

---

## China analysis 2015

---

An initiative of

**THE °CLIMATE GROUP**

In partnership with



In China

**CREIA**

Supported by



An action of

**WE MEAN  
BUSINESS**

---

**RE 100**

**CHINA'S FAST TRACK TO  
A RENEWABLE FUTURE**

**RE100** is a global campaign working with the world's most influential businesses on their journey to become 100% powered by renewables.

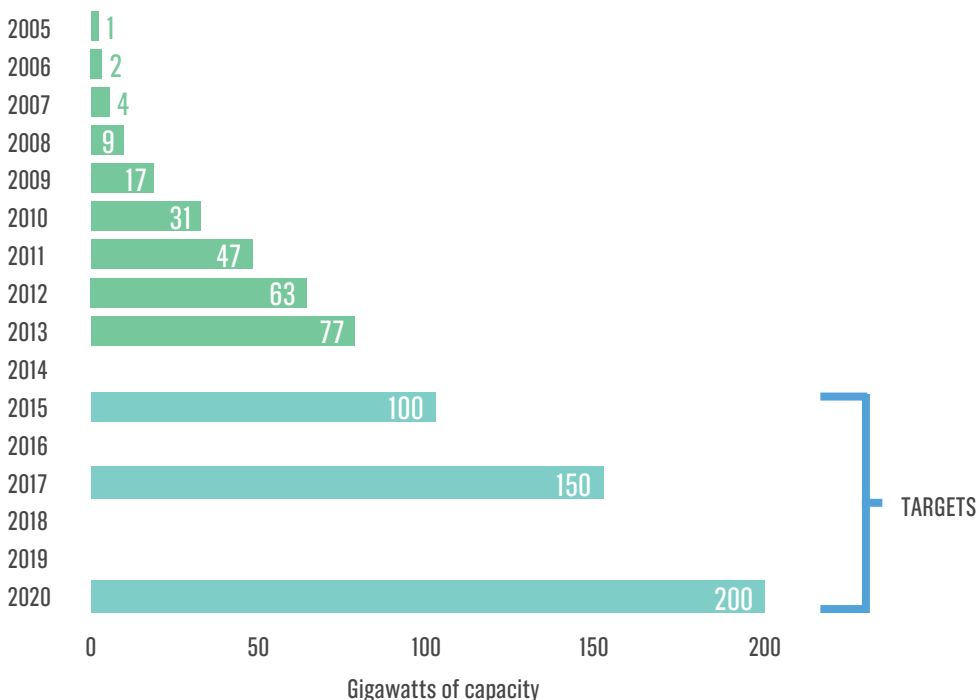
This RE100 China analysis is designed to give businesses around the world an overview of the current and future low carbon energy landscape in China. As the examples of leading companies in this paper show, the journey to 100% renewable is already underway in China. Join us.

### CHINA'S FAST TRACK TO A RENEWABLE FUTURE

**China has wasted no time in directing billions of dollars into its clean energy sector. Currently, the country is the world's leading investor in renewables. In 2014, China increased its investment to US\$89.5 billion, up 32% from the previous year. This was nearly 73% more than the US, the next largest investor.<sup>1</sup>**

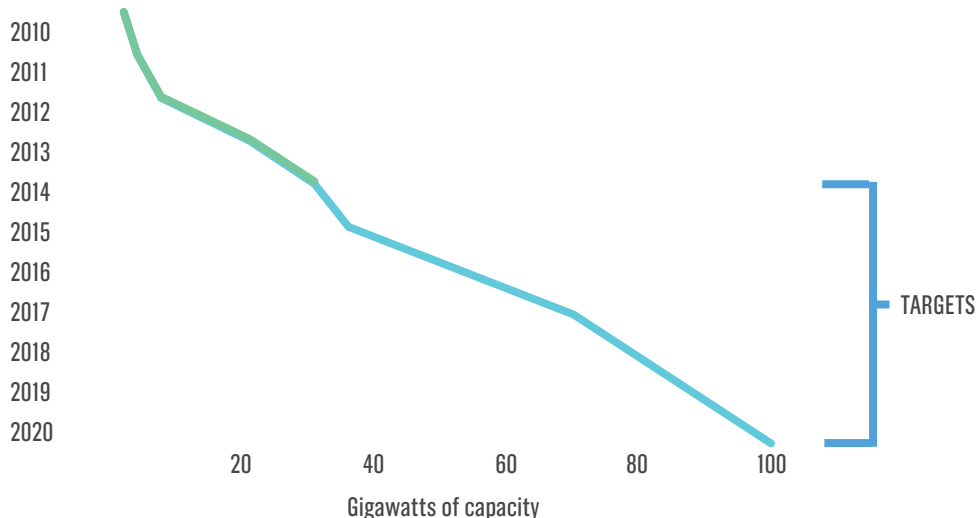
In the same year, China also led the world in new wind and solar installations, with 19.81 gigawatts (GW) and 10.60 GW respectively.<sup>2</sup> By 2020, the world's largest energy user plans to have 100 GW of solar and 200 GW of wind installed.<sup>3</sup>

### CONNECTED WIND IN CHINA, 2005-2020



Source: National Energy Administration (NEA), China Wind Energy Association (CWEA), Azure International

### CONNECTED SOLAR IN CHINA, 2005-2020



Source: NEA, China State Grid, Azure International (Note: 2015 goal of 17.8 GW in total (centralized + distributed). By October 2013 cumulative centralized capacity exceeded 15 GW.)

<sup>1</sup>Bloomberg New Energy Finance. Rebound in Clean Energy Investment in 2014 Beats Expectations. 2015. <http://about.bnef.com/press-releases/rebound-clean-energy-investment-2014-beats-expectations/>

