy Corporation is the largest hydropower company in East China, with a total installed capacity of 2,223 MW and a market share of 9.6% out of the total installed capacity of 23,200 MW in East China.

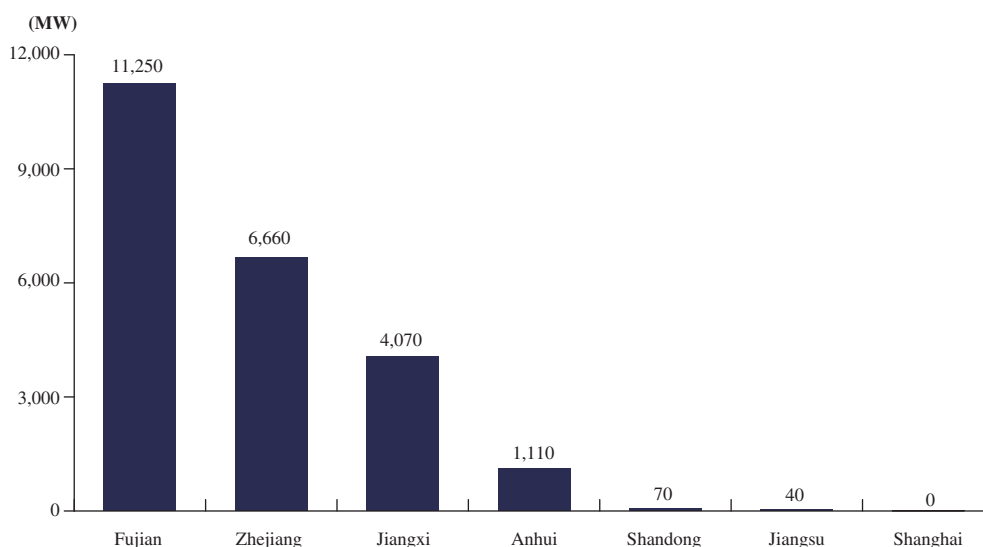
Market Share of the Top Five Power Companies in East China by Hydropower Installed Capacity – December 31, 2011

Rank	Company Name	Installed Capacity (MW)	Market Share (%)
1	Huadian Fuxin Energy Corporation Limited	2,223	9.6
2	Fujian Electric Power Co., Ltd.....	1,942	8.4
3	China Power Investment Corporation	848	3.7
4	China Guodian Corporation.....	500	2.2
5	Jiangxi Electric Power Co., Ltd.	420	1.8

Source: China Electricity Council; Company annual reports; Frost & Sullivan.

Note: East China consists of six provinces and one city, including Fujian, Zhejiang, Jiangxi, Anhui, Jiangsu, Shandong provinces and Shanghai.
Installed capacity excludes pumped storage.

East China Hydropower Industry: Installed Capacity by Region – December 31, 2011



Source: China Electricity Council; Frost & Sullivan.

INDUSTRY OVERVIEW

As shown in the chart above, Fujian ranks first among all the East China provinces with installed hydropower capacity almost doubling that of Zhejiang, the province with the second highest hydropower installed capacity.

HYDROPOWER INDUSTRY IN FUJIAN PROVINCE

Fujian's Hydropower Resources

Fujian has a leading position in East China in terms of abundant hydropower resources. Total installed capacity of hydropower in Fujian as of December 31, 2011 is 11,250 MW. Given the shortage of primary energy resources in Fujian, hydropower is a key power source. Fujian's hydropower installed capacity of the total installed capacity stands at 30.8%, which is higher than China's national average of 20.0% in 2011. The map below shows the location and respective hydropower capacity of major rivers in Fujian.

Major Rivers in Fujian province – Technically Exploitable Capacity⁽¹⁾ – December 31, 2011

River Basin	Capacity Share (%)	Technically Exploitable Capacity (MW)
Minjiang River	65.7	8,909
Tingjiang River	9.3	1,261
Jiaoxi River & Aojiang Rivers	8.9	1,207
Jiulong River	6.2	841
Jinjiang River	5.0	678



Source: Frost & Sullivan.

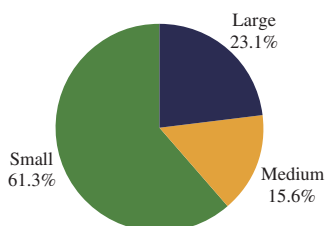
(1) Technically exploitable capacity refers to hydropower capacity, which can be exploited within the limits of current technology.

INDUSTRY OVERVIEW

Fujian's Hydropower Industry Structure

There are more small-sized hydropower plants than mid- to large-sized ones in Fujian. Small hydropower projects are more widely used since most rural areas have small rivers or streams upon which small hydropower plants can be constructed. Various forms of hydropower operation can be adapted to different hydrological conditions. The table below shows the breakdown of hydropower installed capacity by hydropower plant size in Fujian as of December 31, 2011.

Breakdown of Hydropower Installed Capacity by Hydropower Plant Size – December 31, 2011



**Total Installed Capacity:
11,250 MW
December 31, 2011**

Classification of Hydropower Plants in Fujian – December 31, 2011

Size	Installed Capacity (MW)	Number in Fujian	Total Installed Capacity (MW)
Large	>=300	4	2,600
Medium	50-300	20	1,757
Small	<=50	about 6,630	6,893

Source: Ministry of Water Resources; China Electricity Council; Frost & Sullivan.

According to Frost & Sullivan, there are about 6,655 hydropower plants in Fujian, most of which are small hydropower plants (<=50 MW) accounting for 99.6% of the total number of hydropower plants. Installed capacity of small hydropower plants totals 6,893 MW, accounting for 61.3% of the total installed capacity in Fujian.

The construction of small hydropower plants is effective in achieving sustainable and efficient use of Fujian's hydropower resources. Most small hydropower plants are currently owned by private or local state-owned enterprises. To ensure the effective usage of hydropower, it is expected that the consolidation in Fujian hydropower sector will be a growing trend and that the government will promote the transfer of ownership of small hydropower plants to experienced and financially capable hydropower operators to ensure the organized management and the effective use of hydropower, especially for those hydropower plants located along the same river.

INDUSTRY OVERVIEW

The table below lists the major hydropower plants in Fujian with their capacity, installation date, ownership, location and average utilization hours.

List of Hydropower Plants (>=50 MW) in Fujian – December 31, 2011

Hydropower Plant	Installed Capacity (MW)	Installation Date	Ownership	Location	Average Utilization Hours
Shuikou	1,400	1993	Fujian Provincial Electric Power	Minjiang River	3,536
Mianhuatan	600	2001	Huadian Fuxin	Tingjiang River	2,533
Shaxikou	300	1987	China Power Investment Corporation	Minjiang River	3,200
Jiemian	300	2007	Fujian Provincial Electric Power	Youxi River	1,200
Zhouning	250	2005	Huadian Fuxin	Jiaoxi River	2,632
Hongkou	200	2008	Private Business Owner	Huotongxi River	2,260
Longting (Gutianxi Phase II).	130	1969	Huadian Fuxin	Minjiang River	3,400
Ansha	115	1975	Huadian Fuxin	Minjiang River	4,520
Chitan	100	1980	Huadian Fuxin	Minjiang River	5,060
Niutoushan	100	2006	China Power Investment Corporation	Changxi River	3,140
Fengyuan	80	2008	Fujian Mindong Electric Power	Jiaoxi River	2,400
Shuidong	80	1994	Fujian Provincial Electric Power	Minjiang River	3,425
Baisha	70	2006	Huadian Fuxin	Jiulong River	2,664
Qinshan	70	1999	Huadian Fuxin	Jiaoxi River	2,070
Jinzaoqiao	66	2006	Dachuang	Huotongxi River	2,394
Gutianxi (Phase I).	66	1956	Huadian Fuxin	Minjiang River	5,600
Zhaokou	60	2005	Huadian Fuxin	Minjiang River	4,138
Hua'an	60	1979	Huadian Fuxin	Jiulong River	6,200
Daixi	55	2006	Dachuang	Tangkou River	2,600
Zhuzhou	54	2000	Great Power Group	Minjiang River	3,500
Shangpei	51	2003	Private Business Owner	Tangkou River	3,451
Yongkou	50	1998	Fujian Provincial Electric Power	Minjiang River	2,860
Beijing	50	2005	Zhejiang Ouneng Electric Power Group	Minjiang River	4,140
Gaosha	50	1995	Huadian Fuxin	Minjiang River	4,000

Source: Frost & Sullivan.

