



China Goes Solar as America Stumbles

New Five-Year Plan Boasts Big Ambitions

By Melanie Hart

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The U.S. media is abuzz over last week's bankruptcy of thin-film solar manufacturer Solyndra LLC, with some conservative politicians trying to use the demise of the start up to argue against federal financing for green energy. But the Chinese media is focusing on a far more important solar power development: two major energy plans that will lay the policy roadmap for China's clean energy development over the next decade.

The first is the 12th Five Year Plan for Renewable Energy Development, covering 2011 to 2015, which focuses on sources of renewable energy such as hydropower, wind, solar, and biomass. The second is the Emerging Energy Industry Development Plan, covering 2011 to 2020, which also includes nuclear energy, clean coal, smart grid, and alternative fuel for new-energy vehicles.

The State Council, China's national cabinet, is currently reviewing both plans, but it looks like the renewable energy plan for 2011-2015 will come out first. Details of the plan are already leaking to the press, and thus far, it looks like the biggest story will be solar. According to the latest leaks in the Chinese media, the new renewable energy plan will raise solar targets to unprecedented levels: 10 GW of installed solar capacity by 2015, including 9 GW from photovoltaic installations and 1 GW from solar thermal electric power generation, and 50 GW total installed capacity by 2020.¹

The United States is currently ahead of China, with 2.6 GW installed solar capacity at year-end 2010. The United States is also leading in solar equipment, with \$1.9 billion in overall net exports in 2010, and a \$247 million trade surplus with China. But as Chinese policymakers prep for a major push on solar, U.S. policymakers are gearing up to slash funding for the basic support programs that created this impressive lead, and that means we could easily lose our edge to China.

For China, these new targets are truly big. As of year-end 2010, China had around 700 megawatts of installed solar capacity, so meeting the new 2015 target will require adding another 9.3 GW to the grid—a capacity expansion of over 1,000 percent during the 2011-2015 five-year plan period.²

Thus far, the big China renewable story has been wind. During the 11th Five-Year Plan for 2006-2010, the Chinese government funneled money and policy support into the wind sector. As a result, in 2010 China surpassed the United States in total wind capacity, and there are now four Chinese wind turbine manufacturers among the global top 10, up from zero just five years ago.

Now the Chinese have decided that solar is the next big thing. Internal critics of China's clean energy planning process can point to overcapacity in wind power to argue that aggressive targets and subsidies are no longer needed in clean energy.³ In the wind sector, China's 11th Five-Year Plan awarded local officials for investment and capacity expansion, and those officials responded by building more wind farms than the transmission grid could handle.

Behind closed doors China's traditional fossil-fuel interests—particularly the large and politically connected coal conglomerates—are using the overheating wind market to argue against preferential policies for renewable energy. Those interests are strong, and their resistance has reportedly disrupted the clean energy target-setting process and delayed these two long-awaited policy packages.⁴

Unlike wind, however, photovoltaic electricity generation is still trailing behind. Over the past five years, wind projects received 72 percent of China's new clean energy investments, but solar received just over 6 percent. There is no overheating or excess capacity in solar, so China's fossil-fuel interests have less political capital to resist aggressive state support programs.

Solar development has also reportedly gained a new political boost from the Japanese nuclear disaster. Chinese leaders are under pressure to dial back their nuclear power targets, but they have already pledged to expand non-fossil fuels to 15 percent of the country's energy supply by 2020. To stay on track, any nuclear slowdown must be offset by another clean energy source such as solar, wind, or hydropower, and among the three, solar is the only sector that is not currently facing internal political challenges.

The new benchmarks being set for solar are a big increase over China's previous solar targets. China's 2007 Medium-and Long-Term Development Plan for Renewable Energy set a 2020 solar capacity target of 1.8 GW. That target has been climbing steadily, but even as recently as June 2011 many Chinese media outlets and government officials were quoting a 5 GW solar target for 2015 and a 20 GW target for 2020.⁵ If the latest reports are correct, the new targets will be twice as high.

Chinese markets are already heating up over the news. According to the China Securities Journal, if China achieves the new 10 GW benchmark, the solar sector will likely expand by up to RMB 440 billion (\$68.9 billion) over the 2011-2015 period.⁶ Many marketwatchers actually expect the sector to grow even faster, possibly reaching 15 GW by 2015, which would entail an even larger expansion of up to RMB 690 billion.

The Chinese government has already handed out at least RMB 10 billion to subsidize around 642 MW (0.642 GW) in solar generation projects since 2009. And in August 2011 the National Development and Reform Commission launched a feed-in tariff for solar power generation. The new tariff sets benchmark prices for solar energy—minimum prices China’s grid operators must pay for solar power—and the tariff will soon be paired with clean energy quotas to guarantee market demand. These policies are already a strong first step toward providing a stable and attractive Chinese solar market.

Most of the 11th Five-Year Plan solar policy support, however, went toward larger-scale photovoltaic projects located primarily in the west. China already has a power transmission problem—supply is concentrated in the west and demand is concentrated in the east—so adding more large-scale western solar projects, though economical from a facilities perspective, has further strained the west-to-east transmission grid.