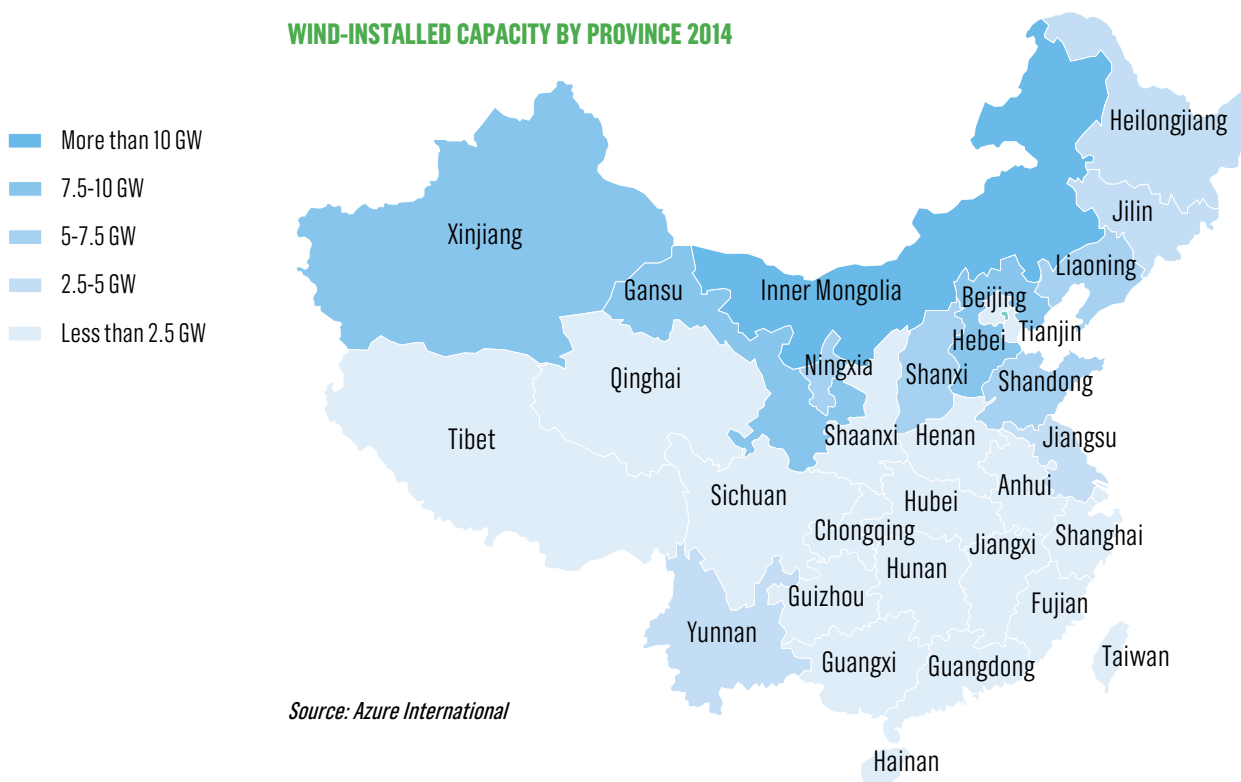
<sup>2</sup>National Energy Administration. 2014 nian guang fu fadian tongji xinxi. 2015. [http://www.nea.gov.cn/2015-03/09/c\\_134049519.htm](http://www.nea.gov.cn/2015-03/09/c_134049519.htm)

National Energy Administration. Feng dian changye jiance qingkuang. 2015. [http://www.nea.gov.cn/2015-02/12/c\\_133989991.htm](http://www.nea.gov.cn/2015-02/12/c_133989991.htm)

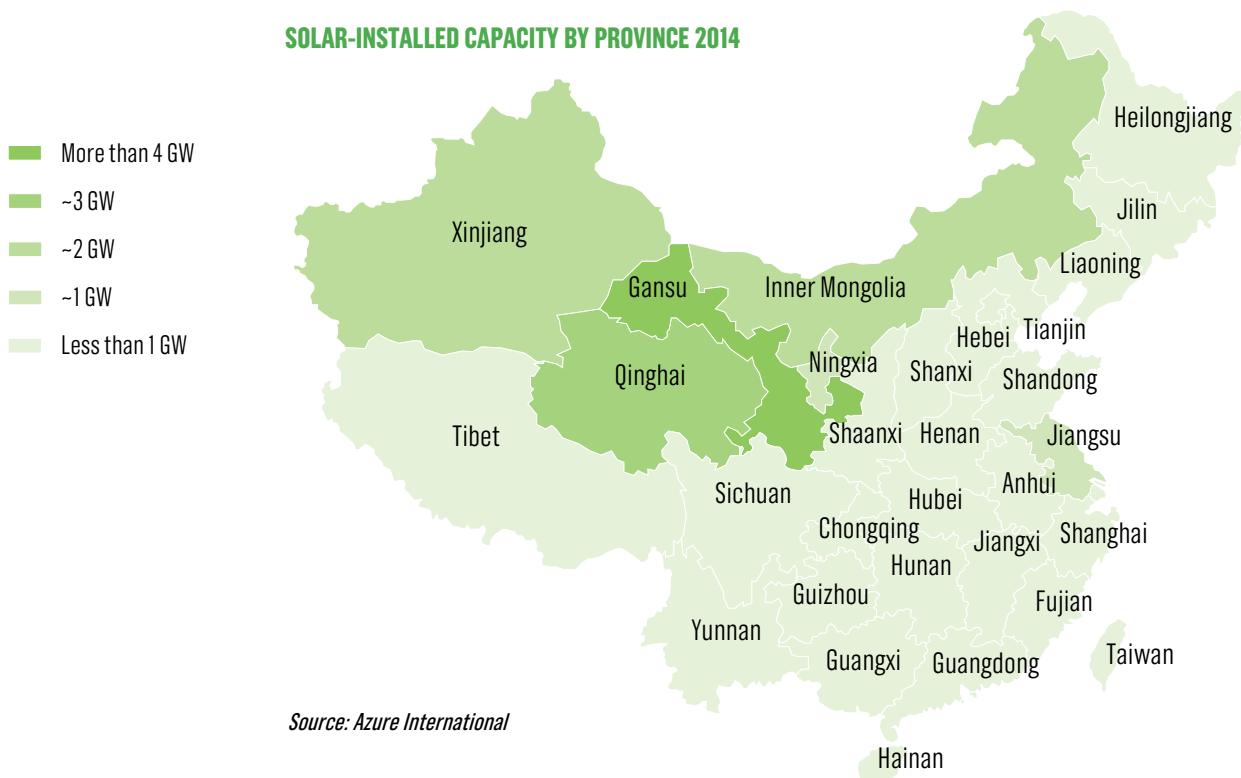
<sup>3</sup>National Energy Administration. Guowuyuan bangongting guanyu yin fa nengyuan fazhan zhanlue xingdong jihua (2014-2020 nian) de tongzhi. [http://www.nea.gov.cn/2014-12/03/c\\_133830458.htm](http://www.nea.gov.cn/2014-12/03/c_133830458.htm)

China's ambitious push for renewables is supported by a host of policies and regulations that encourage energy efficiency and domestic renewable energy deployment. To kick-start the expansion of its renewable energy capacity, the Renewable Energy Law passed in 2005 (amended in 2009) provided an umbrella framework for regulating renewables in China.<sup>4</sup> Now, under China's 12th Five-Year Plan (12th FYP: 2011-2015), the country aims to source 11.4% of its primary energy from renewable sources by 2015, and 15% by 2020. The renewable energy target is further reinforced by the 12th FYP's goal to reduce energy intensity by 16% and carbon intensity by 17%.<sup>5</sup>

**WIND-INSTALLED CAPACITY BY PROVINCE 2014**



**SOLAR-INSTALLED CAPACITY BY PROVINCE 2014**



<sup>4</sup>The National People's Congress of the People's Republic of China. The Renewable Energy Law of the People's Republic of China. 2009. [http://www.npc.gov.cn/englishnpc/Special/CombatingClimateChange/2009-08/25/content\\_1515301.htm](http://www.npc.gov.cn/englishnpc/Special/CombatingClimateChange/2009-08/25/content_1515301.htm)

<sup>5</sup>Xinhuanet. "Shier wu" mo zhongguo lizheng fei huashi nengyuan zhan yici nengyuan bishong da 11.4%. 2012. [http://www.nea.gov.cn/2012-10/25/c\\_131928372.htm](http://www.nea.gov.cn/2012-10/25/c_131928372.htm)