Note: Average annual utilization hours are based on the historical generation of the power plant since its installation.

INDUSTRY OVERVIEW

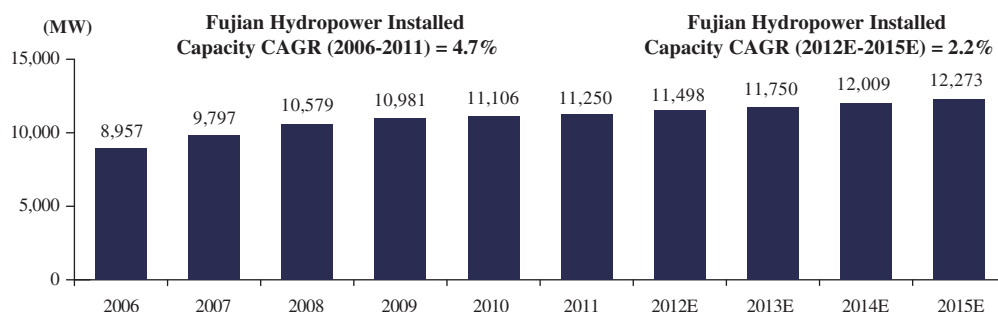
Reservoirs with water storage capacities of over 100 million cubic meters are defined as key reservoirs, which are normally located at the upper end of rivers, and have the ability to regulate water flow. There are a total of nine key reservoirs in Fujian province, seven of which belong to Huadian Fuxin Energy Co., Ltd. They are Mianhuatan, Chitan, Ansha, Gutianxi, Mindong, Wan'anxi and Baisha, collectively accounting for 68.6% of the total water storage capacity of all key reservoirs in Fujian.

Key Reservoir	Ownership	Location	Water Storage	Percentage
			(million m ³)	of Total (%)
Mianhuatan	Huadian Fuxin	Tingjiang River	2,035	28.1
Jiemian	Fujian Provincial Electric Power	Minjiang River	1,824	25.2
Chitan	Huadian Fuxin	Minjiang River	870	12.0
Ansha	Huadian Fuxin	Minjiang River	740	10.2
Gutianxi	Huadian Fuxin	Minjiang River	640	8.8
Hongkou	Private Business Owner	Huotongxi River	450	6.2
Mindong	Huadian Fuxin	Muyangxi River	265	3.7
Wan'anxi	Huadian Fuxin	Jiulong River	229	3.2
Baisha	Huadian Fuxin	Jiulong River	199	2.7
Total			7,252	100

The Growth of Fujian Hydropower Industry

Fujian's hydropower installed capacity has grown from 8,957 MW as of the end of 2006 to 11,250 MW as of the end of 2011, representing a CAGR of 4.7%. Newly installed capacity in 2011 was 144 MW. Total installed capacity of hydropower is expected to reach 12,273 MW as of the end of 2015, according to Frost & Sullivan.

Hydropower Market: Installed Capacity in Fujian, 2006-2015E



Source: *Fujian Yearbook; China Electricity Council; Frost & Sullivan.*

INDUSTRY OVERVIEW

The Tariff Scheme in Fujian Province

As shown in the table below, as of December 31, 2011, the average on-grid hydropower tariff for Fujian is 35.4% and 36.7% lower than the neighboring Zhejiang and Guangdong provinces, respectively. It is also 22.5% lower than the average on-grid hydropower tariff for East China, excluding Fujian province.

Comparison of Hydropower On-grid Tariff in Fujian and Other Regions (2011)

	<u>Fujian</u>	<u>Zhejiang</u>	<u>Guangdong</u>	<u>East China (Fujian Excluded)</u>
On-grid Tariff (including 17% VAT) (RMB/kWh)	0.31	0.48	0.49	0.40

Source: Pricing Bureau of Fujian province, Pricing Bureau of Zhejiang Province, Pricing Bureau of Guangdong Province, Pricing Bureau of Jiangxi Province, Pricing Bureau of Shandong Province, Pricing Bureau of Anhui Province, Pricing Bureau of Jiangsu Province, Frost & Sullivan.

In recent years, the on-grid tariff on hydropower in Fujian has been repeatedly adjusted upwards. The table below lists some of the recent tariff adjustments for hydropower plants in Fujian:

<u>Year of Tariff Adjustment</u>	<u>Events</u>
2012	The Pricing Bureau of Fujian province increased the on-grid tariff for all hydropower plants connected to provincial grid under its regulation by RMB0.021/kWh
2012	The benchmark on-grid tariff for new small-sized hydropower projects in Fujian was increased by RMB0.021/kWh
2011	The NDRC increased the on-grid tariff for five hydropower plants in Fujian, including Ansha, Chitan, Gutianxi, Hua'an and Shaxikou by RMB0.04/kWh
2009	The benchmark on-grid tariff range for new small-sized hydropower projects in Fujian was raised from RMB0.301-0.345/kWh in 2007 to RMB0.323-0.367/kWh
2009	The NDRC increased the on-grid tariff for Ansha, Chitan and Hua'an by RMB0.03/kWh
2008	The NDRC increased the on-grid tariff for Ansha, Chitan, and Hua'an by RMB0.015/kWh
2005	The NDRC increased the on-grid tariff for all hydropower projects in Fujian by RMB0.007/kWh
2005	The NDRC increased the on-grid tariff for several hydropower plants in Fujian, including Ansha, Chitan, Gutianxi, Hua'an, Shaxikou and Chuanchangxi

INDUSTRY OVERVIEW

Leading Hydropower Operators in Fujian

The following table lists Fujian's leading hydropower operators by their installed capacity and market share as of December 31, 2011. Huadian Fuxin Energy is the largest hydropower company in Fujian, with a total installed capacity of 2,223 MW and a market share of 19.8% as of December 31, 2011. In terms of total installed capacity, Huadian Fuxin Energy Corporation is also significantly larger, by 281 MW compared to Fujian Electric Power, the second largest hydropower operator in Fujian, according to Frost & Sullivan.

Market Share of The Top Five Power Companies in Fujian by Hydropower Installed Capacity – December 31, 2011

Rank	Company Name	Installed Capacity (MW)	Market Share (%)
1	Huadian Fuxin Energy Corporation Limited	2,223	19.8
2	Fujian Electric Power Co., Ltd.....	1,942	17.3
3	China Power Investment Corporation.....	459	4.1
4	Fujian Mindong Electric Power Limited Company.....	298	2.6
5	Fujian Dachuang Group	152	1.4

Source: China Electricity Council; Company annual reports; Frost & Sullivan.

THE GLOBAL WIND POWER GENERATION INDUSTRY

Wind power is the fastest growing clean energy sector in the world due to the increasing maturity of its technology in comparison to other types of clean energy. According to Frost & Sullivan, the world's wind market experienced rapid growth in installed capacity from 74,122 MW in 2006 to 239,000 MW in 2011, representing a CAGR of 26.4%.

