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INDUSTRY OUTLOOK | China's Electricity Industry

Moderate Growth under Economic Rebalancing, Outlook Stable**Table of Contents**

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Executive Summary

The outlook for China's electricity industry is stable, which reflects our opinion on the credit conditions in the industry.

- Under the framework of economic rebalancing, China's electricity supply and demand is in balance and the industry is expected to grow in response to macroeconomic conditions. The industrial sector will continue to be the primary engine for electricity consumption, while the service sector and households will further drive demand. The large size and growth potential of the electricity market will provide stable incomes for Chinese electricity companies.
- The Chinese government has implemented preferential policies for renewable energy. The electricity industry attempts to diversify its power asset structure, allocating more capital expenditures in alternative power generation. Hydro and wind power together will account for most of the renewable energy portfolio; as for nuclear and solar power, their respective market size is relatively small so it remains a challenge to achieve the capacity targets set in the 12th Five-Year Plan.
- Since China's electricity industry is dominated by state-owned enterprises, government support is a key factor in determining the credit profile of electricity companies. As coal-fired power generation is the dominant source of electricity supply, reduced coal prices have led to improvements in the profitability of thermal power generating companies which rely on coal as generation input.
- Given the investment needs for capacity additions, electricity companies have highly leveraged capital structures and large financial expenses. Given the favorable government policies, clean and renewable power companies enjoyed higher profit margins than conventional thermal power companies. Therefore, the credit quality of electricity companies with renewable power plants is expected to improve gradually.

1. Industry Overview

Given its strategic importance to the economy and society, China's electricity industry is a highly regulated industry. The regulatory framework of power generation and grid transmission is summarized in Exhibit 1.

Exhibit 1. Highly Regulated Electricity Market in China

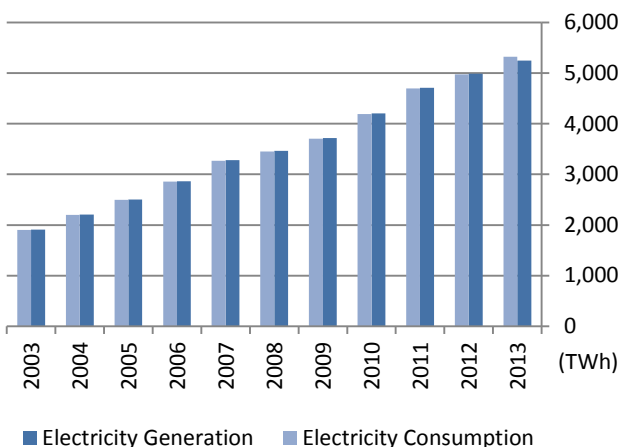
Power Generation	Grid Transmission
Barriers to entry	State-owned grid company as the single buyer
Planning of power asset structure	Regulated on-grid tariffs
Approval of production projects	Centralized electricity dispatch

1.1 Supply and Demand Is In Balance Now

The development of China's electricity industry is highly correlated with movements in the macro economy (Exhibit 2 and 3). Driven by exports and investments, China's economy experienced double-digit annual growth between 2003 and 2007. Economic growth together with electricity shortfall resulted in the accelerated growth of electricity market and the high level of generation utilization. Electricity companies also rapidly expanded their installed capacities. The 2008 global financial crisis also hampered the Chinese economy. To minimize the adverse impact, the central government immediately launched an economic stimulus program, and in consequence, the electricity market recorded a strong recovery in 2010.

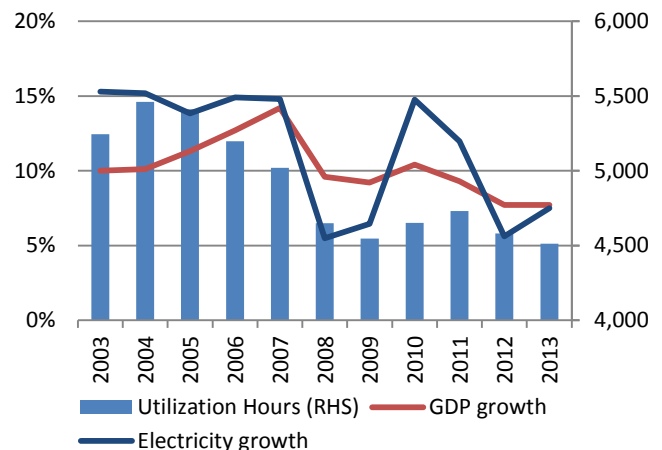
Since 2011, the global economy has been under pressure due to the outbreak of the European sovereign debt crisis and the slow recovery of the U.S. economy. The Chinese economy is also undergoing rebalancing with decelerated fixed asset investments. Given the rapid pace of capacity additions, there is now a balance between electricity supply and demand. Looking forward, the growth of electricity industry will continue on an upward trajectory but also be constrained by China's slower economic growth.

Exhibit 2. Electricity Generation and Consumption



Sources: National Bureau of Statistics, CEC

Exhibit 3. Recent Balance between Supply and Demand



For the six months ended June 2014, national electricity generation and consumption recorded 2,616.3 TWh and 2,627.6 TWh, representing year-on-year growth of 5.8% and 5.3% respectively. The average utilization hours of power generation further decreased to 2087 hours, 79 hours lower than the corresponding period last year.