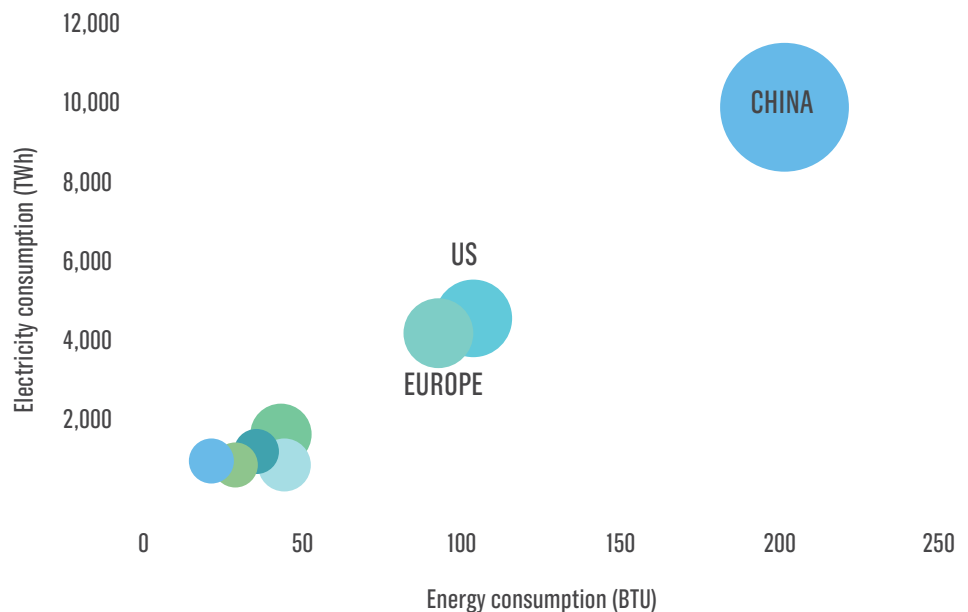
China's renewables growth comes at a pivotal time. It is estimated that by 2020, China will account for 32% of global emissions, producing 70% more carbon dioxide (CO<sub>2</sub>) than the US, the next closest emitter. The country's emissions are largely driven by electricity consumption, which is forecast to grow 250% from 2010 to 2030, while the rest of the world's consumption will remain relatively flat (see graphs below).

In November 2014, President Xing Jinping announced that China intends to make best efforts to limit its emissions, and to increase the share of non-fossil fuels in primary energy consumption to around 20% by 2030.<sup>6</sup> To meet this target, Greenpeace climate and coal policy researcher, Li Shuo believes China will have to plan for an additional 800-1,000 GW of power generation capacity from renewable sources in the next 15 years.<sup>7</sup> China currently has a total of just 1,329 GW of capacity from all energy sources, primarily from coal, so this latest push on renewables is the country's most aggressive to date.<sup>8</sup>

In March 2015, China's State Council issued a reform plan, which should propel the country to further optimize its energy mix and improve the share of renewable energy in electricity generation.<sup>9</sup> 'Opinions Regarding the Deepening of the Power Sector's Reform', outlines policy recommendations to encourage competition in China's electricity sector and revamp the existing pricing system. Once they are made official, the reforms may enable private and foreign entities to enter the sales and distribution business, which is currently dominated by Southern Power Grid Company and the State Grid Corporation of China. Eventually, electricity prices paid by large power users should be determined by market forces rather than by the National Development and Reform Commission.<sup>10</sup>

According to some energy analysts, the proposed structural and pricing reforms could also pave the way for large industrial microgrids where several sources of renewable energy could be combined. And as multiple electricity retailers compete for business, it is likely some will begin to offer distinguished product offerings, including green electricity tariff schemes similar to those available in Europe and the United States.<sup>11</sup>

### CHINA'S PROJECTED ENERGY AND ELECTRICITY USE BY 2030



Source: US Energy Information Administration (EIA), Azure International

<sup>6</sup>The White House, Office of the Press Secretary. US-China Joint Announcement on Climate Change. 2014. <https://www.whitehouse.gov/the-press-office/2014/11/11/us-china-joint-announcement-climate-change>

<sup>7</sup>Wong, E. The New York Times. China's Climate Change Plan Raises Questions. 2014. <http://www.nytimes.com/2014/11/13/world/asia/climate-change-china-xi-jinping-obama-apec.html>

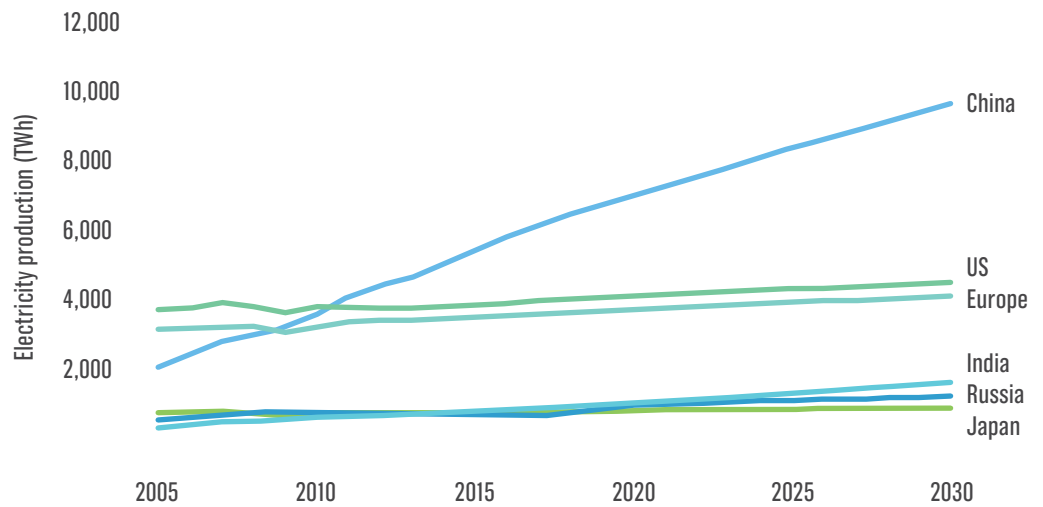
<sup>8</sup>China Electricity Council. 2015 nian 1-2 yuefen dianli gongye yunxing jian kuang. 2015. <http://www.cec.org.cn/guohuayutongji/gongxufenxi/dianliyunxingjiankuang/2015-03-20/135495.html>

<sup>9</sup>Lan, L. China Daily. Reforms will power change across electricity industry. 2015. [http://www.chinadaily.com.cn/business/2015-03/26/content\\_19912740.htm](http://www.chinadaily.com.cn/business/2015-03/26/content_19912740.htm)

<sup>10</sup>China Smart Grid. "Guanyu jinyibu shenhua dianli tizhi gaige de ruogan yijian" (quan wen). 2015 <http://www.chinasmartgrid.com.cn/news/20150323/600488.shtml?>

<sup>11</sup>Author's personal correspondence with Cleantech Advisory - Azure International.

