

## China Renewable Energy and Sustainable Development Report<sup>1</sup>

China's extraordinary economic growth and heavy reliance on increasingly expensive foreign oil, the vast environmental toll that is one of the most apparent costs of China's economic success, persistent rural poverty in China and periodic power shortages all have impressed upon Beijing that renewable energy must be a large part of China's economy if China is to both complete its economic transformation and achieve "energy security".

China rapidly has moved along the path of renewable energy development. In 2005 China had the world's largest total investment in renewable energy sources (excluding large scale hydropower plants) with expenditures of \$6 billion dollars U.S. and the largest installed capacity of renewable energy with 37,000 MW of installed capacity. By 2006 China's total renewable energy output equaled 8% of non-renewable energy generation or 200 million MT of coal equivalents. China's goal is for renewable energy to account for 10% of all energy consumption by 2010. In the medium term China plans to develop 120,000 MW's of renewable energy by the year 2020; this would account for 12% to 16% of China's total installed energy producing capacity that year. In the long term China has set an objective of having 30% or more of its total energy requirements satisfied by renewable sources by 2050. China's ambitious growth target for renewable energy production will require an investment of approximately 800 billion Yuan (~\$100 billion U.S.D.) by 2020.

Our goal at the *China Renewable Energy and Sustainable Development Report* is to provide authoritative, timely, informative and useful information about the emerging renewable energy and sustainable development sectors in China for global companies who have products and services to sell to or buy from China's rapidly growing renewable energy and sustainable development sectors and other policy makers, NGOs and interested parties. Drawing from original Chinese language materials of Chinese companies, industry associations, central and local government agencies and non-governmental organizations, the *China Renewable Energy and Sustainable Development Report* will cover developments in China's solar, wind, bio-fuel, bio-mass, small hydroelectric and other renewable energy sectors, including regular features on investment, growth, local and national laws and regulations, leading Chinese companies, industry meetings, tradeshow, exhibitions and conferences and business opportunities.

An interactive map of China's renewable energy projects is now available on China Strategies' website. To view the *China Renewable Energy Interactive Map* visit [www.chinastrategiesllc.com](http://www.chinastrategiesllc.com), click on the tab for "China's Renewable Energy Industry" and follow the directions to register and receive access. The *China Renewable Energy Interactive Map* was developed with the assistance of Ryan Hodum, a very talented young

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2 Global Environmental Policy from American University in Washington, D.C. with a focus on  
3 renewable energy utilization in China.  
4

5 For more information about subscribing to the *China Renewable Energy and Sustainable*  
6 *Development Report*, please contact us at [lou@chinastrategiesllc.com](mailto:lou@chinastrategiesllc.com). For more  
7 information about China Strategies, LLC, please visit us at [www.chinastrategiesllc.com](http://www.chinastrategiesllc.com).  
8

### 9 *This Month's Top Story*

10  
11 On September 4, 2007 the National Development and Reform Commission (NDRC)  
12 issued the *{Medium and Long Term Development Plan for Renewable Energy}*, which notably  
13 calls for the investment of 2 trillion Yuan (~\$263 billion dollars U.S.) before 2020 on  
14 renewable energy development in China. Including hydroelectric power, China's renewable  
15 energy output equals approximately 8% of all energy consumed in China. The *{Medium and*  
16 *Long Term Development Plan for Renewable Energy}* calls for that percentage to rise to 10%  
17 by 2010 and 15% by 2020. According to Chen Deming, a deputy chairman of the NDRC  
18 who commented on the new plan, these goals are more far-reaching than what many countries  
19 have required, but that they also pose a challenge to China. In 2006 consumption of power  
20 generated from coal accounted for 69% of total energy consumption in China. By 2020 the  
21 plan calls for the development of a total of 300,000 MW of hydropower, 30,000 MW of wind  
22 power, 30,000 MW of bio-mass, 1800 MW of solar power, 300 million square meters  
23 coverage of solar hot water heaters, 44 billion square meters of methane gas per annum and 50  
24 million tpy of bio-fuels. The *{Medium and Long Term Development Plan for Renewable*  
25 *Energy}* calls for the development of six 1000MW-scale wind farms by 2020; these six large  
26 scale wind farms will be located in Xinjiang Province's Dabancheng, Gansu Province's  
27 Yumen, the Jiangsu Province/Shanghai coastal region, Hebei Province's Zhangbei, Jilin  
28 Province's Baicheng and Inner Mongolia's Huitengxile. One principal of the *{Medium and*  
29 *Long Term Development Plan for Renewable Energy}* is that China will not affect food  
30 security in developing bio-fuels, but that the emphasis will be on developing non-grain plants  
31 to be converted into bio-fuels. Presently there are 4 plants in China that use grains to  
32 produce ethanol; those four plants have a combined capacity of 1.02 million tpy, yet going  
33 forward the emphasis will be on utilizing land that is less hospitable for grain cultivation to  
34 raise such fuel crops as tung trees and sorghum. According to Chen Deming, the deputy  
35 chairman of the NDRC, Beijing is sensitive to where power prices are, but will gradually take  
36 into consideration environmental factors in setting power prices. Beijing also cannot  
37 completely deregulate power prices because the price of renewable energy is still much higher  
38 than coal fired power plants. China will be proactive in promoting renewable energy  
39 development by adopting a variety of policy measures to encourage the use of renewable  
40 energy; these policies will include preferential finance and tax policies, including specialized  
41 funds to subsidize the development of renewable energy sources and tax policies that reduce  
42 or eliminate taxes for qualified renewable energy development activities.  
43