Major Wind Power Countries in the World

Top Five Wind Power Countries by Cumulative Installed Capacity, 2011

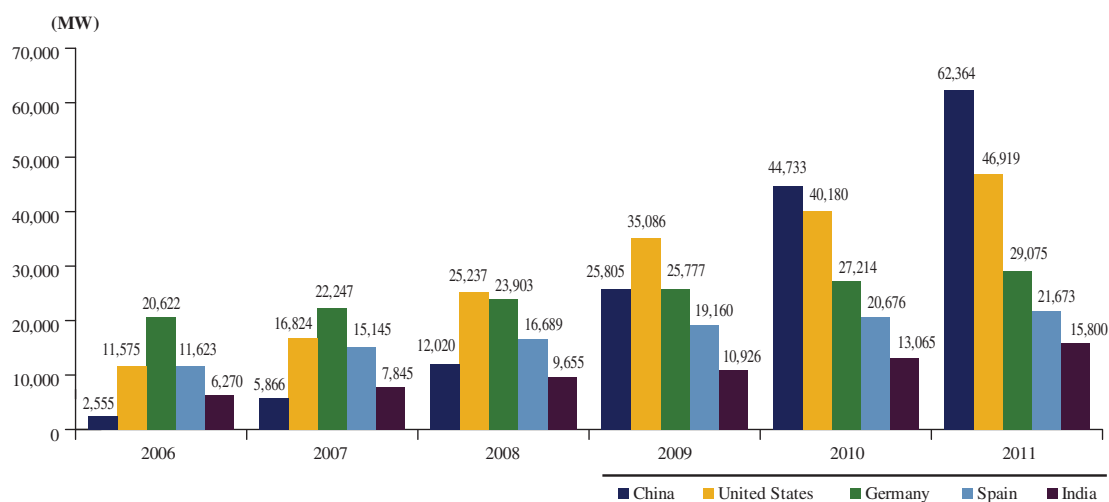
	MW	%
The PRC.	62,364	26.1
United States	46,919	19.6
Germany.	29,075	12.2
Spain.	21,673	9.1
India	15,800	6.6
Total Top 5	175,831	73.6
Rest of the World	63,169	26.4
World Total	239,000	100.0

Source: China Wind Energy Council; Global Wind Energy Council; Frost & Sullivan.

INDUSTRY OVERVIEW

The chart below shows the total wind power installed capacity of the top five wind power countries from 2006 to 2011. The PRC experienced a rapid increase in its wind power installed capacity from 2,555 MW in 2006 to 62,364 MW in 2011, achieving a CAGR of 89.5%. In 2011, the PRC added 17,631 MW of wind power capacity, maintaining its position as the world's largest wind power country with a total installed wind capacity of 62,364 MW. The PRC's newly installed capacity in 2011 constitutes 51.6% of all the new capacity installed globally that year.

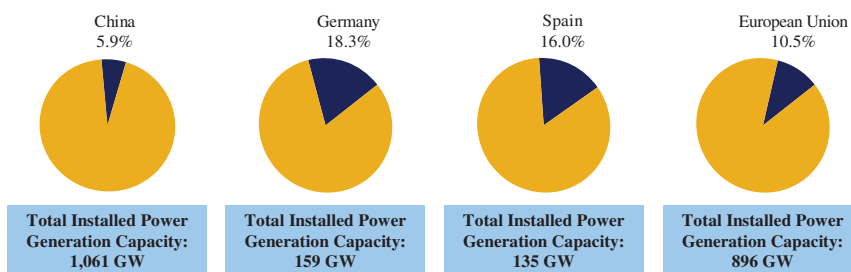
**Wind Power Installed Capacity
of the Five Largest Wind Power Countries, 2006-2011**



Source: China Wind Energy Council; Global Wind Energy Council; Frost & Sullivan.

Despite its rapid growth, the PRC's wind power installed capacity as a percentage of total installed capacity is still relatively low, which implies a huge development potential. As of the end of 2011, PRC's total installed wind capacity of 62 GW only accounted for 5.9% of its total installed power capacity, compared to other large wind power countries such as Germany and Spain where wind power contributes over 15.0% of their total installed power capacity.

**Comparison of Wind Power Installed Capacity as a Percentage of
Total Power Installed Capacity, 2011**



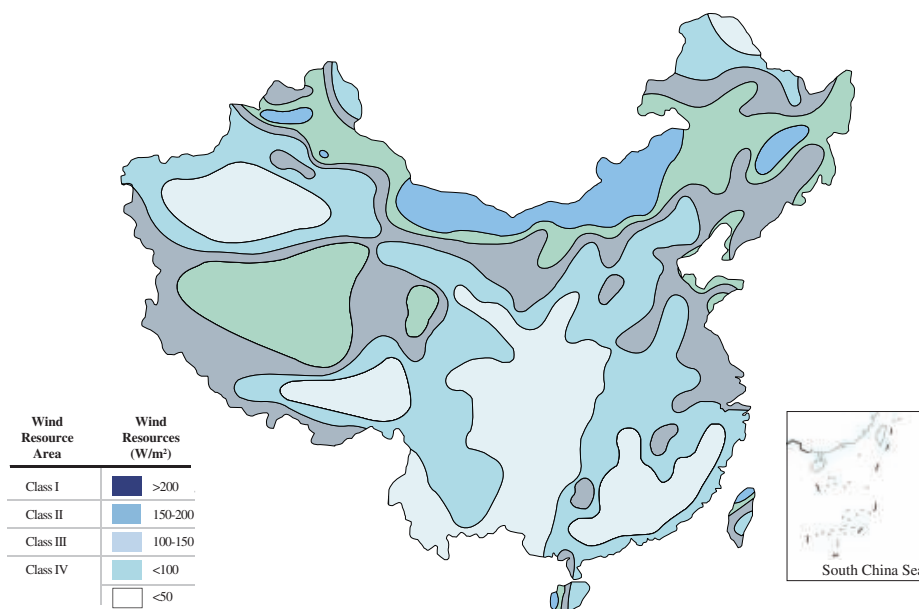
Source: China Wind Energy Council; Global Wind Energy Council; Frost & Sullivan.

INDUSTRY OVERVIEW

THE PRC WIND POWER INDUSTRY

The PRC's wind power industry has been growing rapidly in recent years, given the country's rich wind resources. As shown on the two maps below, the areas with large amounts of wind resources and consequently large installed capacities are Northern China and the Southeastern coastal areas. Northern China has abundant wind energy resources mainly because of their mid to high altitudes, often encountered with cold anticyclones whereby pressure differences cause high-speed winds. The Southeastern China coastland is another area with a huge potential for wind resource application due to surface temperature differences between the land and the ocean. The funneling effect provided by the Taiwan Strait further enhances wind speed. In general, for wind power projects located in North China, their power generation normally peaks in winter when local wind speed peaks, and bottoms out in summer when local wind speed reaches its lowest level. The map below shows wind resources distribution in China:

The PRC Wind Resources Distribution



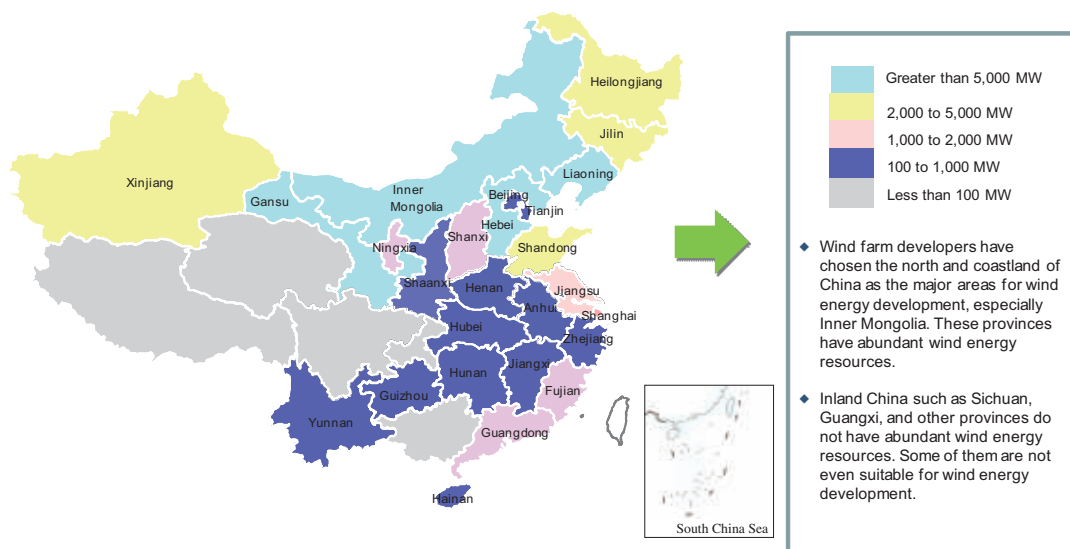
Source: NDRC; Frost & Sullivan.