### CHINA'S ESTIMATED ELECTRICITY CONSUMPTION, 2005-2030



Source: EIA, Azure International

#### CHINA'S RENEWABLE ENERGY QUOTA SYSTEM

China will soon implement its long-awaited renewable energy quota system to help accelerate the country's transition to a low carbon economy. Under the planned quota system, each of China's provinces will be responsible for ensuring that a certain percentage of their electricity consumption will come from non-hydro renewable energy sources, primarily wind, solar and biomass. The quotas differ according to a province's renewable energy resources (currently set between 2-10%). Provinces that are unable to meet their quotas may have to suspend or reduce their fossil fuel power generation projects.

Once put into play, the renewable energy quota system is expected to speed up the implementation of renewable energy projects, especially in China's eastern provinces where electricity consumption rates rank highest in the nation. The quota system is also likely to encourage the country's two electric utility companies (State Grid Corporation of China and China Southern Power Grid Corporation) to improve the rate of connectivity of wind and solar to their power grids.

Sources: Wang, L. *China Smart Grid. Xin dian gai li ting xin nengyuan: ke zai sheng nengyuan pei e zhi yi huo pi jin qi huo gongbu*. 2015. <http://guangfu.bjx.com.cn/news/20150330/603267.shtml>

*China Could Issue Renewable Portfolio Standard by Year-End. Renesola News*. 2014. <http://www.renesola.com/news/156.htm>

#### INCENTIVIZING CORPORATE POWER USERS

Until recently, the focus of renewable investment in China has been on large-scale utility projects – the supply side of the energy equation. But the central government increasingly sees the opportunity for stimulating businesses – the biggest end users of energy – and has introduced a number of incentive schemes for renewable energy investment that are already attracting interest. Certain cities and regions are also pioneering new forms of purchasing contracts that provide companies with opportunities to source green electricity directly from the grid.

Key renewables opportunities for businesses are explored below.

## SOLAR

The policy environment has never been more favorable for corporate investment in solar photovoltaic (PV) installations. In August 2013, the Chinese government introduced new feed-in tariffs (FITs), at both state and provincial levels, to fuel the growth of distributed solar rooftop installations. The central government currently provides 20-year subsidies of RMB 0.42 (US\$0.06) per kilowatt-hour (kWh) of output from distributed PV rooftop projects.<sup>12</sup> In addition, project owners receive about RMB 0.40/kWh (local benchmark price of coal-fired power) from the state grid, for any surplus power they generate. To spur local solar PV market development, provinces and cities across China are also providing additional subsidies to complement the state FITs.

According to Azure International, a leading clean tech advisory firm in Beijing, these additions can increase overall subsidies to the solar PV project owner by 20-50%, which in turn increases the project's overall internal rate of return.

### PROVINCES AND CITIES PROVIDING LOCAL PV SUBSIDIES



Source: Azure International, updated August 2014

Government solar subsidies encourage self-consumption because the power generated from distributed solar (subsidy 0.42 RMB (US\$0.06)/kWh + retail price of electricity that company avoids purchasing, up to 1.2 RMB (US\$0.19)/kWh = 1.62 RMB (US\$0.25)) is often 2-3 times more valuable than electricity sold to the grid (subsidy 0.42 RMB (US\$0.06)/kWh + coal tariff up to 0.40 RMB (US\$0.06)/kWh = 0.82 RMB (US\$0.12)). This means the ideal adopter of PV in China is a commercial or industrial enterprise — rather than residential sector which pays lower electricity rates — that can consume the majority of electricity generated at the source.<sup>13</sup>

<sup>12</sup>National Development and Reform Commission. Guojia fazhan gaige wei guanyu tiaozheng ke zai sheng nengyuan dian jia fuja biao zhun yu huanbao dian youguan shixiang de tongzhi. 2013. [http://www.sdpc.gov.cn/fzgggz/jgggljggs/201308/t20130830\\_556164.html](http://www.sdpc.gov.cn/fzgggz/jgggljggs/201308/t20130830_556164.html)

<sup>13</sup>Popper, K. & Wang, A. Azure International. Renewable Energy and Corporate Power Consumption Overview. 2015.

Meanwhile, the National Energy Administration has started to deregulate the electricity market for small distributed solar generation including rooftop PV projects, and now exempts projects under six megawatts (MW) from having to apply for a power generation license.<sup>14</sup> Since July 1, 2014, grid companies can also issue commercial invoices to individual rooftop PV owners, which helps streamline the payments of subsidies, as well as payments for generating electricity for the grid. Under these new policy developments, individuals and private enterprises are better positioned to develop solar PV projects than before.<sup>15</sup> Indeed, throughout 2014, a group of leading foreign and Chinese corporations announced plans to install their PV projects (see map below) on-site at their facilities.

The economic case for solar PV rooftop projects is already compelling for businesses. According to the Chinese Renewable Industries Association (CREIA), rooftop solar projects currently offer the industrial and commercial sectors a payback period of 7-9 years and an 8% rate of return.<sup>16</sup>

Following the finalized policy on national and provincial solar quotas released on March 19, China will aim to install 17.8 GW of solar in 2015 – 68% more than in 2014.<sup>17</sup>

### DISTRIBUTED PV: ATTRACTIVE RETURN ON INVESTMENT

#### SHAANXI YOUSER GROUP

Shaanxi Youser Group, also known as Shaanxi Non-ferrous Metals Holding Group, was established in Shaanxi, Xi'an in 2000. As the third largest producer of molybdenum in the world, the company currently employs over 40,000 people across 35 locations in China. Its revenues in 2013 were RMB 96.4 billion (US\$15.5 billion).

#### PROJECT DETAILS

<b>Commission date:</b>	December 2013
<b>Size:</b>	300 kW
<b>Project economics:</b>	Equity IRR: 13.8% Payback period: 7.6 years
<b>Lifetime environmental impact:</b>	Energy savings: 84 tons SCE Carbon dioxide (CO <sub>2</sub> ) reduction: 179 tons Sulphur dioxide (SO <sub>2</sub> ) reduction: 17 tons

**Assumptions:** 1,376 annual utilization hours, 80% total system efficiency, 0.8% yearly reduction in power output, 25-year system lifetime, 20-year subsidy availability.