### 44 *China's Solar Power Industry*

45  
46 In 2007 Shandong Province established a 2.133 billion Yuan fund to support energy  
47 conservation and reduction of emissions. From that fund the provincial government will  
48 allocate funds to subsidize hotels, schools and other establishments to build solar hot water

1 supply systems. Shandong Province now has more than 100 companies that are involved  
2 with renewable energy and those companies produce more than 3 billion Yuan/annum in  
3 revenue. To date a total of 15 million square meters of buildings have a solar hot water  
4 heating system.

5  
6 In remarks made on September 18, 2007 at the “2007 World Solar Energy Conference”,  
7 Shi Dinghuan, the Chairman of the China Renewable Energy Institute and a member of the  
8 Counselor’s Office of the State Council, said that after 2020 China will experience scale  
9 development of solar power. Nearly 1000 individuals from more than sixty countries  
10 attended the conference. In his remarks Mr. Shi called on greater cooperation between  
11 developed countries and developing countries, especially in the realm of technology transfer  
12 of key renewable energy technologies.

13  
14 Construction began on August 18, 2007 on a 12 billion Yuan, 15,000 MT solar energy  
15 grade silicon project in Xinyu city, Jiangxi Province. The first phase of the project, which  
16 will total 6000 MT of polycrystalline silicon materials, is expected to be completed and in  
17 operation by the end of 2008; the entire project will be open by 2009. The project is being  
18 developed by Jiangxi Saiwei LDK Solar Energy High Technology Co., Ltd., which went  
19 public on the NYSE on June 1, 2007, raising \$469 million U.S.D.

20  
21 According to Shi Dinghuan, the chairman of the board of the China Renewable Energy  
22 Society, solar hot water appliances already cover 90 million square meters of buildings in  
23 China and serve 40 million households and 200 million people. China is now the world’s  
24 largest producer and user of solar hot water appliances.

25  
26 On August 8, 2007 the 200 million Yuan, 25MW solar cells project of the Tri-crystalline  
27 Silicon Products Manufacturing Co., Ltd. formally set up in Quanzhou, Fujian Province. The  
28 project will be manufacturing mono-crystalline solar cells by 2008.

29  
30 In early August 2007 a group of Chinese solar module manufacturers were having  
31 preliminary discussions regarding forming a national photovoltaic industry alliance. The  
32 motivation for the discussions included the desire to contain what was referred to as  
33 “disorderly, pernicious competition” among companies in the solar energy module industry.  
34 The background to these discussions is the rapid growth of the domestic solar industry in  
35 China over the past 1-2 years, fueled by a great deal of capital which perceived a new market  
36 opportunity. Being near the tail end of the solar industry production chain, the solar module  
37 industry doesn’t have a great deal of technology that it contributes, which means that there are  
38 fewer barriers to entry than in the solar cells or silicon industries. According to one industry  
39 insider by the end of 2006 there were approximately 200 solar module manufacturers in China  
40 and because there is a lot of capital that is available and which likes this sector, there will be  
41 another increase in the number of solar module manufacturers in China in 2007. Solar  
42 module manufacturers are competing to increase the scale of their operations to reduce costs;  
43 in this manner they see the way to overcome the price competition which has ensued as a  
44 consequence of so many new entrants into the industry. One example is the Wuxi (Jiangsu  
45 Province) Guofei Green Energy Co., Ltd. which had 10MW of capacity in 2006, which will  
46 increase to 30MW in 2007 and further increase to 40-50MW in 2008; the company is  
47 increasing capacity despite the fact that it sold only 6MW of solar modules in 2006. The