1.2 Industrialization Creates Enormous Need for Electricity, And Urbanization Will Lead to Additional Demand

Industrialization has been the primary driver of China's economic growth. Close to half of GDP came from industrial activities, and over 70% of electricity was consumed by the industrial sector (manufacturing, mining, construction, and energy production) (Exhibit 4 and 6). Among all the industries, the production of steels, non-ferrous metals, construction materials, and petrochemicals is extremely energy intensive. In the medium term, the industrial sector will continue to consume the largest portion of electricity.

Given the shift to a consumption-driven economic growth, urbanization becomes an increasingly important policy goal in China (Exhibit 5). As a result, the service sector and households will drive additional electricity demand. For the past five years, the electricity consumption of these two sectors showed a high growth momentum (Exhibit 7). In addition, as the service sector is more energy efficient than the industrial sector, the energy intensity (i.e., the quantity of energy needed for each unit of GDP) is expected to be reduced in China.

Exhibit 4. GDP Composition by Sectors

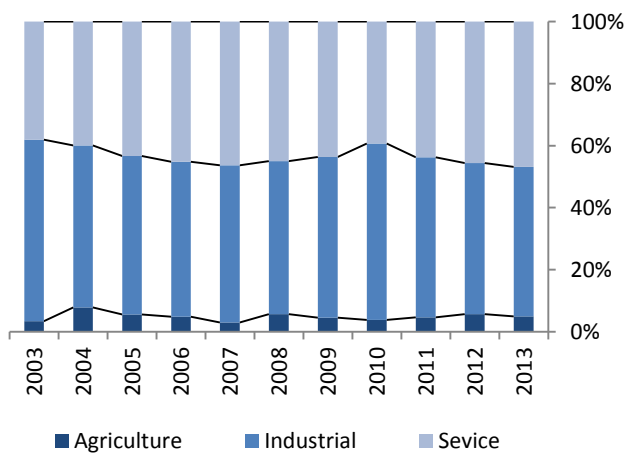
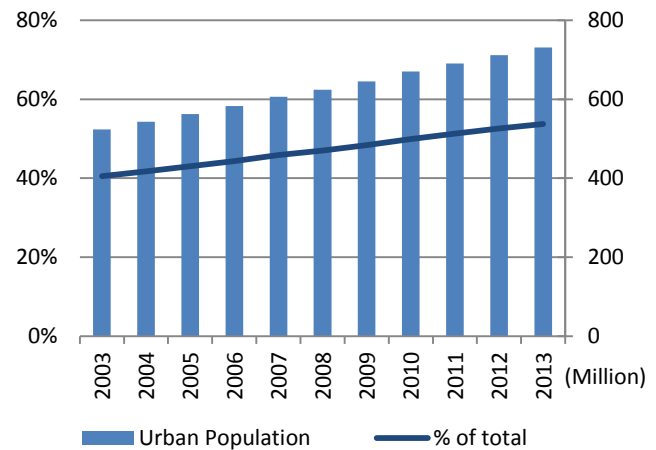


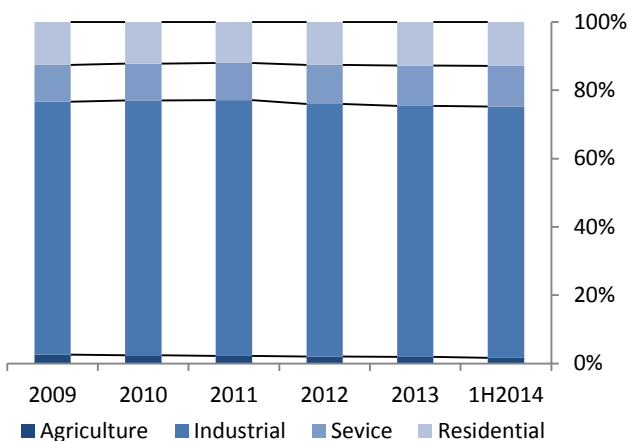
Exhibit 5. Urban Population in China



Sources: National Bureau of Statistics

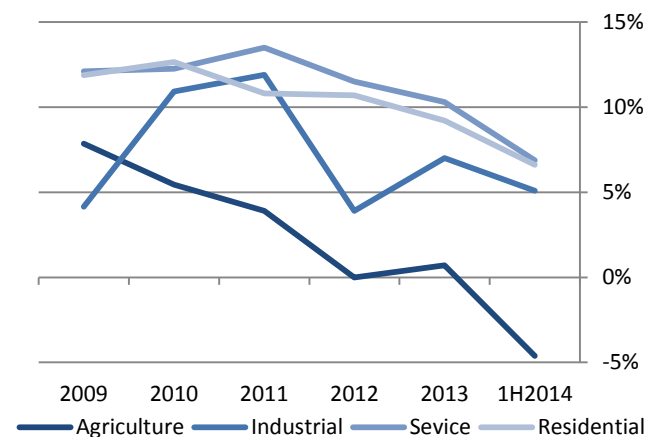
In the first half of 2014, the electricity consumption by the three major sectors, i.e. agriculture, industrial, and service, were 43.5 TWh (2% of total), 1,932.5 TWh (74%), and 313.8 TWh (12%) respectively, and residential consumption added another 337.8 TWh (13%). The growth rates for these sectors were -4.6%, 5.1%, 6.9%, and 6.6% respectively.