*Source: XinTong Intelligent. Projects. 2014 <http://www.xaxintong.com/zh/distributed-pv-power-station/project-case.html>*

*Popper, K. & Wang, A. Azure International. Renewable Energy and Corporate Power Consumption Overview. 2015.*

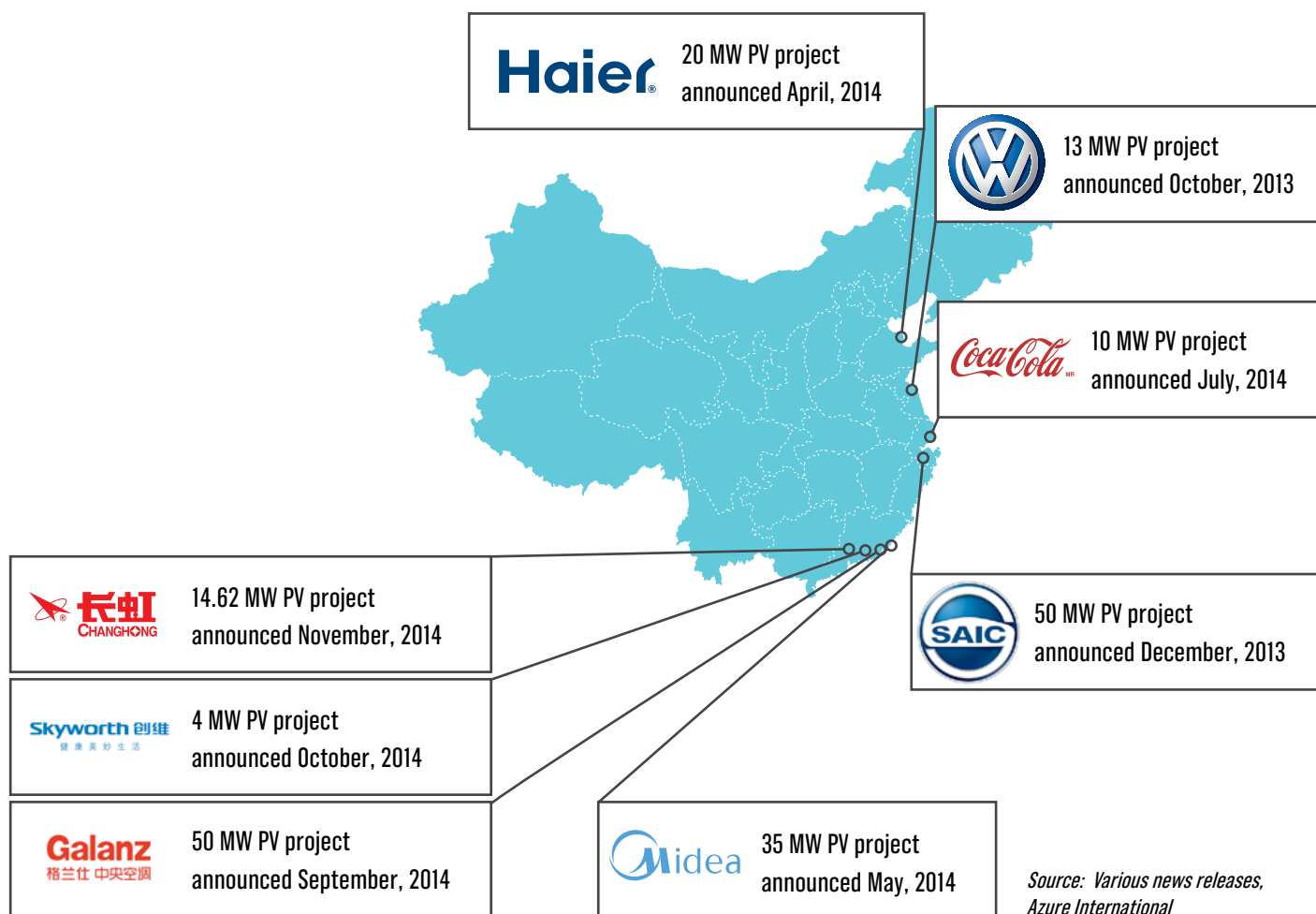
<sup>14</sup>China Smart Grid. Fa gai wei zhengshi gongbu lushang feng dian shangwang dian jia tiaozheng jiguo (quan wen). 2015. <http://news.bjx.com.cn/html/20150107/579839-2.shtml>

<sup>15</sup>Xiu, P. Lost in Transmission: Distributed Solar Generation in China. 2014. [http://www.wilsoncenter.org/sites/default/files/Lost%20in%20Transmission\\_Distributed%20Solar%20Generation%20in%20China\\_Xiupei%20Liang\\_2.pdf](http://www.wilsoncenter.org/sites/default/files/Lost%20in%20Transmission_Distributed%20Solar%20Generation%20in%20China_Xiupei%20Liang_2.pdf)

<sup>16</sup>Li, J. Beijing: Chinese Renewable Energy Industries Association. Studies on investment and financing mechanism that support the development of China's distributed solar PV industry.

<sup>17</sup>Reuters.UPDATE 1-China to install 17.8 GW of solar power in 2015 -regulator. 2015 <http://af.reuters.com/article/energyOilNews/idAFL3NOWK2U620150318>

## RECENTLY ANNOUNCED DISTRIBUTED PV PROJECTS BY LARGE CORPORATES



## RE100 CORPORATE PARTNERS LEAD THE WAY ON SOLAR

Convened by The Climate Group in partnership with CDP, our RE100 initiative raises awareness of the benefits for companies going 100% renewable. In the US and Europe, 16 companies have now joined the campaign and made a public commitment to going 100% renewable. Solar PV is the most popular renewable power technology for these businesses.

## IKEA

RE100 founding partner, IKEA, has committed to producing renewable energy equivalent to at least 70% of its consumption by 2015, and to producing as much renewable energy as it consumes by 2020. This includes the energy used by the company's own manufacturing operations.

In 2012, IKEA announced its strategic partnership with Hanergy to install solar photovoltaic panels on IKEA-owned buildings in China. Once in operation, the electricity generated by the PV modules is expected to meet 10-15% of the power needs of IKEA stores, and 100% of the power needs for IKEA's Shanghai Distribution Center in China.

Rooftop installations on the IKEA Beijing store have an installed capacity of 416.24 kilowatts (KW), generating approximately 452,000 kWh every year, which translates into an annual reduction of CO<sub>2</sub> emission by approximately 426 metric tons. The store has become the first business facility in Beijing to be granted grid access for its rooftop grid-connected solar power generation installations by the Beijing Electric Power Company.

By 2013, half of IKEA's stores in China had gone solar, with yearly electric energy production now topping 1.6 million kWh.

Source: The Climate Group. *Nearly Half of China's IKEA Stores Go Solar, With Hanergy Partnership. 2013.*