1 price of modules has declined over the past two years. In 2005 the price was \$35 U.S.D. to  
2 \$38 U.S.D. per watt; as of the beginning of 2007 the price had dropped to \$32 U.S.D. per watt  
3 and it is expected that the price will drop again by the end of 2007 to \$30 U.S.D. per watt.  
4 Consequently, gross profits at most profitable solar module manufacturers are only 10%.  
5 The solar cell manufacturers, which are the upstream suppliers of the solar module industry,  
6 are also experiencing an increase in production capacity and fairly robust competition. The  
7 suppliers of the solar cell manufacturers, which are the polycrystalline silicon manufacturers,  
8 are not reducing prices as the supply of silicon is insufficient at present to address the current  
9 demand; the U.S. and Japan are the principal suppliers of polycrystalline silicon. One such  
10 example of a solar cell manufacturer is the China Power (Nanjing) Photovoltaic Co., Ltd.,  
11 which went public on NASDAQ in May 2007. Beginning in August 2004 when the company  
12 started-up it had five production lines producing solar cells. By the end of 2006 the company  
13 had 6 production lines producing a total of 192MW of solar cells; by the end of 2008 the  
14 company expects to have expanded further to a total of 12 production lines and be producing  
15 390MW of solar cells. Industry experts believe that the solar module manufacturers will  
16 have their toughest time in 2008. By 2009 the price of polycrystalline silicon will have  
17 moderated somewhat and by 2010 as China's output of polycrystalline silicon grows the price  
18 will decrease further. By 2010 China's domestic polycrystalline silicon output capacity will  
19 reach 60,000 to 100,000 tpy and international suppliers will provide another 100,000 tpy; in  
20 2010 the demand for polycrystalline silicon will be only 100,000 tpy.

21  
22 GT Solar Incorporated of Merrimack, New Hampshire entered into a \$171 million U.S.D.  
23 supply agreement with Glory Silicon Energy Co., Ltd. of Zhenjiang, Jiangsu Province to sell  
24 its DSS450 furnaces for the production of multi-crystalline silicon ingots. This order will  
25 equip what will be one of the world's largest silicon wafer factories, having approximately  
26 1500MW per annum of capacity.

27  
28 More than 90% of regions in China enjoy as much as 4500 mega-joules per square meter  
29 of irradiation from the sun. More than 2/3<sup>rd</sup> of China's regions have in excess of 2200  
30 hours/year of the sun's exposure. If only 1% of the sun's exposure on China were converted  
31 into power, all of China's energy requirements for the year would be satisfied.

4

### 32 33 *China's Wind Power Industry*

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36 Among the 23.334 billion Yuan the city of Chongqing will spend on alternative energy,  
37 conservation and environmental projects during the 11<sup>th</sup> Five Year Plan period are 8 wind  
38 farms with a total installed capacity of 450MW that are to be built in six counties in  
39 Chongqing. The wind farms are planned to be completed and operating within 5 years.

40  
41 China continues to look favorably on the vast potential of wind power. According to the  
42 central government's estimates China has as much as 1 million MW of wind power generating  
43 potential, including 253,000 MW of land based wind power potential and the remaining  
44 amount in near land sea-based wind power generating potential. As a comparison, China's  
45 hydropower potential is approximately 390,000 MW. By 2010 China will have at least  
46 5000MW of wind power operating; by 2015 wind power capacity will have grown to at least  
47 10,000MW and by 2020 to at least 30,000MW. After 2010 China will be the world's largest

1 market and world's center of manufacture of wind power equipment.