Exhibit 6. Composition of Electricity Consumption



Sources: NEA, CEC

Exhibit 7. Growth Rate of Electricity Consumption



1.3 Capacity Mix Remains Heavily Dependent on Coal-fired, While Renewable Energy Portfolio Grows Rapidly

China is the largest producer and consumer of coal in the world, and coal-fired generation is the dominant source of electricity supply. The growth of thermal generating capacity is slowing down, while renewable energy is expanding fast and its proportion of the national capacity keeps rising (Exhibit 8 and 9). As of June 2014, total installed capacity of power generation grew by 9.4% to 1,251.2 GW, consisting of 70% of thermal (the majority are coal-fired), 20% of hydro, and 10% of other renewable energies. By fuel type, the capacity growth rates were 5.4% for thermal, 14.4% for hydro, 21.7% for nuclear, and 22.6% for wind.

Exhibit 8. Growth of Installed Capacity

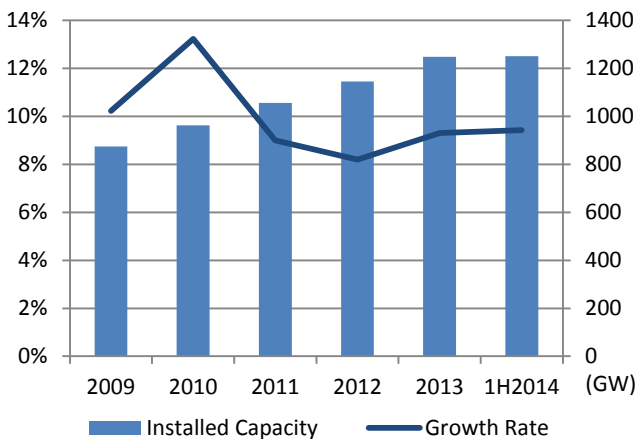
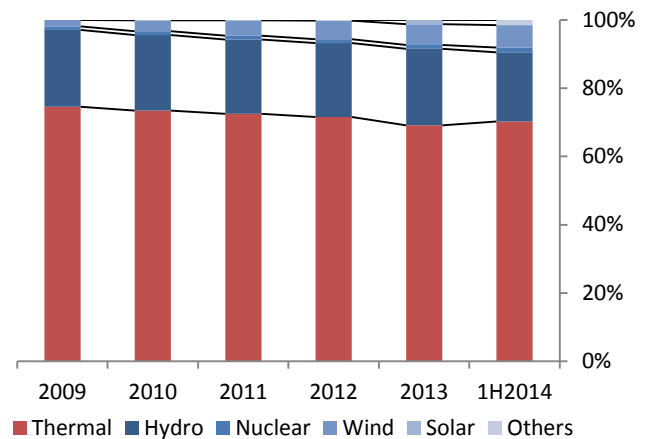


Exhibit 9. Installed Capacity by Fuel Type



Sources: NEA, CEC

The annual investment amounts in electric infrastructure remained high, approximately equally distributed to capacity installation and grid construction (Exhibit 10). Currently, as the Chinese government emphasizes environmental sustainability, the investment strategy of electricity companies is shifting from capacity expansion to fuel mix optimization (Exhibit 11). Conventional thermal power generating companies are allocating capital expenditures to install environmentally friendly desulfurization equipment and eliminating small-scale thermal generators.

Exhibit 10. Investment in the Electricity Industry

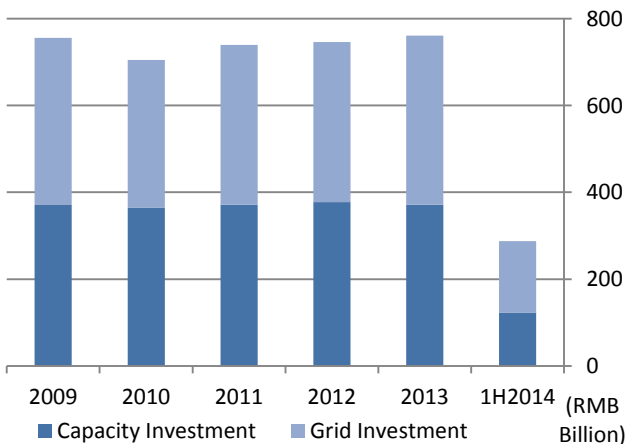
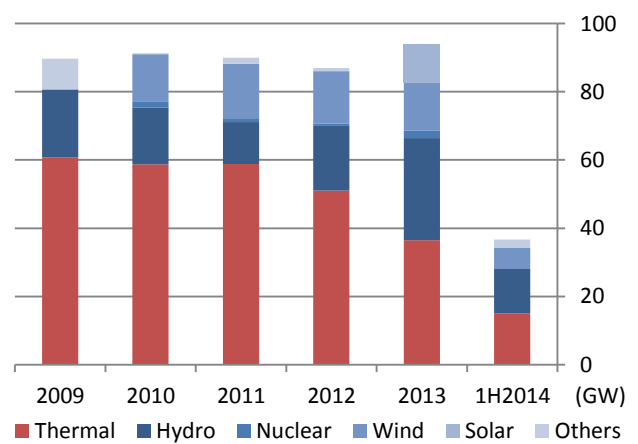