#### ELION RESOURCES GROUP

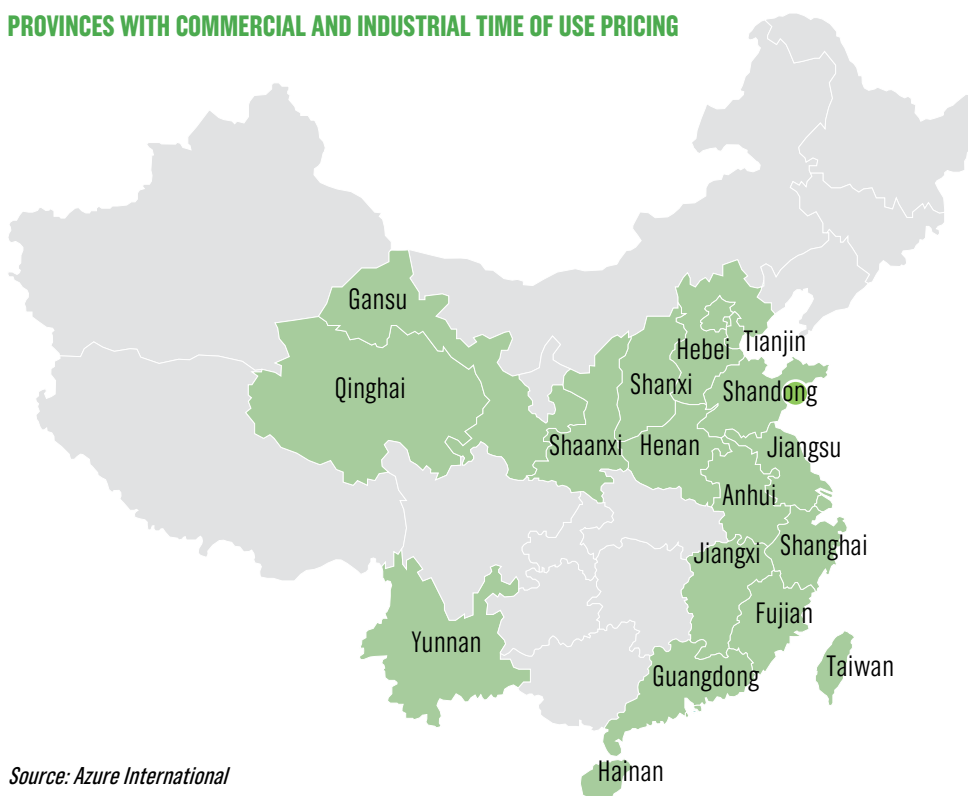
Elion, one of China's top 100 private enterprises, and the first Chinese company to sign up to RE100, has committed to go 100% renewable by 2030, as part of its focus on a range of clean energy technologies.

The company has been involved in eco-restoration for almost three decades, transforming deserts into green spaces through afforestation and sand erosion prevention projects. The company is particularly focused on the Kubuqi Desert in Inner Mongolia and other ecologically fragile regions along the Silk Road Economy Belt in China.

Elion currently has a ground-mounted 110 MW solar PV installation in the Kubuqi Desert. The company consumes the power that is generated from this project, and excess electricity is sold via the grid. By 2020, Elion plans to generate an additional 5 GW of solar power through ground-mounted installations in Inner Mongolia, Hebei and Xinjiang provinces.

*Source: The Climate Group. Elion Resources Group*

#### PROVINCES WITH COMMERCIAL AND INDUSTRIAL TIME OF USE PRICING



*Source: Azure International*

In China, about 66% of commercial and industrial power consumers pay for their electricity based on time of use (TOU) pricing. For corporations operating in provinces with TOU pricing, solar production becomes more valuable than in provinces not offering TOU pricing. This is because peak electricity usage (e.g. powering manufacturing processes) coincides with the time frame when electricity prices are highest, which is also when the sun is out.

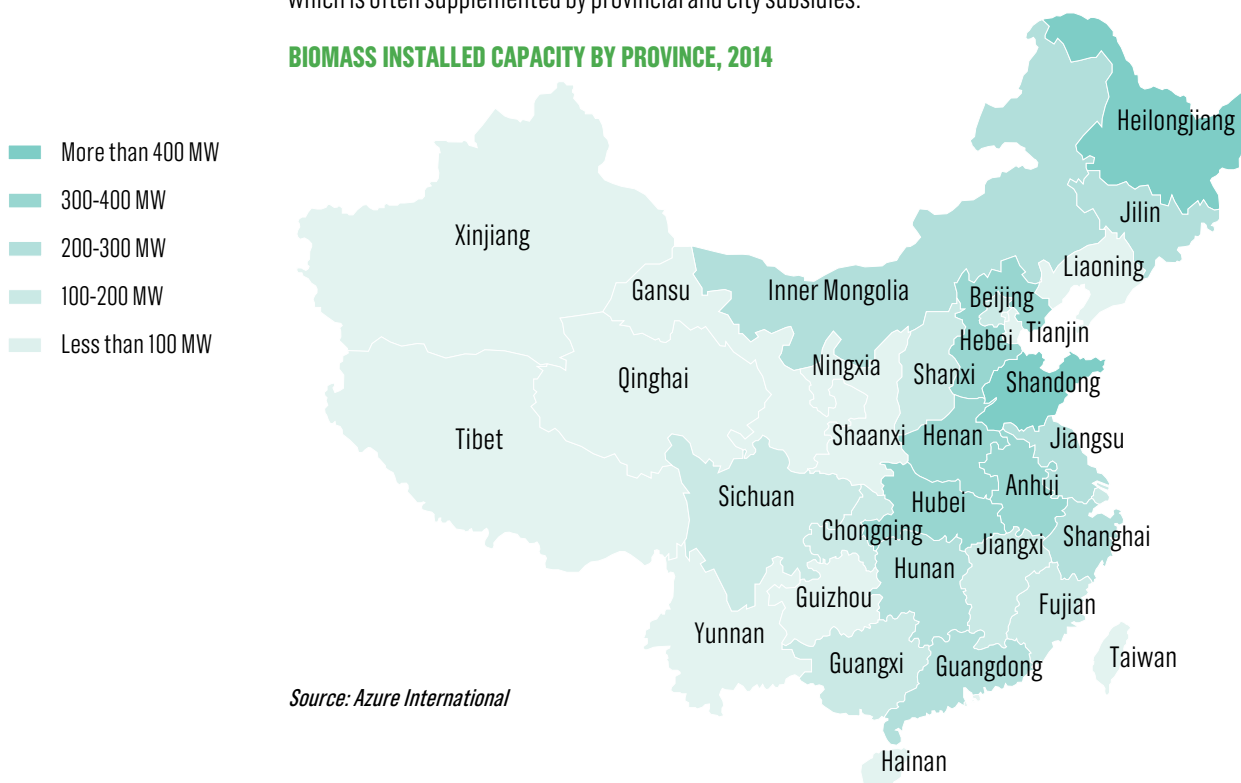
## WIND

Currently, the majority of wind projects in China are large-scale utility developments, so this technology option is generally not being explored by the corporate sector. A national subsidy for distributed wind has been under development for several years, but has not yet been officially released. Without a defined price, distributed wind projects are not as economically attractive for corporations as solar options. But it should be noted that distributed wind is benefiting indirectly from a number of distributed PV support policies including free grid interconnection – although projects under 6 MW are exempt from applying for a generation license.<sup>18</sup>

## BIOMASS

By 2020, China aims to have 30 GW of installed biomass generation capacity.<sup>19</sup> Projects that connect to the grid are supported by a national RMB 0.75/kWh feed-in-tariff that was released in July 2010, and which is often supplemented by provincial and city subsidies.<sup>20</sup>

### BIOMASS INSTALLED CAPACITY BY PROVINCE, 2014



Previously, the Clean Development Mechanism (CDM) – which was a key part of the UN’s global climate treaty and allows emissions reduction credits related to projects in developing countries to be traded – supported over half of China’s biomass generation projects (187 out of a total 275). With the end of the CDM, and a drop in Certified Emission Reduction prices, there has been a decline in the growth of biomass generation projects in the last few years.