2  
3 Though the price of wind power in China continues to be higher than coal fired power  
4 plants, the cost of producing wind power is decreasing rapidly. For example, the Inner  
5 Mongolia Huiteng Xile Wind Farm, whose equipment is almost entirely imported, was  
6 developed for a cost of 7800 Yuan/KW and the price of power which it produces (on-grid  
7 price including taxes) has been reduced to 0.45-0.5 Yuan/KW. If the turbines are produced  
8 in China they estimate that the price of power which they produce could be reduced a further  
9 10-15%. The average cost to develop a wind farm in China is 8000-9000 Yuan/KW, with  
10 60%-70% of that cost in equipment.

11  
12 Currently China is estimating that total installed wind power generating capacity will be  
13 at 10,000 MW by 2010. In order to achieve this level of installed capacity Chinese  
14 companies will have to invest approximately 45 billion Yuan in wind power equipment  
15 purchases by 2010. After 2010 equipment purchases for wind power development are likely  
16 to be 13 billion Yuan/year.

17  
18 Hainan Province has announced in mid August 2007 that it would construct a total of  
19 1234.5MW of wind power at 12 locations over a period of years in accordance with the *{Plan*  
20 *of Hainan Province for the Construction of Wind Farms}*. Initially Hainan Province plans to  
21 have 4-6 wind farms operating by 2010; those 4-6 wind farms will have 250-300MW of power  
22 generating capacity. Before 2015 total installed wind power generating capacity in Hainan  
23 Province will have reached 400MW and by 2020 will have increased further to 600MW. It is  
24 estimated that land-based wind resources are as high as 20,000 MW. Presently Dongfang  
25 city in Hainan Province has a wind farm that generates 87MW of power.

26  
27 Of the 230 million kwh wind potential throughout China, it is estimated that Inner  
28 Mongolia has wind resources of approximately 101 million kwh or 40% of the total. There  
29 are some 200 companies that have already entered or plan to enter Inner Mongolia's wind  
30 power industry. Through the end of 2005 total installed on-grid wind generating capacity  
31 was 170MW and there is another 962.1MW of installed wind generating capacity which is  
32 under construction. By the end of 2010 Inner Mongolia expects to have a total of more than  
33 5000MW of wind generating power operating and that amount will equal 7.5% of total power  
34 generating capacity in Inner Mongolia. Yet based on the announced projects, it is likely that  
35 the total amount of wind power capacity in Inner Mongolia by the end of 2010 will exceed  
36 5000MW. For example the city of Chifeng already has entered into an agreement with the  
37 Datang Company to develop 1000MW of wind power and by the end of 2010 Chifeng city  
38 alone is expected to have total installed capacity of 1500MW. Among others, [Airtricity](#), one  
39 of the world's largest wind power developers is pursuing projects in Inner Mongolia.

40  
41 Construction of Shanxi Province's first windmill was completed on September 10, 2007  
42 in Shibao County by the Shanxi International Power Group Company. The entire wind farm  
43 will entail a total of 117 windmills which will be able to produce 330 million kwh per year.  
44 The cost of the project is 2 billion Yuan.

45  
46 AES Corporation, a U.S. company and Guohua Energy Investment Co., Ltd. will establish a joint  
47 venture company to build own and operate a 49.5MW wind farm.



1  
2 With one 100MW wind farm already completed and another six wind farms under  
3 construction (with capacity of 350MW), Gansu Province has announced that it is planning  
4 another 10 wind farms. The 10 wind farms will be developed by the China Power  
5 International Co., Northwest Power Grid Co. and other entities that participated in the  
6 development of Gansu Province's first wind farm. The planned capacity of these 10 wind  
7 farms is 1000MW in total. The wind farms are being construction in Guazhou, Gansu, which  
8 is known as the "world's wind reservoir".  
9