Exhibit 11. Additional Installed Capacity by Fuel Type



Sources: NEA, CEC

1.4 Electricity Market Represents Regional and Seasonal Effects

Although the overall electricity market is in balance, regional divergence still exists. There is an electricity surplus in the Northeast and Northwest regions, while the Northern China region faces tight electricity supply during the peak hours in summer. The growth rate of electricity consumption in the Western region is higher than other geographic regions (Exhibit 12).

For monthly electricity consumption, fluctuations are largely affected by weather conditions (Exhibit 13). Electricity demand is expected to grow at a moderate pace in the second half of 2014.

Exhibit 12. Electricity Consumption Growth by Region

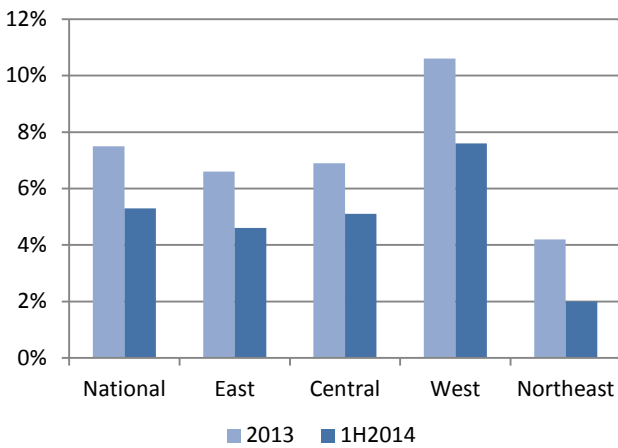
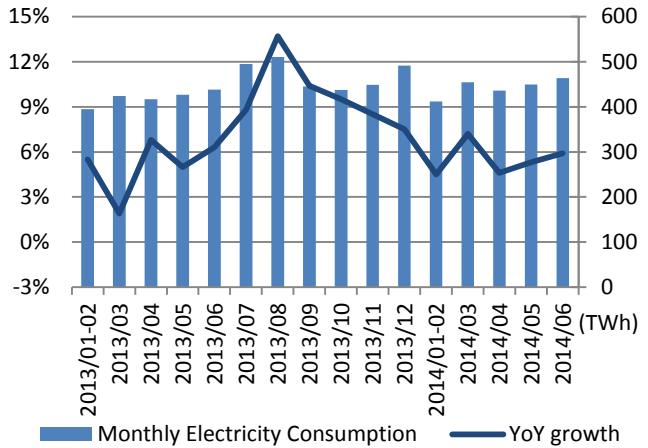


Exhibit 13. Monthly Electricity Consumption



Sources: CEC

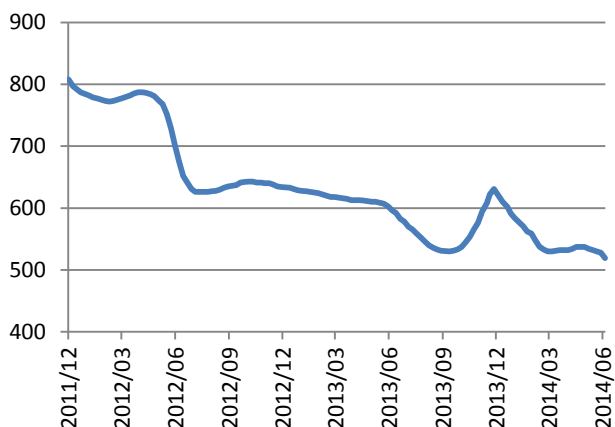
2. Future Development

2.1 The Reform of Regulatory Framework Is Progressive

China’s electricity industry is supervised and regulated by the National Development and Reform Commission (NDRC) and the National Energy Administration (NEA). The NDRC and provincial Price Bureaus set benchmarks and make adjustments for on-grid tariffs. The government has been committed to the reform of the electricity market, covering power generation, grid transmission, dispatch, and retail. Nevertheless, the implementation of policies will be gradual.

China’s tariff setting regime for the electricity industry is subject to the regulator’s discretion rather than a rule-based mechanism. In particular, there is no recovery mechanism for fuel costs (including coal, gas, and oil). As a result, the profitability of Chinese electricity companies, especially for thermal power generating companies, fluctuates with changes in fuel prices. During 2007 to 2010 when coal prices kept rising, the lagged tariff adjustments resulted in shrinking profits for electricity companies. When coal prices started to decline in 2012, their profitability improved substantially. As of 25 June 2014, the Bohai-Rim coal price was RMB 528 per ton, representing a drop of 12.4% from one year ago (Exhibit 14). Given the overcapacity and overproduction of coal, prices are expected to remain low. In the near term, fuel costs will continue to have a large impact on the profit margins for coal-fired power generation.