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 coastal areas and offshore are found in Shandong, Jiangsu, Zhejiang, Fujian, Guangdong and Hainan. The PRC government has also planned out eight geographic regions, the Eight Wind Power Bases, where wind power projects are most concentrated. These eight regions include Xinjiang, Gansu, West Inner Mongolia, East Inner Mongolia, Jilin, Hebei, Jiangsu and Shandong.

INDUSTRY OVERVIEW

The map below shows the cumulative installed capacity in major wind resource provinces in China:

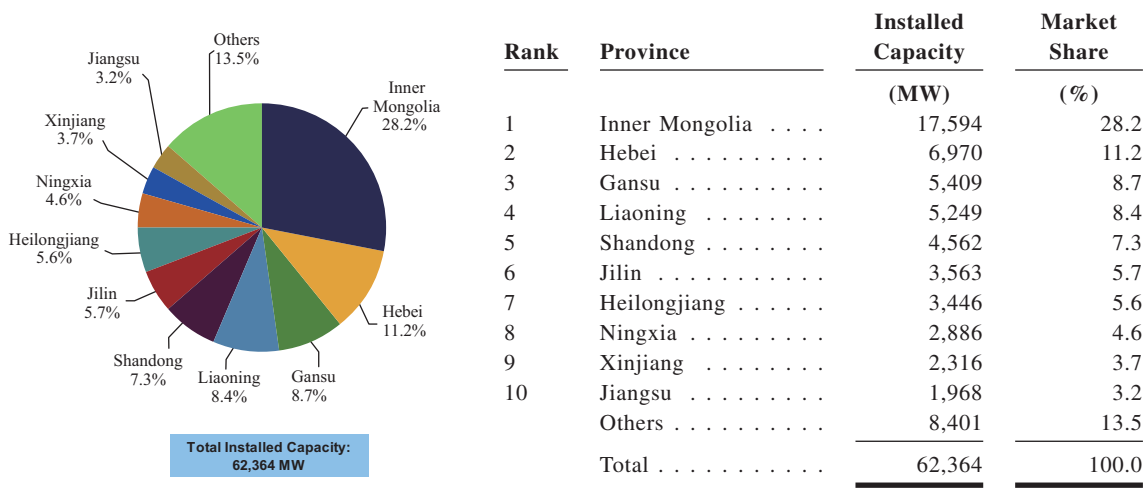
**The PRC Wind Market: Cumulative Installed Capacity
in Major Wind Resource Provinces – December 31, 2011**



Source: China Wind Energy Association; Frost & Sullivan.

The chart below illustrates the top ten provinces in China with the highest installed capacity as of the end of 2011.

**Top Ten Provinces in China
by Wind Power Installed Capacity, December 31, 2011**



Source: China Wind Energy Association.

INDUSTRY OVERVIEW

The following table sets forth a comparison of wind power tariffs by provinces.

Area	Wind Power On-grid Tariff RMB/kWh (incl. VAT)
Guangdong	0.61
Zhejiang	0.61
Shanghai	0.61
Hunan	0.61
Hainan	0.61
Guangxi	0.61
Jiangsu	0.61
Hubei	0.61
Jiangxi	0.61
Fujian	0.61
Anhui	0.61
Shandong ⁽¹⁾	0.61
Sichuan	0.61
Henan	0.61
Liaoning	0.61
Hebei ⁽²⁾	
Zone 2	0.54
Zone 4	0.61
Chongqing	0.61
Tianjin	0.61
Beijing	0.61
Heilongjiang ⁽³⁾	
Zone 3	0.58
Zone 4	0.61
Jilin ⁽⁴⁾	
Zone 3	0.58
Zone 4	0.61
Shaanxi	0.61
Guizhou	0.61
Shanxi	0.61
Yunnan	0.61
Qinghai	0.61
Inner Mongolia ⁽⁵⁾	
Zone 1	0.51
Zone 2	0.54
Gansu ⁽⁶⁾	
Zone 2	0.54
Zone 3	0.58
Ningxia	0.58
Xinjiang ⁽⁷⁾	
Zone 1	0.51
Zone 3	0.58

INDUSTRY OVERVIEW

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

- (1) Although the wind power on-grid tariff in Shandong Province is RMB0.61/kWh (including VAT), all wind projects in Shandong Province enjoy a RMB0.09/kWh subsidy from the provincial government.
- (2) Zone 2 in Hebei includes Zhangjiakou and Chengde; Zone 4 includes all areas except for areas included in Zone 2.
- (3) Zone 3 in Heilongjiang includes Jixi, Shuangyashan, Qitaihe, Suihua, Yichun and Da Hinggan Ling area; Zone 4 includes all areas except for areas included in Zone 3.
- (4) Zone 3 in Jilin includes Baicheng and Songyuan; Zone 4 includes all areas except for areas included in Zone 3.
- (5) Zone 2 in Inner Mongolia includes Chifeng and Tongliao. Xinganmeng is included in Zone 2.
- (6) Zone 2 in Gansu includes Zhangye, Jiayuguan and Jiuquan; Zone 3 includes all areas except for areas included in Zone 2.
- (7) Zone 1 in Xinjiang includes Urumqi, Yili Kazakh autonomous prefecture, Changji Hui autonomous prefecture, Klamyi and Shihezi; Zone 3 includes all areas except for areas included in Zone 1.

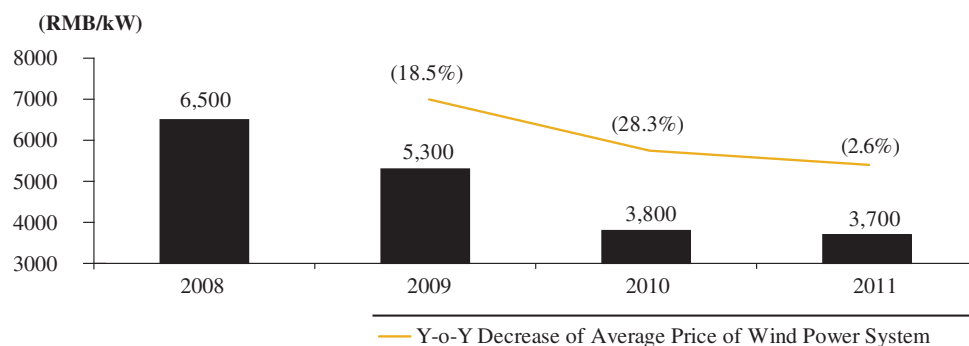
The PRC's wind power industry is mainly driven by the following factors:

- **Plentiful wind resources:** The PRC has the most abundant wind power resources in the world. According to Chinese State Oceanic Administration, PRC's current onshore technically exploitable wind resources are around 3,000 GW.
- **Favorable national policies:** The strong growth of the PRC wind energy industry has been driven by supportive national energy policies and incentives. In the past few years, the PRC government has launched a series of policies and incentives to encourage the development of its wind power industry. The Medium- and Long-term Development Plan for Renewable Energy issued in September 2007 specified that grid companies must purchase all electricity generated from clean energy projects within their coverage. In 2008, the PRC government further introduced favorable taxation policies for the wind sector whereby wind power companies are exempt from income tax for three years from their first income-generating year and receive a 50.0% reduction in income tax for three years thereafter. Recently the 12th Five-Year Plan provides for six 10 GW onshore wind power bases and two 10 GW offshore wind power bases to be built, with at least 70 GW of newly installed wind power capacity, which is to be developed from 2011 to 2015.