### *China's Bio-Mass Energy and Bio-Fuels Industries*

11  
12 Beginning in August 2007 for approximately 2 months, Hainan Province will be investigating the  
13 creation of a formal bio-fuels industry. At the same time, Chinese companies, including the China  
14 Hainan New Fuels Industry Development Co., Ltd., have already invested in the bio-fuels industry in  
15 Hainan Province. One such project is the cultivation of the Jatropha Curcas tree, a poisonous shrub  
16 that is a good feed stock for bio-fuels. The China Hainan New Fuels Industry Development Co. Ltd's  
17 project is the largest to date in Hainan Province; the company has planted 240,000 Jatropha Curcas trees  
18 and another 5 million seedlings. According to the general manager of the company, within a year the  
19 company plans to have a total of more than 1300 hectares of land under cultivation with Jatropha Curcas  
20 trees. The China National Offshore Oil Corporation (CNOOC) also is planning to have a 60,000 tpy  
21 bio-diesel refinery in place in Hainan Province within the year and will be cultivating more than 600  
22 hectares of land with Jatropha Curcas trees. Two-thirds of a hectare of Jatropha Curcas trees can  
23 produce approximately 3 MT of seeds and those 3 MT of seeds are capable of producing 1 MT of bio-  
24 diesel. According to the United Nations China has yet to develop scale production of bio-fuels and at  
25 present China is producing only 40,000 to 50,000 tpy of bio-fuels, though projects under development or  
26 in planning will have total capacity of 3 million tpy.  
27

28 Hunan Province's first bio-mass power generation project broke ground on August 20, 2007. The 6  
29 500 million Yuan Yueyang Kaiyou Bio-Mass Power Plant will be located in Yueyang city's Jieyuan  
30 Management District. In the 50 kilometer radius around Yueyang farmers produce upwards of 225,000  
31 tpy of wheat husks and another 348,000 tpy of cotton stalks and rapeseed stalks, all of which previously  
32 had just been treated as waste. The Yueyang Kaiyou Bio-Mass Power Plant will use the proprietary  
33 technology of the Wuhan Kaiyou Joint Stock Investment Co., Ltd., which promises to increase heat  
34 efficiency of the agricultural waste to energy plant by 35-40%. When operating the agricultural waste  
35 to energy facility will burn approximately 400,000 tpy of agricultural waste and will produce 288  
36 million kwh of power. Farmers in the area who sell their agricultural waste may earn as much as 7200  
37 Yuan/annum (@180 Yuan/MT).  
38

39 China's agricultural sector has plentiful bio-mass resources. By one estimate China's  
40 agricultural sector has a total of 500 million MT of coal equivalent energy which it produces  
41 in bi-mass each year, including 150 million MT of coal equivalent energy from crop waste.  
42 China has approximately 670 million hectares of land which can be used to grow energy  
43 crops. Experts estimate that the bio-mass which China's agricultural sector is able to  
44 produce each year would be sufficient raw materials to produce 50 million tpy of fuel ethanol  
45 and bio-diesel.  
46

### *China's Small Hydroelectric Power Industry*

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1 According to Shi Dinghuan, the chairman of the board of the China Renewable Energy Society,  
2 total installed capacity of small hydroelectric power already exceeds the total installed capacity of large  
3 hydroelectric generating capacity in China.  
4

5 The Shaanxi Province, Ningshan County small hydroelectric project was registered as China's  
6 107<sup>th</sup> CDM project on August 23, 2007. The United Kingdom and Northern Ireland are the foreign  
7 partners.  
8

9 In the first week of September 2007 the CDM executive board registered the following three small  
10 hydroelectric projects: 1) the 10MW Gansu Hongyuan hydroelectric project; 2) the 12MW Gansu  
11 Wuhuzha hydroelectric project; and 3) the Shaanxi Xunyang Guihua small hydroelectric project.  
12  
13

### 14 Renewable Energy Conferences in China

  
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16 The World Solar Energy Conference will be held for the first time in Beijing on September 18-21,  
17 2007. According to Torben Esbensen, the chairman of the International Solar Energy Society, the fact  
18 that China will host this conference for the first time in the 20 year history of the World Solar Energy  
19 Conference is testament to the rapid development of China's renewable energy sector.  
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21

### 22 Laws and Policies Governing Renewable Energy and Sustainable Development in China

  
23

24 Recently the State Council's Office of Legislative Affairs issued a rough draft of the  
25 *{Regulations on Energy Conservation in Civilian Buildings}*, which "encourage and support  
26 the utilization of solar power, geothermal power and other renewable energy in new  
27 construction and renovations of civilian buildings and promote the use of new technologies,  
28 new industrial techniques and new materials and equipment in energy conservation in civilian  
29 buildings" in China. 7  
30