Exhibit 14. Bohai-Rim Steam-Coal Price Index (BSPI)



Source: Ocean Shipping Coal

A principal coal-fired power tariff reform occurred in December 2012.¹ Starting from January 2013, once coal prices fluctuate by 5% or more on an annual basis, on-grid tariffs will be adjusted accordingly. The proportion of price fluctuations born by electricity companies has also been reduced from 30% to 10%. In September 2013 and August 2014, the NDRC has twice lowered on-grid tariffs for coal-fired power generation. Nonetheless, we expect the tariff cut will have a marginal impact on the profitability of electricity companies.

2.2 Renewable Energy Is a Major Area of Investments

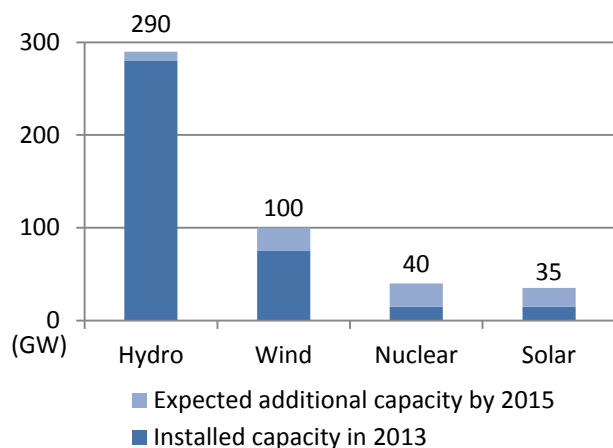
To encourage the use of renewable energy, the government has promulgated favorable policies for renewable power generation. According to the *Renewable Energy Law* (《可再生能源法》), the preferential measures include guaranteed purchase of electricity generated from renewable power plants, subsidized on-grid tariffs, and tax-related incentives. In addition, financial institutions are encouraged to provide favorable loans to renewable energy projects.

Given the long-term supportive policy and steady stream of investments, the renewable capacity has showed robust growth in the past few years. The 12th Five-Year Plan, which covers the years from 2011 to 2015, emphasized environmentally sustainable development. The government has set critical environmental targets, including the reductions of energy intensity, carbon emissions, and fossil fuel consumption. According to the plan,² China will increase its non-fossil fuel capacity to 30% of the national installed capacity, consisting of 290GW hydro, 40GW nuclear, 100GW wind, and 35GW solar (Exhibit 15). The capacity targets of hydro and wind power are expected to be achieved by 2015, while nuclear and solar energy face challenges with capacity additions in the short run.

¹ General Office of the State Council: *Guidelines of Enhancing the Marketization of Thermal Coal* (關於深化電煤市場化改革的指導意見).

² State Council: *12th Five-Year Plan for Energy Development* (《能源發展“十二五”規劃》) and *Promoting the Development of the Solar Photovoltaic Industry* (關於促進光伏產業健康發展的若干意見).

Exhibit 15. Targets for Building Renewable Capacity



Source: State Council, NEA

Within the renewable energy portfolio, hydro power contributes about 20% of the national installed capacity. The Three Gorges Dam is the world's largest hydro power station with a capacity of 22.5GW. However, the construction of the project has damaged the surrounding environment, and caused geological problems due to the resettlement of local residents. For future development, large-scale hydroelectric projects (installed capacity of 1GW or more) will become the focus of capacity additions.

Wind power has already received favorable policy measures during the 11th Five-Year Plan, and thus it has achieved higher capacity growth and larger profit margin than other alternative energies. China has surpassed the United States and has become the global leader of installed wind capacity. However, excessive expansion faces challenges of grid connectivity, which leads to power losses from grid congestion. Recent guidelines on grid connection and power consumption intend to improve generation efficiency, as the wind curtailment rate declined by 5% to 8.5% in the first half of 2014. Furthermore, since onshore wind resources have been largely utilized, wind power generating companies will roll out the development of offshore wind power, but it is subject to higher construction and maintenance costs, and more complicated approval procedures.

For safety reasons, expansion of nuclear plants requires the approval of the State Council. In view of Japan's Fukushima nuclear disaster in March 2011, the Chinese government suspended the approval of all new nuclear projects. In October 2012, more stringent standards of nuclear safety were unveiled,³ which signaled a restart of China's nuclear program. The government is embarking on the approval of coastal nuclear plants but the construction of inland nuclear plants has not yet been resumed. As of June 2014, China has 20 operating reactors and additional 28 reactors under construction.

The size of solar photovoltaic market remains relatively small in China, constrained by less competitive costs and limited policy initiatives. Since 2012, the government has announced favorable tariff benchmarks and subsidies for solar power generation. Recent policies also encourage the development of distributed solar energy (located on rooftops or on the ground), which will help to increase the popularity of solar power generation in the future.

China has introduced on-grid tariffs for renewable power generation in different regions (Exhibit 16). The benchmark on-grid tariffs shall apply to newly built power plants and shall remain stable for a certain period.