China’s new renewable plan aims to address this imbalance by encouraging more smaller-scale distributed solar generation projects in the southern and eastern regions where China’s power demands are highest.⁷ Chinese leaders hope that the shift toward smaller-scale projects will also encourage more small- and medium-enterprise participation. China’s big central-government state-owned enterprises, which have massive resources and soft budget constraints, won most of the existing large-scale photovoltaic tenders by bidding below market value, thus shutting small- and medium-sized companies out of the market and driving down quality.

China’s big state-owned firms are generally less interested in small-scale, smaller-profit generation projects, so supporting those projects should open up new market opportunities for private enterprises.⁸ This is an important competitive step for China’s solar power industry because, unlike the state-run giants, China’s smaller private enterprises have hard budget constraints and stronger incentives to innovate. Chinese leaders are betting that increasing private-sector participation will accelerate the overall market shift toward more advanced solar technologies.

The 2011-2015 renewable energy plan also includes new targets for water, wind, biomass, and other renewables.⁹ Connected wind capacity should reach a new target of 100 GW by 2015, up from 13.9 GW at year-end 2010, of which 25 GW should be distributed wind capacity. Hydropower should grow from 210 GW at year-end 2010 to 290 GW by 2015 (including 260 GW from conventional hydropower and 30 GW from pumped water storage), and biomass should reach a total installed capacity of 13 GW by 2015.

The new plan also sets China’s first nationwide targets for geothermal energy (100 MW by 2015), tidal power generation (constructing one or two 20 MW projects by 2015), and ocean projects (building five 10 MW generation stations by 2015).¹⁰ The United States has no major ocean power projects, but it will be difficult for China to catch up to the relatively strong U.S. lead in geothermal energy. The Obama administration’s U.S. Recovery Act kick-started the U.S. industry with geothermal stimulus funding, and those projects will add around 8 GW to the grid over the next few years.

Chinese leaders have not yet released the details on the specific subsidies, tax incentives, and pricing structures they will use to achieve these new renewable targets. The policy support package will most likely include a new quota system, which will require grid companies to purchase a certain percentage of their annual energy acquisitions from nonwater renewables.¹¹

Overall, the new plan aims to boost renewables to at least 9.5 percent of China's total energy consumption by 2015. China is aiming to catch up with the United States, where renewable energy was 8 percent of total energy consumption in 2010 and could potentially reach 15 percent by 2015.

Expanding the renewable energy sector will move China in the right direction on their three biggest energy problems: supply shortages, an over-reliance on dirty coal, and the fact that most of their conventional energy supplies are in the west and most of the demand is in the east, which currently puts too much strain on the transmission grid. Chinese leaders are also banking on renewable energy to provide a new tier of better paying "green collar" jobs to boost more workers up into the middle class.

And here in America? We also suffer from an over-reliance on fossil fuels, and we also need higher-wage green collar jobs. Unlike the Chinese, however, our policymakers are not quite so forward-looking.

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Endnotes

Note: All translations are the author's own.

- 1 Shi er wu kezaisheng nengyuan fazhan mubiao mingque" (12th Five-Year Plan Renewable Energy Development Targets Now Clear), Zhongguo Zhengquan Bao (China Securities Journal), August 30, 2011, available at http://news.xinhuanet.com/fortune/2011-08/30/c_121931669_2.htm.
- 2 China National Energy Administration, "2010 nian nengyuan jingji xingshi ji 2011 nian zhanwang" (2010 Energy Economy Situation and Outlook for 2011), (2011), available at http://nyj.ndrc.gov.cn/ggtz/t20110128_393339.htm.
- 3 "Xinxing nengyuan chanye fazhan guihua nanchan beihou" (Behind the Scenes of the Difficult Birth of the Emerging Energy Industry Development Plan), Huan Qiu Qiye Jia (Global Entrepreneur), August 24, 2010, available at: <http://www.newenergy.org.cn/html/0108/8241035153.html>.
- 4 "Kezaisheng nengyuan 'da yue jin' nanxing zhongxiao qiye wuli canyu jingzheng" (Renewable Energy 'Great Leap Forward' Hard to Pass; Small and Medium Enterprises Powerless to Participate in the Competition), Guoji Jinrong Bao (International Finance News), September 5, 2011, available at: http://news.xinhuanet.com/fortune/2011-09/05/c_121966625.htm.
- 5 "Guowuyuan shouli kezaisheng nengyuan shi er wu guihua guangfu fadian dafu shangtiao" (State Council Receives Renewable Energy 12th Five-Year Plan; Solar Generation Raised Substantially), Zhongguo Jinrong Wang (China Finance Network), June 3, 2011, available at: <http://stock.zqjrw.com/News/201163/Stock%20cfm/895525562300.shtml>.
- 6 "12th Five-Year Plan Renewable Energy Development Targets Now Clear."
- 7 "Renewable Energy 'Great Leap Forward' Hard to Pass."
- 8 Ibid.
- 9 "12th Five-Year Plan Renewable Energy Development Targets Now Clear."
- 10 Ibid.
- 11 Ibid.