INDUSTRY OVERVIEW

- **A well-defined tariff system:** In 2009, the PRC government classified the country into four onshore wind energy resource zones and set up four tiers of wind power feed-in tariffs based on the quality of wind resources in each zone. Currently, the wind power on-grid tariff ranges from RMB0.51/kWh to RMB0.61/kWh. For the 1st, 2nd and 3rd wind energy resource zones, including some cities in North, Northeast, and Northwest with the highest wind energy resources, wind power tariffs range from RMB0.51/kWh to RMB0.58/kWh. For the 4th wind energy resource zone with less wind energy resources, wind power tariff is set at RMB0.61/kWh. Different benchmark prices among regions help to balance the pace of development, and also help to curb the blind expansion of wind power companies.
- **High-quality wind turbines and low cost wind turbine supplies:** In the past few years, the PRC wind turbine manufacturers have improved the average quality of their wind turbines and increased production capacity. In addition, advancement in technology has significantly reduced and will continue to reduce the cost of wind power systems. Due to the rapid expansion of the wind turbine sector, the advancement of wind turbine technologies and the emergence of more manufacturers, wind turbine prices have been declining significantly since 2008, as shown in the chart below. According to Frost & Sullivan, the average price of wind turbines from leading domestic wind turbine manufacturers decreased from RMB6,500/kW in 2008 to RMB5,300/kW in 2009, further to RMB3,800/kW in 2010, and further decreased to RMB3,700/kW in 2011.

Chinese Wind Turbine Market: Average Per Unit Price of Domestic Wind Turbines⁽¹⁾ 2008-2011



Source: Frost & Sullivan.

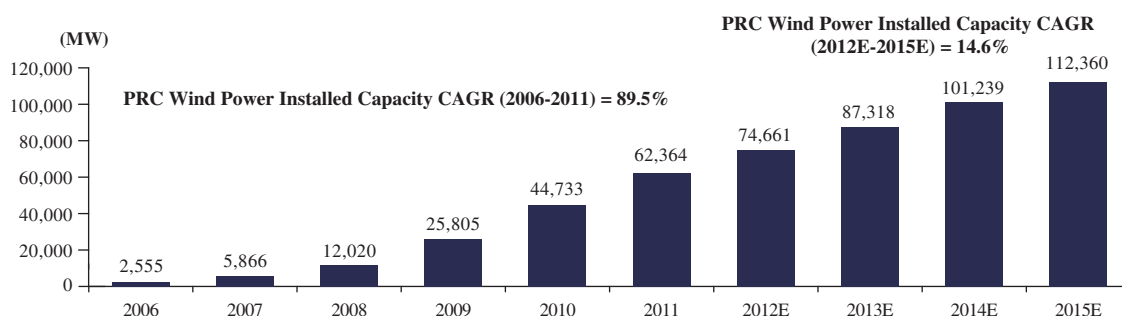
- (1) Average per unit price of domestic wind turbines calculated from domestic wind power plants' bidding price for wind turbines ranging in size from 1 MW to 3 MW.

INDUSTRY OVERVIEW

The Growth of the PRC Wind Power Industry

The PRC's wind power installed capacity has grown from 2,555 MW in 2006 to 62,364 MW in 2011, achieving a CAGR of 89.5%. Newly installed capacity in 2011 was 17,631 MW. Frost & Sullivan expects total wind power installed capacity in the PRC to continue to increase at a CAGR of 14.6% between 2012 and 2015, reaching 112 GW in 2015. The following chart illustrates historical and forecast wind power installed capacity from 2006 to 2015E.

Total Wind Market: Installed Capacity in the PRC, 2006-2015E



Source: China Wind Energy Council; China Electricity Council; Frost & Sullivan.

Leading Wind Power Operators in the PRC

Large PRC power generation groups contribute to the majority of investments in the wind power sector. The table below lists leading wind power operators in the PRC by total installed capacity as of December 31, 2011. Huadian Fuxin Energy Corporation ranks fifth in the PRC in terms of total installed capacity with a total of 2,171 MW and a market share of 4.8% out of the total grid-connected installed capacity of 45,050 MW in the PRC.

Market Share of Top Ten Wind Power Companies in the PRC by Installed Capacity – December 31, 2011

Rank	Company Name	Installed Capacity	Market Share
		(MW)	(%)
1	China Longyuan Power Group Corporation Limited	8,598	19.1
2	China Datang Corporation Renewable Power Co., Limited	5,172	11.5
3	Huaneng Renewables Corporation Limited	4,904	10.9
4	Shenhua Guohua Energy Investment Co., Ltd	3,005	6.7
5	Huadian Fuxin Energy Corporation Limited	2,171	4.8
6	China Guangdong Nuclear Power Wind Power Co., Limited	2,000	4.4
7	China Guodian Power Development Co., Ltd	1,881	4.2
8	Beijing Jingneng Clean Energy Co., Ltd.	1,683	3.7
9	Datang International Power Generation Co., Ltd.	1,269	2.8
10	China Resources Power (Holding) Co., Ltd	1,250	2.8

Source: Frost & Sullivan; ranking is based on grid connected installed capacity.

INDUSTRY OVERVIEW

Average utilization hours of wind power plants indicate power generating efficiency as well as operational reliability. In 2011, China Resources Power had the highest average utilization hours with 2,126 hours. Huadian Fuxin Energy and Beijing Jingneng Clean Energy ranked second and third, with 2,072 hours and 2,050 hours, respectively.

Average Utilization Hours of Wind Power Companies (China), 2011

Rank	Company Name	Average Utilization Hours
1	China Resources Power (Holding) Co., Ltd	2,126
2	Huadian Fuxin Energy Corporation Limited	2,072
3	Beijing Jingneng Clean Energy Co., Ltd.	2,050
4	China Longyuan Power Group Corporation Limited	2,026
5	China Guodian Power Development Co., Ltd	1,965
6	Huaneng Renewables Corporation Limited	1,962
7	China Datang Corporation Renewable Power Co., Limited	1,951
8	Datang International Power Generation Co., Ltd.	1,800
	Average Utilization Hours in China (2011)	1,903

Note: This ranking only includes listed companies in top ten wind power companies by installed capacity.

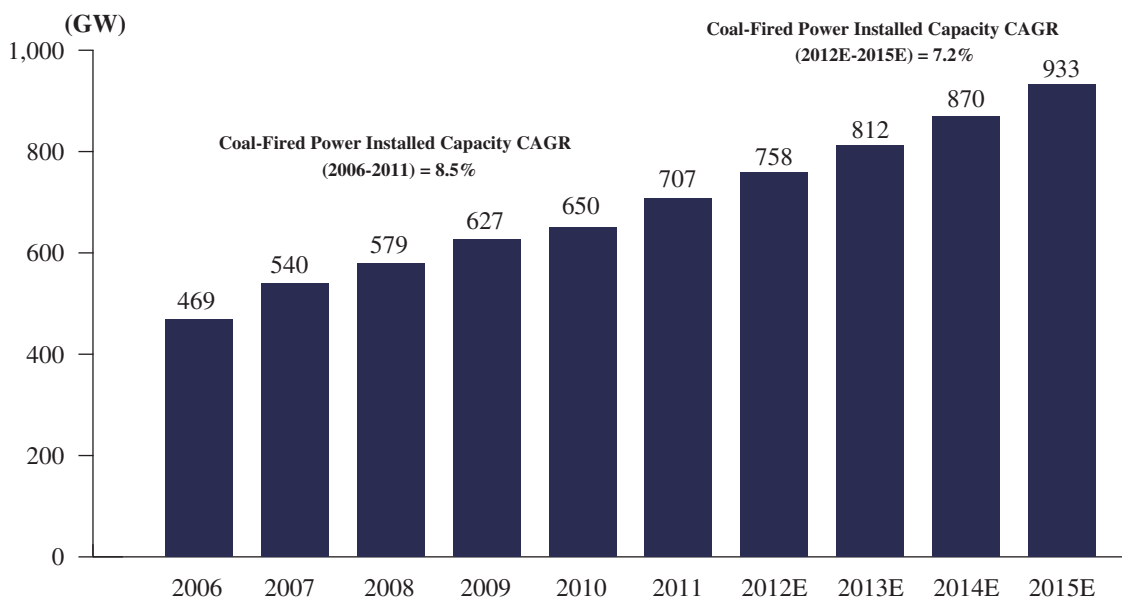
Source: Frost & Sullivan, Information from companies' annual reports. Ranking only includes listed wind power operators that rank in the top ten in China by wind power installed capacity.