But although corporations no longer receive the same level of added benefits offered by emission reduction credits, biomass power generation can still be a viable, low-cost, on-site renewable energy option. Biomass power generation typically goes hand-in-hand with heat generation, and the food and drink, paper and pulp and agricultural sectors tend to produce good-quality biomass waste products.

For example, in Guangxi Province, which manufactures two thirds of China’s sugar, most refining factories now use bagasse (a by-product of sugar manufacturing) to generate electricity, due to shortages of natural gas, oil and coal. More than 100 refining factories in the region have set up their own power plants, which cumulatively produce 2 billion kWh every year, equivalent to around 3 million tons of standard coal.<sup>21</sup>

<sup>18</sup>China Smart Grid. Fa gai wei zhengshi gongbu lushang feng dian shangwang dian jia tiaozheng jigou (quan wen). 2015. <http://news.bjx.com.cn/html/20150107/579839-2.shtml>

<sup>19</sup>Zhao, X., Tan, Z., Liu, P. Development goal of 30 GW for China’s biomass power generation: Will it be achieved? 2013. <http://www.sciencedirect.com/science/article/pii/S1364032113002591>

<sup>20</sup>People’s Republic of China National Development and Reform Commission. Guojia fazhan gaige wei guanyu wanshan nong lin shengwu zhi fadian jiage zhengce de tongzhi. 2010. [http://www.ndrc.gov.cn/zqfwzx/zfdj/jggg/dian/201007/t20100728\\_363366.html](http://www.ndrc.gov.cn/zqfwzx/zfdj/jggg/dian/201007/t20100728_363366.html)

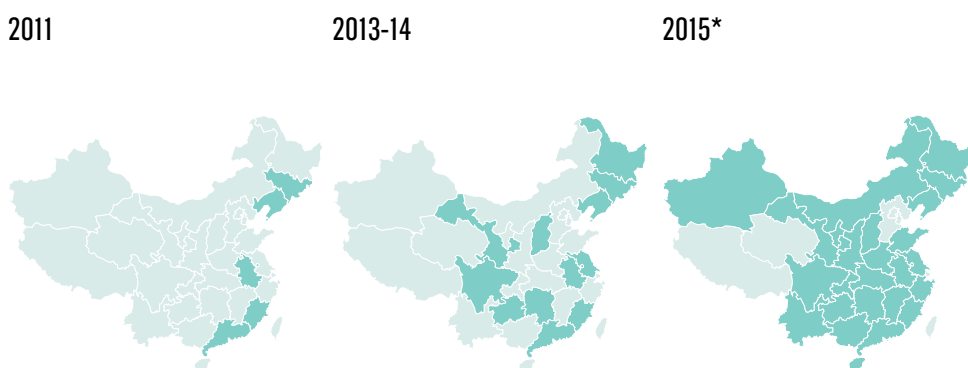
<sup>21</sup>China Today. Change: Development Opportunities amid Crisis. 2014. [http://www.chinatoday.com.cn/english/society/2014-02/07/content\\_594553\\_2.htm](http://www.chinatoday.com.cn/english/society/2014-02/07/content_594553_2.htm)

## GREEN POWER AGREEMENTS

### DIRECT POWER PURCHASING

In 2014, the National Energy Administration set a target for 3% of electricity consumption to be sold through direct sales agreements.<sup>22</sup> Under this pilot system, the local grid fixes its transmission and distribution pricing. Large electricity consumers can then directly negotiate pricing on electricity purchases with their local generation plants, usually at a discount to the wholesale market rate.

### SPREAD OF DIRECT ELECTRICITY SALES PILOTS



*\*Expected, based on policy releases at the provincial level calling for implementation in 2015*

*Source: SERC 2012, NEA 2014, Azure International 2015*

In most provinces, only thermal generation plants are eligible to bid in these markets. This is due to the ease of scheduling (controllable output) and the fact that thermal generation plants produce excess capacity (they can increase their output to meet demand from the power trading market). Yet in 2014, Inner Mongolia and Yunnan started piloting agreements whereby industrial users can purchase wind and hydropower respectively directly from generation sites.

#### WIND IN INNER MONGOLIA

Currently, in Inner Mongolia, the National Energy Agency, the Northeast China Energy Regulatory Bureau and the Inner Mongolia Autonomous Region Grid Company are working in collaboration to include wind power in the direct electricity sales pilots. The aim is to help support electricity market reform, and to allow for greater absorption of wind electricity into local grids.

So far, the organizations have brokered a power purchase agreement to enable a metal refinery to purchase 100 GWh of wind power sourced from a farm operated by the China Huaneng Group. The project is expected to reduce wind curtailment by 100 GWh, and to improve the utilization hours of wind farms in the Northeast (E. IMAR) region by 82 utilization hours. Notably, such agreements help utilize wind that would otherwise be curtailed (which occurs when wind plants are required by the local grid operator to reduce their generation output).

*Sources: China Power News. Dongbei dianli zhijie jiaoyi jianshao feng dian qi feng 1 yi qianwa shi. 2014. [http://www.cpn.com.cn/dljg/201411/t20141104\\_764203.html](http://www.cpn.com.cn/dljg/201411/t20141104_764203.html)*

*Hinggan (Xing'an) League Development and Reform Commission. Dianli yonghu yu fadian qiye zhijie jiaoyi you chu xin zhengce. 2014. <http://xam.gov.cn/mxtzz/fgdt/295232.htm>*

*Li, J. ECONOMICS - 21st Century Network. Dian gai yunnan yangben diaocha: zhi gou dian jiaoyi jizhi shang dai wanshan. 2014. <http://money.21cbh.com/2014/12-17/xOMDA0MDRfMTM1NDgxOA.html>*

<sup>22</sup>State Grid Electric Power Company. Guojia nengyuan ju bu sheding 2015 nian shuidian, feng dian deng fazhan mubiao. 2015. [http://www.bj.sgcc.com.cn/html/main/col12/2015-01/08/20150108100809969418578\\_1.html](http://www.bj.sgcc.com.cn/html/main/col12/2015-01/08/20150108100809969418578_1.html)

## HYDRO IN YUNNAN

In September 2014, a direct sales pilot was initiated in Yunnan province, whereby the Huaneng Lancang River Hydropower Station sells surplus hydroelectric power to surrounding industrial consumers. The pilot project is focused on resolving issues associated with surplus hydroelectric power generation, which is estimated to be more than 10 GWh each year, and is expected to grow with new plant installations.

Sichuan and Hunan provinces have recently released policies that would allow for similar transactions.

*Source: Li, J. ECONOMICS - 21st Century Network. Dian gai yunnan yangben diaocha: zhi gou dian jiaoyi jizhi shang dai wanshan. 2014. <http://money.21cbh.com/2014/12-17/x0MDA0MDRfMTMINDgx0A.html>*

The spread of 'direct sale' pilot projects is one of the fastest growing market reforms. In the foreseeable future, it will be a viable option for corporations wishing to buy renewable electricity directly from specific projects, at rates often set lower than the wholesale market rate for electricity.