³ State Council: *Nuclear Power Security Plan (2011-2020)* (《核電安全規劃(2011~2020年)》) and *Nuclear Power Development Plan (2011-2020)* (《核電中長期發展規劃(2011~2020年)》).

Exhibit 16. Cost Competitiveness across Renewable Energies

	Wind (onshore)	Wind (offshore)	Nuclear	Solar
Construction costs (RMB/KW)	7,000 – 9,000	15,000 – 23,000	16,000 – 20,000	8,000 – 13,000
Utilization hours	1,000 – 3,000	2,000 – 4,000	7,000 – 8,000	800 – 2,500
Generation costs (RMB/kWh)	0.27 – 0.31	0.50 – 0.70	0.22 – 0.27	0.50 – 0.80
On-grid tariffs (RMB/kWh)	0.51 – 0.61	0.75 – 0.85	0.43	0.90 – 1.00

Source: CCXAP research

2.3 Government Support Plays As a Key Factor

In 1997, the State Power Corporation was established to take ownership of state-owned power generation assets, power transmission grids, and local distribution networks. It was responsible for the investment, development, construction, management, and operation of power plants and grids in China.

In 2002, the State Power Corporation was reorganized into two grid companies, State Grid and Southern Grid, and five large independent power producers (IPPs): China Huaneng, China Guodian, China Datang, China Huadian, and China Power Investment. These key market players are wholly owned by the central government and have nationwide operations.

The specialized power generating companies include China Three Gorges (hydropower), China Longyuan (wind power), China General Nuclear Power, and China National Nuclear (nuclear power). In addition, there are power generating companies under large state-owned groups, such as China Resources Power, Shenhua Guohua Power, and SDIC Power. There are also large municipal companies which mainly operate in their respective regions, including Beijing Energy, Shenergy, Zhejiang Provincial Energy, Guangdong Yudean, and Shenzhen Electricity.

China's electricity industry is dominated by state-owned enterprises (SOEs), so government support is one of the key credit metrics considered for rating electricity companies. These large SOEs are better positioned than private enterprises, and help the government to achieve critical policy goals. By the end of 2013, the installed capacity of the Big-Five IPPs accounted for almost half of the national capacity (Exhibit 17).

Exhibit 17. Installed Capacity of Big-Five IPPs

Group Name	Installed capacity (GW)	% of national capacity	Capacity mix
China Huaneng	143.29	11.49%	Thermal 79%, Hydro 13%, Wind 7%
China Guodian	122.79	9.84%	Thermal 75%, Hydro 10%, Wind 14%
China Datang	115.39	9.25%	Thermal 76%, Hydro 15%, Wind 8%
China Huadian	112.69	9.03%	Thermal 76%, Hydro 19%, Wind 5%
China Power Investment	89.68	7.19%	Thermal 69%, Hydro 21%

Source: CCXAP research

3. Company Analysis

We select 12 electricity companies for comparison in this section, of which most are Hong Kong-listed. Within our tracked samples, the profitability of electricity companies increased steadily, and the debt-to-capital ratio and interest coverage ratio also improved slightly. We expect the credit quality of these electricity companies will remain stable in the near term.

Exhibit 18. Profitability of Tracked Samples

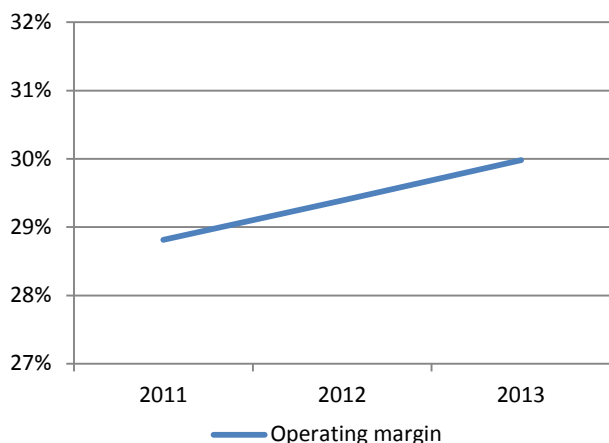
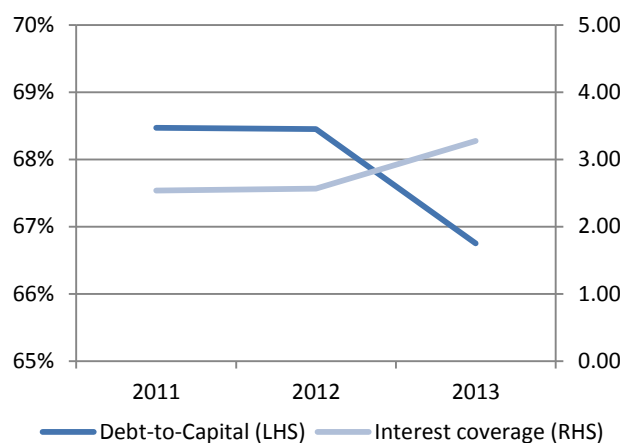


Exhibit 19. Credit Metrics of Tracked Samples



Source: CCXAP research

3.1 Large Independent Power Producers

Benefitting from declining coal prices, electricity companies recorded improved profit margins in the first half of 2014. Since large IPPs also invest in their own coal resources, fuel cost fluctuations will have less impact on these companies. Data from core listed subsidiaries of the Big-Five IPPs and China Resources Power are shown in Exhibit 20.