INDUSTRY OVERVIEW

THE PRC COAL-FIRED POWER INDUSTRY

The PRC power industry is characterized by a heavy dependence on coal as fuel for power generation given the relative abundance of coal reserves available in the country compared to crude oil and natural gas. As a result, coal-fired power plants have a long history in the PRC and have dominated the PRC power market. According to Frost & Sullivan, as of December 31, 2011, total coal-fired power plant installed capacity was approximately 707 GW, which accounts for approximately 66.6% of the total PRC power installed capacity. The following chart illustrates Frost & Sullivan's estimates of coal-fired power installed capacity in the PRC from 2006-2015E. Given the abundance of coal resources, there is no doubt that coal-fired power plants will continue to meet the vast majority of the PRC's power needs.

Coal-Fired Power Market: Installed Capacity in the PRC, 2006-2015E

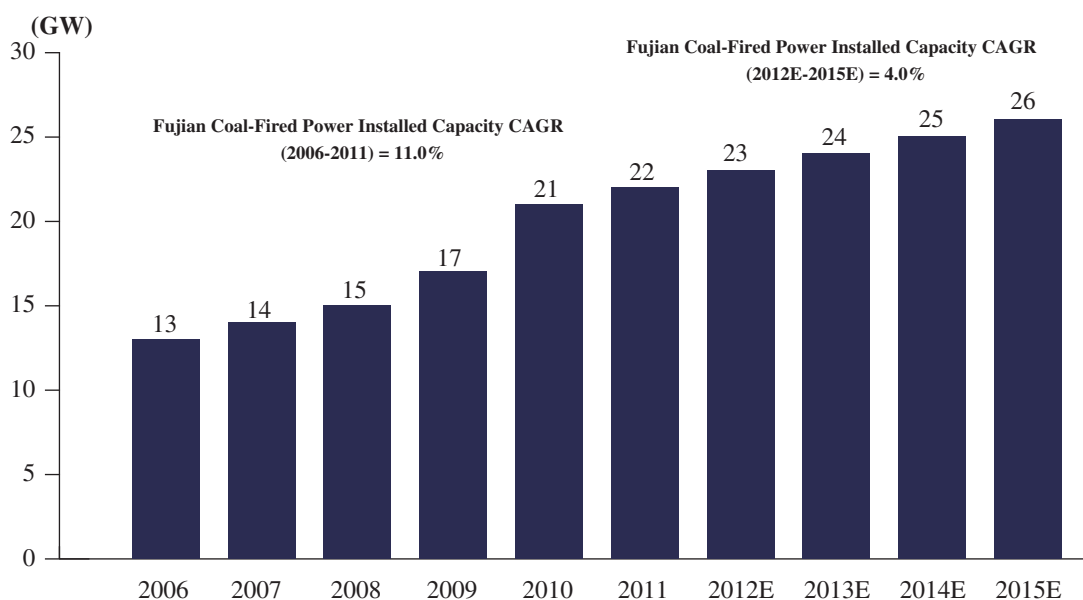


According to Frost & Sullivan, installed capacity of coal-fired power plants in Fujian was 22 GW in 2011, accounting for 60.0% of Fujian's total power market.

INDUSTRY OVERVIEW

While the percentage of coal-fired power generation to total power generation in Fujian is lower than the national average, coal-fired power plants play a key role in ensuring a stable and continuous electricity supply when there is a shortage of rainfall, which results in reduced utilization hours of hydropower. Coal-fired power installed capacity in Fujian is expected to grow at a CAGR of 4.0% and to reach 25,636 MW in 2015.

Coal-Fired Power Market: Installed Capacity in Fujian, 2006-2015E



Industry Dynamics

The factors listed below are considered important drivers of Chinese coal-fired power plant operators:

- *Increasing economies of scale in power generation capacity*

Older, small coal-fired power plants are no longer efficient and face replacement and/or upgrade pressure with increasing demand for power and rising coal prices in the PRC. The PRC government has put forward a series of new policy measures for the coal-fired power industry titled “Constructing New Big Power Units While Closing Small Ones.” The goal is to consistently expand installed capacity while closing down small inefficient coal-fired power units in order to enhance productivity and to save energy. Actions have been taken to shut down or upgrade small and inefficient power generating units (usually below 200 MW) and to prohibit power generating units below 300 MW to be built in the region covered by the grid, and to promote power generating units above 300 MW with more priority given to the larger generating units. Certain types of units that have operated over 20 years shall be closed down or upgraded, and certain types of coal-fired condensing turbine units with installed capacities of less than 300 MW are prohibited from receiving governmental approval.

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- ***Improving power generation efficiency***

A variety of advanced power generation technologies has been developed, imported and adopted in the PRC, including supercritical and ultra-supercritical pulverized-coal (“USC-PC”) technologies. USC-PC generates thermal energy by operating above the critical point of water and burning pulverized coal (powdered coal or coal dust). As the pressures and temperatures increase, so does the operating efficiency. On average, supercritical and ultra-supercritical plants operate in the 42.0-47.0% operating efficiency range. Emphasis on large capacity, high efficiency, and environment-friendly 600 MW and 1,000 MW supercritical and ultra-supercritical generating units is expected in the future.

- ***Proximity to coal resources and favorable coal pricing mechanisms***

The cost of coal accounts for the majority of the total operating cost of coal-fired power plants and thus is a major and direct factor on the profitability of coal-fired power plants. Most of the PRC’s coal mines are located in the north of the country and coal is transported to various regions mainly through railway and marine or sea shipment. Coal-fired plants that are located near ports or major railway terminals enjoy a lower transportation cost.

There are two types of coal prices: contracted coal price and noncontracted coal price. Contracted coal is a pricing mechanism set by the NDRC to require coal suppliers to sell coal to coal-fired power plants at a lower-than-market price. Once set, the contracted coal price does not fluctuate with spot coal prices. A noncontracted coal price is often referred to as a spot market price and fluctuates when the spot coal price changes.

The table below shows the spot price for 6,000 kcal/kg of steam coal at Qinhuangdao Port from 2006 to April 2012.

6,000 kcal/kg GAD FOB Steam Coal Spot Price at Qinhuangdao Port, China

Price (USD/ton)	2006	2007	2008	2009	2010	2011	2012
January	NA	59.00	101.00	100.00	121.56	138.72	143.76
February	47.00	NA	NA	95.00	104.22	137.94	142.32
March	49.50	66.00	135.00	86.00	104.74	138.40	142.45
April	50.00	67.00	127.50	93.40	107.66	139.28	144.85
May	51.00	67.00	154.00	90.00	117.27	147.39	
June	51.00	74.00	146.50	85.00	114.10	138.37	
July	51.25	74.00	153.00	89.00	114.33	149.06	
August	52.00	74.30	163.40	89.72	112.67	148.10	
September	52.00	74.30	NA	84.95	111.45	150.00	
October	52.00	75.00	120.00	94.50	119.50	154.34	
November	NA	92.00	80.00	101.75	129.00	154.80	
December	NA	93.50	87.00	112.04	127.83	151.73	

Source: Bloomberg.