## GREEN POWER SUBSCRIPTIONS

Several companies in China, including L'Oréal and P&G, have taken the initiative to secure renewable electricity through agreements with their local electricity providers.

### PROCTER & GAMBLE

Procter & Gamble (P&G) helped pioneer a green electricity tariff in Suzhou, a major city in the province of Jiangsu, to support its green energy goals and to provide a case study for the Chinese market. In 2012, based on discussions with the Suzhou grid, P&G negotiated an incremental cost of RMB 0.07/kWh to purchase green electricity that would be sourced exclusively from local wind farms for three years. The incremental cost for the renewable electricity is earmarked to support further renewable energy development.

The green power subscription agreed between P&G and the Suzhou energy grid was part of a longer process. In February 2011, the Jiangsu province grid, in partnership with the Ministry of Environmental Protection, began to consult the 'Suzhou 500 Corporates'. Based on this consultation, they decided to implement a framework that enables companies to purchase renewable electricity based on payment of a "green premium" on top of standard retail rates.<sup>23</sup>

According to China State Grid statistics released in December 2014, green electricity purchased through this program has exceeded 21 GW, and additional subsidies collected reached nearly RMB 1.5 million (just under US\$250,000).

### L'ORÉAL

In May 2014, L'Oréal applied for a special tariff to purchase wind power for an additional fee of RMB 0.108/kWh, which was approved by the Jiangsu DRG pricing bureau. L'Oréal is now the second corporation to successfully negotiate a green power subscription/PPA in Jiangsu.<sup>24</sup>

Green power subscription is a novel approach that is still in its infancy. Certain attributes of the system are not yet supported by clear policies on issues such as pricing and the guarantee of renewable energy. However, there is appetite from businesses in China to pay a premium for non-fossil fuel energy sources. This is demonstrated by the 49 corporate subscribers who paid a premium of RMB 0.53 per kWh for renewable energy provided under the Shanghai Green Tariff system (2006-2010).<sup>25</sup> Opportunities for green power subscriptions are likely to grow if more corporations start to express demand for sourcing renewable energy through this market-based mechanism.

<sup>23</sup>Taichang News. "Baojie jiajia gou feng neng jiangsu qingjie nengyuan zai tai qian xia diyi dan. Sept 5, 2012. <http://www.tc.chinanews.com/1/2012/0905/34239.html>

<sup>24</sup>Zhou, X. State Grid Jiangsu Provincial Power Company. Guo wang jiangsu dianli cujin shengtai wenming jianshe ceji. 2014. [http://www.js.sgcc.com.cn/html/main/col37/2014-12/19/20141219181304066338882\\_1.html](http://www.js.sgcc.com.cn/html/main/col37/2014-12/19/20141219181304066338882_1.html)

<sup>25</sup>Baumler, A. et al. Sustainable Low-Carbon City Development in China. World Bank Publications. 2012.

## RENEWABLE POWER BRINGS BROAD BUSINESS BENEFITS

**Alongside the government-led incentives for business to get behind renewable power, companies in China are increasingly taking action to green their operations.**

This comes as a result of the growing public awareness of the links between a coal-based economy and air pollution. Many multi-national companies with operations in China are also looking for ways to meet their global commitments, and are investigating options for switching to renewable power.

This is a smart business decision. It can provide energy security, help manage fluctuating energy costs, improve reputation and deliver carbon emission reduction goals.

**With increased interest and incentives, the timing is right for China to shape the corporate path to using renewable energy.**

RE100 is a global campaign working with the world's most influential businesses on their journey to become 100% powered by renewables. The RE100 campaign is partnering with the Chinese Renewable Energy Industries Association (CREIA) to help companies in China set stronger, more ambitious renewable energy commitments.

RE100 will continue to track the unique pathways that corporations are taking to use renewable energy, as highlighted in this update. We will also explore other emerging trends in renewable power options in China.

Launching in China this May, RE100 is set to deliver a series of capacity-building workshops to help companies overcome the most common technical, financial and policy barriers when making the shift to clean energy.

We hope your company will be inspired to join the journey to 100% renewable power.

To find out more, please contact Jenny Chu at [jchu@theclimategroup.org](mailto:jchu@theclimategroup.org) or visit [theRE100.org](http://theRE100.org)

---

Follow the conversation on social media using: #RE100

## ACKNOWLEDGEMENTS

Data and analysis provided by [Azure International](#)

Author: Jenny Chu

Editors: Sophie de Albuquerque, Clare Saxon Ghauri and Emily Farnworth

Designers: Jo Violaris and Michelle Allen

## AN INITIATIVE OF:

**THE °CLIMATE GROUP**

The Climate Group is an award-winning, international non-profit. Our goal is a prosperous, low carbon future. We believe this will be achieved through a 'clean revolution': the rapid scale-up of low carbon energy and technology.

We work with corporate and government partners to develop climate finance mechanisms, business models which promote innovation, and supportive policy frameworks. We convene leaders, share hard evidence of successful low carbon growth, and pilot practical solutions which can be replicated worldwide.

[@Climategroup](https://twitter.com/Climategroup)

## AN ACTION OF:

**WE MEAN BUSINESS**

We Mean Business is a coalition of organizations working with thousands of the world's most influential businesses and investors. These businesses recognize that the transition to a low carbon economy is the only way to secure sustainable economic growth and prosperity for all. To accelerate this transition, we have formed a common platform to amplify the business voice, catalyze bold climate action by all, and promote smart policy frameworks.

[@WMBTweets](https://twitter.com/WMBTweets)

## IN PARTNERSHIP WITH:



CDP is an international NGO that provides the only global system through which more than 5,000 companies and 207 cities report, manage and share vital environmental information. These insights enable investors, companies and governments to mitigate risks from the use of natural resources and identify opportunities from taking a responsible approach to the environment. Please visit [www.cdp.net](http://www.cdp.net).

[@CDP](https://twitter.com/CDP)

## IN PARTNERSHIP WITH:



The Chinese Renewable Energy Industries Association (CREIA), established in 2000 with the support of UNDP, is a non-profit organization, which represents more than 300 Chinese renewable energy companies and foreign counterparts doing business in China. The mission of CREIA is to promote technological progress and the adoption of advanced technologies in solar, wind and biomass industries, as well as commercialization of renewable energy in China. CREIA is now broadly recognized by policymakers, academic institutes, private sectors, and industry professionals working in the Chinese renewable energy industries as a common voice for policy and regulatory environment improvement, a platform for communication and discussion, and as a network for business cooperation opportunities both in domestic and international markets.

## SUPPORTED BY:



The International Renewable Energy Agency (IRENA) is an intergovernmental organisation that supports countries in their transition to a sustainable energy future, and serves as the principal platform for international cooperation, a centre of excellence, and a repository of policy, technology, resource and financial knowledge on renewable energy. IRENA promotes the widespread adoption and sustainable use of all forms of renewable energy, including bioenergy, geothermal, hydropower, ocean, solar and wind energy in the pursuit of sustainable development, energy access, energy security and low-carbon economic growth and prosperity.

[@IRENA](https://twitter.com/IRENA)