Exhibit 20. Operating and Financial Information of General Electricity Companies

Operating Information (1H2014)	Installed capacity (GW)		Power generation (TWh)	Coal consumption (g/kWh)	Utilization hours	
	Total	Thermal			Total	Thermal
Huaneng Power International	66.89	60.64	151.74	--	2,374	--
Guodian Power Development	40.66	29.20	87.90	306.7	2,238	2,604
Datang International Power Generation	39.66	32.89	90.93	310.0	2,300	--
Huadian Power International	37.32	33.84	87.94	306.3	2,450	2,696
China Power International Development	14.98	12.01	32.73	310.0	--	2,391
China Resources Power	29.90	26.42	96.23	311.0	--	2,752

Financial Indicators (FY2013 and 1H2014)	Operating margin		Debt/Capital		FFO/Debt		Interest coverage	
	FY2013	1H2014	FY2013	1H2014	FY2013	1H2014	FY2013	1H2014
Huaneng Power International	18.02%	22.32%	67.45%	65.90%	24.39%	--	4.39	5.15
Guodian Power Development	23.12%	26.81%	73.26%	73.27%	--	--	--	--

Financial Indicators (FY2013 and 1H2014)	Operating margin		Debt/Capital		FFO/Debt		Interest coverage	
	FY2013	1H2014	FY2013	1H2014	FY2013	1H2014	FY2013	1H2014
Datang International Power Generation	20.40%	23.12%	75.01%	75.38%	13.68%	--	2.23	2.26
Huadian Power International	18.90%	20.81%	77.16%	77.07%	--	--	3.07	3.34
China Power International Development	27.52%	30.69%	65.97%	65.32%	16.07%	--	3.17	3.43
China Resources Power	25.16%	24.89%	50.88%	53.32%	29.29%	--	6.55	6.35

Sources: Company annual reports and websites, CCXAP research

Compared with other electricity companies, the Big-Five IPPs have higher funding and refinancing needs and easier access to capital markets, and thus higher leverage position and larger annual interest payments. The financing costs in the offshore markets are more favorable than the onshore rates. The company's access to onshore and offshore markets as well as interest rate movements will have an impact on its credit metrics.

3.2 Non-nuclear Clean and Renewable Power Companies

Within the current investment environment, large IPPs are the major forces for the development of clean and renewable energy. They are shifting to optimize fuel mix so as to diversify earning sources and benefit from preferential policies. Their Hong Kong-listed subsidiaries are mainly engaged in the construction and operation of renewable power plants, as shown in Exhibit 21.

Exhibit 21. Operating and Financial Information of Clean and Renewable Power Companies

Operating Information (1H2014)	Installed capacity (GW)				Power generation (TWh)		Utilization hours
	Total	Clean and Renewable ⁴	Wind	Solar	Total	Wind	Wind
China Longyuan	14.07	12.20	11.91	--	16.73	11.62	1,036
Huaneng Renewables	6.72	6.72	6.32	0.40	6.06	5.83	960
Datang Renewable Power	5.84	5.84	5.72	0.12	5.16	5.05	908
Huadian Fuxin Energy	10.61	6.76	3.63	0.49	17.83	3.35	959
China Power New Energy	2.01	2.01	0.83	0.10	2.66	0.78	--
Beijing Jingneng Clean Energy	4.31	4.31	1.70	0.21	6.17	1.68	--

Financial Indicators (FY2013 and 1H2014)	Operating margin		Debt/Capital		FFO/Debt		Interest coverage	
	FY2013	1H2014	FY2013	1H2014	FY2013	1H2014	FY2013	1H2014
China Longyuan	31.38%	39.93%	60.24%	61.74%	19.24%	--	3.43	3.82
Huaneng Renewables	47.04%	56.79%	69.18%	71.94%	14.76%	--	2.42	2.60
Datang Renewable Power	43.66%	48.94%	76.76%	77.13%	11.93%	--	2.05	1.94
Huadian Fuxin Energy	33.20%	38.24%	75.35%	75.10%	15.03%	--	2.79	2.99
China Power New Energy	31.95%	37.93%	51.37%	52.22%	14.43%	--	2.78	2.87
Beijing Jingneng Clean Energy	32.58%	34.62%	64.91%	65.97%	14.90%	7.88%	3.15	3.04

Sources: Company annual reports and websites, CCXAP research

⁴ The bucket includes gas-fired, hydro, wind, solar, biological, and other renewable energies.

For wind power, state-owned enterprises are the key market players, accounting for 81% of the national installed capacity by 2013.⁵ Due to diminishing wind resources in the first half of 2014, the utilization efficiency of wind turbines decreased from last year, encumbering the growth of revenues and profits. For solar power, the market is relatively small and fragmented with many private companies and foreign joint venture investments.