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- **Recent upward adjustments of the coal-fired power tariff**

In response to the higher coal price in 2011 and rising electricity consumption, the NDRC has made multiple rounds of tariff adjustments for coal-fired power plants in 2011. The table below lists the recent tariff adjustments in the PRC and in Fujian:

<u>Time of Tariff Adjustments</u>	<u>Events</u>
December 2011	The NDRC raised the coal-fired on-grid power tariff in Fujian by RMB0.0274/kWh
December 2011	The NDRC raised the average coal-fired on-grid power tariff by RMB0.026/kWh and retail power tariff by RMB0.03/kWh effective from December 1, 2011
June 2011	The NDRC raised nonresidential end user power tariffs by an average RMB1.67 cents/kWh in 15 provinces including Shanxi, Qinghai, Gansu, Jiangxi, Hainan, Shaanxi, Shandong, Hunan, Chongqing, Anhui, Henan, Hubei, Sichuan, Hebei and Guizhou effective from June 1, 2011
April 2011	The NDRC hiked the on-grid power tariff in 16 provinces by an average of RMB0.012/kWh. The on-grid tariff hike will be back dated to start from January 1, 2010 for some provinces while other provinces will be allowed to raise on-grid power tariffs from April 10, 2011

OTHER CLEAN ENERGY INDUSTRIES IN THE PRC

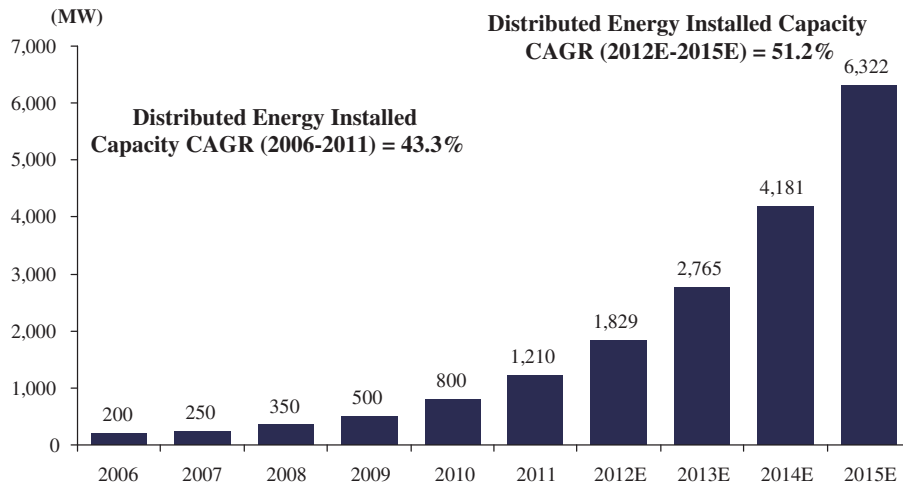
- **Distributed Energy**

According to the Guide on Natural Gas Distributed Energy (關於天然氣分佈式能源的指導意見), distributed energy is defined as the generation of electricity from a natural gas power plant located in the vicinity of the users' location, without large-scale long-distance transmission. In addition to the electricity consumed locally, the excess electricity may be transmitted via a local distribution network. Distributed energy is clean, efficient, reliable, and economically competitive due to its low carbon emission, proximity to end users, ability to serve as an emergency backup, its ability to provide power during peak periods and premium power, etc.

The overall efficiency of the most efficient distributed energy units can reach 80.0%. Guangzhou University Town Distributed Energy Project is the largest distributed energy generation power plant in the PRC as of December 31, 2011.

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Distributed Energy Industry: Installed Capacity in the PRC, 2006-2015E



Source: NDRC; Frost & Sullivan.

The PRC government has been supportive of the development of the distributed energy sector. In China total installed capacity of distributed gas power plants has increased from 200 MW in 2006 to 1,210 MW in 2011, representing a CAGR of 43.3%. Frost & Sullivan expects installed capacity of distributed gas power plant to increase at an even faster growth rate in the next four years, increasing from 1,210 MW in 2011 to 6,322 MW in 2015 driven by the 50,000 MW target set for 2020 in the Distributed Energy Development Plan. In 2011, Measures of Distributed Energy Administration (Consultation Paper) (分佈式發電管理辦法(徵求意見函)) recommends measures to stimulate the development of distributed energy through financial subsidies, the guaranteed purchase of excess power and guaranteed property rights to operators.

The National Energy Administration (NEA) supervises the development of Distributed Generation in the PRC by formulating development plans and relevant policies. The agencies at the provincial level, however, are responsible for the research, evaluation, construction, and management of the projects, such as evaluation of the local available resources, energy demands, clarification of the construction scale, and negotiation with the grid to set up the on-grid electricity price.

Natural gas distributed energy provides power, heating and even cooling in the form of Combined Cooling Heating and Power (“CCHP”) or Combined Heating and Power (“CHP”). The majority of CCHP and CHP projects in the PRC are off the grid and small in scale. The distributed energy systems can provide power during peak periods, as well as hot water, heating or cooling.

For projects that are connected to the grid, power generated is usually consumed by local industry or residents. In only a few cases, power is sold to the grid at a distinctive on-grid tariff negotiated with the grid company. The on-grid tariff for natural gas distributed generation is

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set by the pricing bureau at the provincial or municipal level, based on both the fixed cost and the operating cost of each power plant on a “one price for one unit” tariff setting scheme designed to ensure a reasonable return. Guangzhou University Town Distributed Energy Project is the first large scale and the only grid-connected distributed generation project in the PRC.

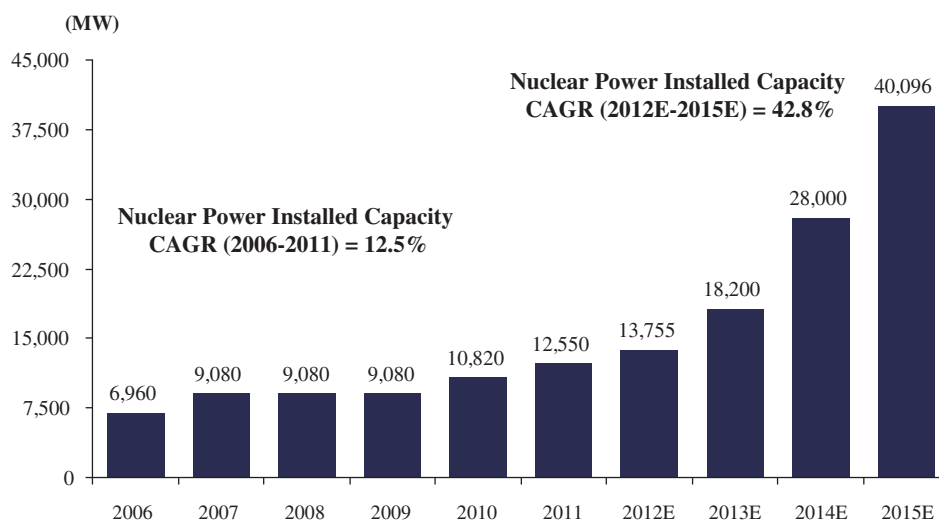
Natural gas distributed energy projects may also apply for CDM to earn additional income from selling emission credits. The eligibility of a specific natural gas distributed energy project to receive CDM income is dependent on whether or not that specific project achieves emission reduction. As of December 31, 2011, Guangzhou University Town Distributed Energy Project is the only natural gas distributed generation project in the PRC that is registered in the CDM program. An increasing number of such natural gas distributed energy projects are expected to be qualified for CDM income in the next few years.

- **Nuclear Power**

The PRC has witnessed rapid growth in the nuclear power sector. According to Frost & Sullivan, nuclear power installed capacity amounted to 12,550 MW in 2011 from 6,960 in 2006, representing a CAGR of 12.5%. The nuclear power installed capacity is expected to reach 40,096 MW and account for 2.8% of the total power installed capacity in 2015 in the PRC.

Compared to other clean energy sources, nuclear power is relatively reliable and affordable with lower generation costs. Consequently, the PRC has placed heavy emphasis on the development of nuclear power.