31 Beginning in September 2007 a system of environmental accountability will be instituted  
32 for the managers of the 154 state-owned enterprises directly under the supervision of the  
33 central government. The new accountability system makes environmental performance an  
34 important factor in assessing the success of the managers and will take environmental  
35 performance into account in making decisions about promotion, etc.  
36

37 With the State Council's Office of Energy taking the lead in drafting the *{Energy Law}*, a  
38 first draft of the proposed law will likely begin circulating in October 2007. At present  
39 through four working drafts, the *{Energy Law}* draft is thirteen chapters and more than 90  
40 articles long and deals with such subjects as Energy Management and Oversight, Energy  
41 Strategy and Planning, Energy Development and Production, Energy Supply and Service,  
42 Conservation and Utilization of Energy, Energy Reserves, Energy in Agriculture, Financial  
43 and Tax Incentives and Constraints, International Energy Cooperation and Legal  
44 Responsibility. One area that has not yet been clarified is which ministries or agencies of the  
45 Chinese government at what level will be responsible for administering the proposed new law.  
46

1 Lu Yongxiang, a deputy chairman of the Standing Committee of the National People's  
2 Congress and the Chairman of the China Institute of Science, in remarks at the "Seminar on s  
3 Strategy for the Sustainable Development of Energy" held on September 20, 2007, said that  
4 "China must move in the direction of greatly increasing the percentage of renewable energy  
5 which it uses" and that the "ideal" energy structure in China would be 25%-30% renewable  
6 energy and 15%-20% hydropower and nuclear energy.

7  
8 In mid-September 2007 the CDM Executive Board issued payment to Gansu Province on  
9 account of the Xiaogu Mountain Hydropower Plant which was registered in August 2006 with  
10 the CDM Executive Board. This is the first income which Gansu Province has received from  
11 its participation in the UN CDM program. According to the Gansu Province Development  
12 and Reform Commission, through August 27, 2007 Gansu had registered 33 CDM projects  
13 with the NDRC and 15 of those had been registered with the UN CDM Executive Board.  
14 These 33 projects have a cumulative emissions reduction of 3.9763 million MT of carbon  
15 dioxide.

### 16 *Business Opportunities in China's Renewable Energy Industry*

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19 Venture capital investment in clean technologies (generally energy generation, water and  
20 wastewater, agriculture and materials) in China is growing. In 2005 investment totaled just  
21 \$170 million U.S.D. In 2006 venture capital investment in clean technologies in China  
22 increased to \$420 million U.S.D. Estimates are that venture capital investment in clean  
23 technologies in 2007 will increase again to \$580 million U.S.D. and will be greater than \$720  
24 million U.S.D. in 2008. Based on a report issued by the Cleantech Group, 70% of those  
25 investments were in solar energy. The biggest recent deal is the \$82 million U.S.D.  
26 investment by Goldman Sachs in the solar module manufacturer, Jiangsu Sunda.

27  
28 On September 5, 2007, the Shanxi Water Resources & Hydropower Construction  
29 Supervision Company issued an RFP for the construction of the Shanxi Zezhou Caohe  
30 Hydropower Station Project. The deadline for submission of a proposal is September 30,  
31 2007.

32  
33 In the town of Lingnan in Zhejiang Province, an RFP for a 200 million Yuan, 250,000 tpy  
34 Waste to Energy BOT was issued on September 4, 2007.

### 35 *CDM Projects and Other Foreign Participation in China's Renewable Energy Sector*

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39 On July 30, 2007 in Beijing, France's Electricite de France (EDF) entered into a 9 million MT  
40 CDM CER (certified emissions reductions) agreement with the Longyuan Group. This is China's  
41 largest CER agreement to date. The emissions reductions came about through 18 wind farms with a  
42 total installed capacity of 945MW, located in eight provinces in Northwest, Northeast and Southeast  
43 China. To date the Longyuan Group already has entered into 39 agreements with EDF and Autria's  
44 KPC Company which involve total installed capacity to produce renewable energy of nearly 2000  
45 MW; these projects include wind farms and power generation from crop stalks. Through the end of  
46 the first emissions reductions period in 2012 the total amount of emissions reductions which these  
47 projects bring about equals in excess of 20 million MT.