To support the development of renewable power projects, electricity companies have allocated large amount of capital expenditures, which led to highly leveraged capital structures. Deleveraging will require long-term and stable operations. Given the preferential measures granted by the government, the liquidity position and the overall credit quality of renewable power generating companies are expected to improve gradually.

3.3 Nuclear Power Companies

Currently, only two electricity companies, China General Nuclear Power and China National Nuclear, have operating nuclear reactors primarily located on the southeast coast. A summary of operating nuclear reactors and those under construction is shown in Exhibit 22.

Exhibit 22. Summary of Nuclear Reactors in China (As of June 2014)

Company Name	No. of reactors		Capacity (GW)	
	Under operation	Under construction	Under operation	Under construction
China General Nuclear Power	11	13	11.62	15.51
China National Nuclear	7	12	6.51	12.53
China Power Investment	--	2	--	2.50
China Huaneng	--	1	--	0.20
Total	18	28	18.13	30.74

Source: CCXAP research

In general, a nuclear project requires a large amount of upfront investment, a long construction and operation period, and stable cash generating ability. Given the stable operation of nuclear reactors, the utilization hours are higher than for other types of power generators. With the preferential policies and favorable tariffs, nuclear power companies have strong profitability and stable cash flows. We notice that the two largest nuclear power companies have sizable projects under construction, which will result in large capital expenditures in the following years. Nevertheless, the holding companies have stable cash dividends from operating plants, and there are capital injections from other shareholders. Therefore, the debt burden of nuclear power companies is considered moderate.

⁵ Chinese Renewable Energy Industries Association (CREIA): *2014 China Wind Power Development Report*.

Conclusion

Affected by economic rebalancing and growth slowdown, the supply and demand of the electricity market has become more balanced and will continue to grow at a moderate level. Given that environmental sustainability is an important policy objective, the electricity industry emphasizes fuel mix optimization and will accelerate the development of clean and renewable energy. With lower fuel costs, the profits of conventional thermal power companies have increased. The operating environment of renewable plants is also improving, as revealed in recent policies (for example, resolution of wind curtailment, construction of coastal nuclear plants, and development of distributed solar power). The liquidity position and key credit metrics of electricity companies are expected to improve gradually. The overall credit outlook of China's electricity industry is stable.

Appendix. Industry Policy

The electricity industry-related policies this year are highlighted as follows, most of which are relevant to the renewable energy sector.

Exhibit 23. Major Electricity Industry Policies (As of September 2014)

Date	Agency	Title and Content
Feb 2014	Ministry of Finance, State Administration of Taxation	Value-added Tax of Large-scale Hydroelectric Corporations (關於大型水電企業增值稅政策的通知) <ul style="list-style-type: none"> For hydro plants with installed capacity over 1GW, part of value-added tax is refunded
Mar 2014	National Energy Administration	2014 Grid Connection and Electricity Consumption of Wind Power (關於做好 2014 年風電並網消納工作的通知) <ul style="list-style-type: none"> Ensure consumption of wind power for regions subject to grid curtailment Improve grid connectivity and dispatch management
Mar 2014	National Development and Reform Commission, National Energy Administration, Ministry of Environmental Protection	Working Plan of Air Pollution Prevention for Energy Sector (《能源行業加強大氣污染防治工作方案》) <ul style="list-style-type: none"> Set short-term (2015) and medium-term (2017) environmental targets Reinforce governance on key sources of pollution Control accelerated energy consumption Increase supply of clean energy Structural changes for sustainable development
Jun 2014	National Development and Reform Commission	On-grid Tariffs of Offshore Wind Power (關於海上風電上網電價政策的通知) <ul style="list-style-type: none"> 0.85 RMB per kWh for electricity produced by offshore wind turbines and 0.75 RMB per kWh for inter-tidal wind projects
Jul 2014	National Development and Reform Commission	Tariff Setting Mechanism of Hydroelectric Pumped Storage (關於完善抽水蓄能電站價格形成機制有關問題的通知) <ul style="list-style-type: none"> Two-fold tariffs for pumped storage power stations: production costs plus allowed investment returns
Aug 2014	National Development and Reform Commission	Easing Tariff Contradictions for Environmental Protection (關於進一步疏導環保電價矛盾的通知) <ul style="list-style-type: none"> Lower the on-grid tariffs for coal-fired power generation, effective as of 1 September 2014
Sep 2014	National Energy Administration	Further Implementation of Distributed Solar Power (關於進一步落實分散式光伏發電有關政策的通知) <ul style="list-style-type: none"> Diversify the applications of distributed solar power Strengthen planning, construction and management
Sep 2014	National Development and Reform Commission, National Energy Administration, Ministry of Environmental Protection	Action Plan of Energy Preservation and Emission Reduction for Coal-fired Power Generation (2014-2020) (《煤電節能減排升級與改造行動計畫(2014—2020 年)》) <ul style="list-style-type: none"> Reductions in coal consumption for each unit of electricity generation and pollutant emissions Improvements of operation efficiency and equipment technology

Source: CCXAP research

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