Nuclear Power Market: Installed Capacity in the PRC, 2006-2015E



Source: China Electricity Council; Frost & Sullivan.

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Major Nuclear Players in the PRC

The nuclear power industry in the PRC is highly concentrated and regulated. There are currently three companies with a Nuclear Power Plant Holding Qualification, which entitles them to operate nuclear power plants, namely China Nuclear Engineering Group Corporation, China Guangdong Nuclear Power Group and China Power Investment Corporation. Only China Nuclear Engineering Group Corporation and China Guangdong Nuclear Power Group have controlling stakes in nuclear power plants. On a consolidated installed capacity basis, China Nuclear Engineering Group Corporation ranks first with a total of 6,450 MW installed capacity and a market share of approximately 51.4%. China Guangdong Nuclear Power Group ranks second with 6,100 MW of installed capacity and a market share of 48.6%.

Nuclear Power Companies in the PRC – December 31, 2011

<u>No.</u>	<u>Company</u>	<u>Installed Capacity</u>	<u>Market Shares</u>
		(MW)	(%)
1	China Nuclear Engineering Group Corporation	6,450	51.4
2	China Guangdong Nuclear Power Group	6,100	48.6

Source: China Electricity Council; Company annual reports; Frost & Sullivan.

Note: There are three companies with a Nuclear Power Plant Holding Qualification in China, but only two of them are controlling companies, as shown above.

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There are currently 10 nuclear power projects under planning and construction. By the end of 2015, there will be additional companies (including Huadian Fuxin) participating in nuclear projects in the PRC.

Nuclear Power Plants under Planning and Construction

Power Plant	No. of Reactors	Installed Capacity (MW)	Location	Ownership	Est. Online Date
Yangjiang Nuclear Power Plant	6	6,480	Guangdong	China Guangdong Nuclear Power Group, CLP	2013-2019
Fuqing Nuclear Power Plant	6	6,480	Fujian	China Nuclear Engineering Group Corporation (51%), Huadian Fuxin Energy Corporation (39%) , Fujian Investment & Development Corporation (10%)	2013-2018
Hongyanhe Nuclear Power Plant (Phase 1)	4	4,320	Liaoning	China Guangdong Nuclear Power Group (45%), China Power Investment Corporation (45%), Liaoning Construction Investment Group (10%)	2012-2014
Ningde Nuclear Power Plant	4	4,320	Fujian	Datang Power (44%), China Guangdong Nuclear Power Group (46%), Fujian Provincial Energy Group (10%)	2012-2015
Taishan Nuclear Power Plant	2	3,400	Guangdong	China Guangdong Nuclear Power Group (70%), EDF (30%)	2013-2014
Fangjiashan Nuclear Power Plant	2	2,160	Zhejiang	China Nuclear Engineering Group Corporation (100%)	2013-2014
Sanmen Nuclear Power Plant	2	2,500	Zhejiang	China National Nuclear Corporation (51%), Zhejiang Provincial Energy Group (20%), China Power Investment Nuclear Corporation (14%), China Huadian Group (10%) , China Nuclear Engineering and Construction Group (5%)	2013-2014
Haiyang Nuclear Power Plant	2	2,500	Shandong	China Power Investment Corporation (40%), China Nuclear Engineering Group (20%), China Guodian Group (20%), Shandong Luxin holding Corporation (10%), Huaneng Group (5%), Yantai Electric Power Development (5%)	2014-2015
Fangchenggang Nuclear Power Plant	2	2,160	Guangxi	China Guangdong Nuclear Power Group (61%), Guangxi Investment Group (39%)	2015-2016
Changjiang Nuclear Power Plant	2	1,300	Hainan	China Nuclear Engineering Group (51%), China Huaneng Group (49%)	2014-2015

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The PRC government has issued a series of nuclear power regulations since 2006 that are the foundation for the rapid development of the nuclear power sector in the PRC, including the Mid- and Long-Term Plan for the Nuclear Power Sector (2005-2020) (國家核電中長期發展規劃(2005-2020)). The PRC government also issued the Adjustment about the Import Tax Policy regarding the Third Generation of Nuclear Power Plants and Other Major Technology or Equipment (關於調整三代核電機組等重大技術裝備進口稅收政策的通知) in 2011, which focuses on encouraging relevant companies to develop the Third Generation of Nuclear Power Plants, through tax-free policies on imported equipment and raw materials.

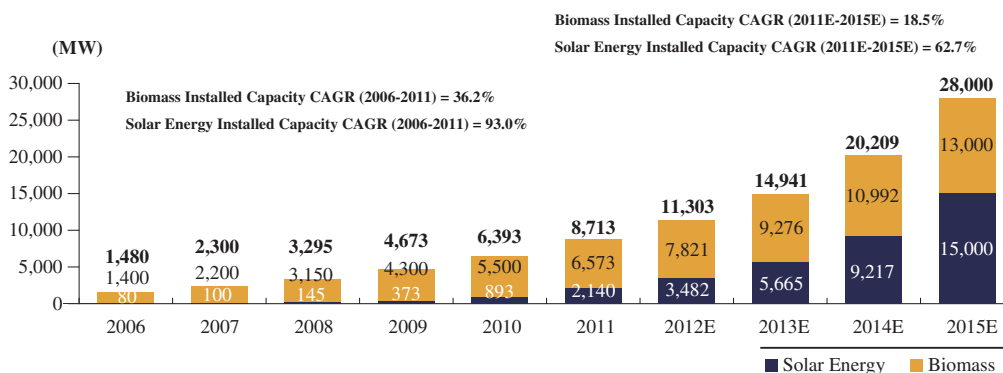
The on-grid tariff for nuclear power plants is set by the National Pricing Bureau based on the operating cost of each plant on a “one price for one unit” tariff setting scheme. Reasonable return is guaranteed by a fixed internal rate of return that is certain percentage points higher than the interest rate of long-term treasury bonds in the PRC.

- **Biomass & Solar Power**

Biomass is plant matter used to generate electricity or heat through direct combustion via boilers and steam turbines. Total installed capacity for biomass energy in the PRC reached 6,573 MW as of the end of 2011. Frost & Sullivan expects installed capacity for biomass to grow from 7,821 MW in 2012 to 13,000 MW by 2015 at a CAGR of 18.5%.

Solar power is the conversion of sunlight into electricity. Sunlight can be converted directly into electricity using photovoltaics (“PV”), or indirectly with concentrated solar power (“CSP”). The total installed capacity for solar energy in the PRC has reached 2,140 MW in 2011. Frost & Sullivan expects solar power installed capacity to grow from 3,482 MW in 2012 to 15,000 MW by 2015 at a CAGR of 62.7%.

Solar and Biomass Energy Industry Data: Installed Capacity in the PRC, 2006-2015E



Source: China Electricity Council; Frost & Sullivan.

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THE FROST & SULLIVAN REPORT

We commissioned Frost & Sullivan, an Independent Third Party, to prepare an independent industry report on the global renewable energy market for use in whole or in part in this prospectus. This prospectus contains information extracted from the Frost & Sullivan Report in sections such as “Summary,” “Industry Overview,” “Business” and “Financial Information.”

We agreed to pay Frost & Sullivan a total fee of approximately HK\$2.0 million for the preparation of the Frost & Sullivan Report.

Frost & Sullivan is an independent industry consultant founded in 1961, which has over 40 global offices and employs over 1,800 analysts and experts worldwide. The firm covers a number of industries, including aerospace, defense, automotive, transportation, chemicals, energy and power systems, environmental technologies, electronics, information and communication technologies and health care.

Frost & Sullivan researches and analyzes new market opportunities for corporate growth and has prepared the Frost & Sullivan Report based on data released by government institutions such as the NDRC, the China Electricity Council, as well as a study undertaken by Frost & Sullivan through primary research, which involves discussing the status of the industry with leading industry participants and industry experts. The methodology used in the Frost & Sullivan Report is the Expert Opinion Consensus Methodology, which integrates several forecasting techniques with the market engineering measurement-based system.