1 The China National Jiangsu Dongtai 201MW Wind Power project was approved by the CDM  
2 Executive Board on August 11, 2007. The project is a collaboration of the China National (Dongtai)  
3 Wind Power Co., Ltd. and Britain's EDF Trading Co., Ltd. and the anticipated emissions reductions  
4 total 381,460MT. Through August 15, 2007 the CDM Executive Board had registered a total of 105  
5 Chinese CDM projects, which was second only to India and amounts to 13.82% of all registered CDM  
6 projects worldwide. These 105 projects have planned emissions reductions of 70,293,852MT, which  
7 amounts to 43.46% of total emissions reductions for all registered CDM projects.  
8

9 As of September 12, 2007 the CDM executive board had registered a total of 111 Chinese CDM  
10 projects. The registered Chinese CDM projects account for 14.40% of all registered CDM projects,  
11 second only to India and the Chinese projects will account for a total of 70.568765 million MT of  
12 carbon dioxide emissions avoidance, which is 43.4% of total CDM carbon dioxide emissions  
13 reductions.  
14

15 The Manasi Number One Hydropower Project, which is a joint venture development of the  
16 Xinjiang Tianfu Thermal Power LLC and the Tokyo Electric Power Company, Inc. was successfully  
17 registered with the CDM Executive Board.  
18

19 On September 14, 2007 the 91.5MW wind power project of Jiangsu Province's Huaneng New  
20 Energy Resources Industry Joint Stock Co., Ltd. and Endesa Generation S.A. was registered by the  
21 CDM Executive Board. The expected reduction in carbon dioxide emissions from this project is  
22 199,780MT. The Huaneng/Endesa CDM project is the 113<sup>th</sup> Chinese registered CDM project.  
23

24 The China-Holland CDM Capacity Building Project was initiated in Nanchang on September 17,  
25 2007. A joint project of the Worldwide Environment Office of the Ministry of Science and  
26 Technology, the China 21<sup>st</sup> Century Project Management Center and Holland's ING Bank, the China-  
27 Holland CDM Capacity Building Project's purpose is to build free CDM Technical Service Centers in  
28 six locations in China: Jiangxi, Heilongjiang, Guangdong and Fujian Provinces and Chongqing and 9  
29 Tianjin. Through the end of July 2007 there had been a total of 684 CDM projects which were  
30 registered with the NDRC. As of September 25, 2007 the CDM Executive Board had registered a  
31 total of 115 Chinese CDM projects.  
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33

### *Developments in Environmental Protection and Energy Conservation in China*

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36 Funds allocated from the central government's budget for energy conservation and emissions  
37 reductions in China in 2007 total 21.3 billion Yuan (~\$3 billion U.S.D.), yet taking into  
38 consideration the goal of the central government to reduce energy consumption by 20% per unit of  
39 GDP produced by 2010 and the continued growth of industries in China that consume a great deal  
40 of energy and produce a lot of pollution, these expenditures are not sufficient.  
41

42 On August 7, 2007 the National Development and Reform Commission, the General  
43 Administration of Environmental Protection, the Electric Power Oversight Commission and the  
44 Office of Energy Resources jointly promulgated *{Measures for Managing Energy Conservation in  
45 the Production of Electricity}*. The purpose of the new measures is to increase the efficiency of  
46 the power industry while ensuring the reliability of power supplies and promoting energy  
47 conservation and the production of power economically. The first coal fired power plants (which

1 consume excessive amounts of energy and produce severe pollution discharges) were  
2 decommissioned on August 16, 2007 in Gansu Province in accordance with the *Measures*.  
3

4 In a report issued to the Standing Committee of the National People's Congress on August 26,  
5 2007 Ma Kai, the Chairman of the National Development and Reform Commission stated that,  
6 despite progress in energy conservation and environmental protection, the circumstances which the  
7 effort to reduce emissions and conserve energy is "very severe". Ma Kai's report emphasized  
8 that economic growth is overly fast and growth in industries which consume an inordinate amount  
9 of energy and produce large quantities of pollutants is particularly quick. The rate of growth of  
10 heavy industry in the first half of 2007 was 19.5%, 3.1% faster than light industry; steel, non-  
11 ferrous metals, power, petrochemicals, building materials and chemical industries grew at a rate of  
12 20.1% in H1 2007, 3.6% faster than H1 2006.  
13

14 Zheng Guoguang, the bureau chief of the State Climate Bureau said recently that climate  
15 change will present a 'serious challenge' to China's grain security. By 2030 when China's  
16 population grows to ~1.5 billion people, China's will need to be producing an additional 100  
17 million MT of grain, but with climate warming it is more likely that output of grains in China will  
18 fall by 5% to 10%.  
19

20 China's climate disasters, which are the most severe form of natural disaster, account for  
21 losses equaling 1 to 3% of GDP each year or 10% of GDP value added. According to statistics  
22 compiled by the China Engineering Institute, 62.78% of the approximately 82 billion Yuan/annum  
23 in losses attributable to climate are as a result of excessive rainfall; the other two main causes of  
24 climate related natural disasters are typhoons, of which there are approximately 7/year and  
25 droughts, which affect some 25 million square hectares of crops.  
26

27 On September 5, 2007 the *{Water Pollution Prevention Law of the People's Republic of China*  
28 *(Revised Draft)}* was made public. According to an explanation by Zhou Shengjian, the Minister  
29 of the State Administration of Environmental Protection, which accompanied the release of the  
30 *{Water Pollution Prevention Law of the People's Republic of China (Revised Draft)}*, there is  
31 severe water pollution underground in nearly one-half of Chinese cities and the potable water for  
32 more than 300 million people who live on China's farms have health and safety issues. Of  
33 China's seven major waterways, the Songhua River, the Yellow River and the Huai River have  
34 intermediate levels of pollution, while the Liao River and the Hai River have severe levels of  
35 pollution. In a mid July 2007 investigation of the conditions of the Huai River and the Liao  
36 River, government officials concluded that the pace of remediation of these rivers was not  
37 keeping up with the pace of growth in water pollution on these rivers.  
38

39 The Ministry of Foreign Affairs has established a Foreign Affairs Climate Change Leadership  
40 Group. Yang Jiehu, the Minister of Foreign Affairs has been appointed as the chairman of the  
41 Foreign Affairs Climate Change Leadership Group. The Ministry of Foreign Affairs also has  
42 established the post of Climate Change Negotiations Special Representative, who will be  
43 responsible for organizing and participating in relevant international climate change negotiations.  
44 Yu Qingqin, the former ambassador to Tanzania has been appointed Climate Change Negotiations  
45 Special Representative.  
46

47 On September 18, 2007 Kong Xiaokang, the Deputy Chairman of the China National

1 Standardization Administration Commission spoke about Beijing's efforts to restrict energy  
2 consumption among China's steel, thermal power, non-ferrous metals, petrochemical, building  
3 materials and other industries, saying that the central government is now formulating twenty two  
4 standards which will restrict energy consumption among companies that produce products that  
5 consume a large quantity of energy. The purpose of this new regulatory effort is to raise the  
6 barriers to entry for new construction of projects in these industries, spur mothballing of outdated  
7 production capacity and force energy conservation. In the 11<sup>th</sup> Five Year Plan period, there will  
8 still be growth in the steel, non-ferrous, building materials, petrochemical and other industries that  
9 are large consumers of energy and which account for some 40% of China's GDP; this continued  
10 growth in industries that are large consumers of energy will surely contribute to continued pressure  
11 on energy resources in China. The standards which are being developed will further develop  
12 regulation of the energy consumption in these industries which was begun in May 2007 with the  
13 promulgation of the *{Notice Concerning Promulgating a Comprehensive Work Plan for Energy*  
14 *Conservation and Emissions Reductions}*. Presently there are nine standards which have been  
15 written and the other 13 standards are in the process of being formulated.  
16  
17

### 18 *China's Energy Production and Consumption*

19  
20 According to the Ministry of Agriculture, China's farming villages consumed a total of  
21 900 million MT of coal equivalent energy in 2006.  
22

23 The NDRC issued a report on September 3, 2007 that China produced a total of 1.268  
24 billion MT of coal in the January-July 2007 period. Output of coal in the first seven months  
25 of 2007 increased 11.7% y-o-y. In the January-July 2007 period there were net imports of  
26 coal totaling 2.1 million MT (comprised of 30.96 million MT of imports and 28.86 MT of  
27 exports).  
28

29 An official with the China National Petroleum Group estimated that China's demand for  
30 oil would grow at a rate of 6.2%/annum for the next two to three years.  
31