

# China Renewables Update

*by Christopher Flood, in Beijing*

China has introduced a series of new regulatory and policy initiatives focused on the wind, solar photovoltaic and biomass industries that will be of interest to both Chinese and non-Chinese industry participants.

The new initiatives are expected to provide an additional push to China's already thriving wind and solar PV equipment manufacturing industries and greatly increase the renewable energy project development opportunities within the domestic market.

Recent developments in the wind sector include elimination of a minimum 70% local content requirement on wind turbines for use in government-subsidized projects and of import duties on wind turbine components used by larger domestic manufacturers. The government also implemented a national feed-in tariff system for wind power recently as it continues aggressively to expand wind generating capacity.

In addition, China is poised to begin exploiting its vast offshore wind capacity under new rules introduced this year governing the development of offshore projects. However, foreign industry participants wishing to enter the sector will be required, at least for the time being, to form a joint venture with a Chinese majority partner. Bidding on China's first offshore wind concessions was underway as of press time.

In the solar PV industry, recent national- and provincial-level regulatory initiatives have begun providing the incentives necessary to develop a sizeable domestic market for the first time. These incentives include national government subsidies for the development of utility-scale solar installations and several examples of favorable provincial-level tariffs for solar PV-generated power.

A new national feed-in tariff for biomass announced this year is expected to increase the economic viability of biomass-fired power plants.

Another key development is a series of amendments that took effect last April to the 2006 Renewable Energy Law, the landmark legislation that enshrined renewable energy as a key feature of China's overall energy strategy and is the legislative foundation for the industry in China. The amendments

are aimed at addressing some of the main issues arising from the rapid development of the domestic renewables industry triggered by that law, including transmission bottlenecks and cost-sharing uncertainties. Industry players will need to await a series of implementing regulations and the passage of time to better evaluate the amendments, but initial reaction has generally been positive.

Finally, the Chinese government has either announced or is reportedly contemplating several new policy goals relevant to the development of the renewable energy industry. These new goals include medium- to long-term targets for renewable energy capacity and for the carbon and energy intensity of the Chinese economy. Although the measures are unlikely to affect the day-to-day operations of industry participants, their importance cannot be underestimated as a guide to Chinese policy and a yardstick against which the necessity for future regulation will be measured.

## National Targets

The Chinese government expects renewables to play a key role in efforts to increase China's energy security and to provide a partial response to the immense environmental pressure brought on by its unprecedented industrialization. Renewables are also expected to have the same obvious benefit of any other energy source — they will contribute needed additional fuel for rapid economic growth.

China is targeting that non-fossil fuels (including hydro and nuclear) will account for 10% of final energy consumption by this year and 15% by 2020, up from approximately 9% in 2008. Achieving these targets will require a massive amount of new investment in technology and infrastructure. China was the global leader in renewable energy and energy efficiency investment in 2009, with \$34.6 billion invested, almost double that of second-place United States.

Significant additional investment will be required in the future. A senior member of China's National Energy Administration estimated in July that measures required to implement its draft 2011-2020

*/ continued page 2*

## Renewables Update

*continued from page 1*

development plan for emerging energy industries will require new investment of RMB5 trillion (about US\$736 billion). In addition to wind, solar and biomass, the plan is also expected to encourage new clean coal, smart grid and alternative fuel vehicle technologies. It has been reported that the plan will also include specific renewable energy capacity targets amounting to a total of 500,000 megawatts by 2020, translating into 300,000 megawatts of hydropower capacity, 150,000 megawatts of wind, 20,000 megawatts of solar PV and 30,000 megawatts of biomass.

In addition to the specific renewable energy targets, in December 2009, China committed to reducing the amount of carbon dioxide it emits to generate each unit of GDP by 40% to 45% of 2005 levels by 2020. Doing so would be no small feat in a country that currently relies on relatively cheap coal for about 75% of its power generating capacity. However, the government has said that this target will become binding on a domestic level when it is included in China's next five-year plan covering economic development targets and priorities for the period from 2011 to 2015. China has also targeted a 20% reduction in energy intensity per unit of GDP from 2005 levels by 2020.

### Onshore Wind

China passed Germany this year for second place behind the United States in total installed wind power capacity, and it led the world in newly-installed capacity in 2009 with 13,800 megawatts. Nationwide wind power capacity has doubled every year of the past five, rising from 800 megawatts in 2004 to 26,000 megawatts at the end of 2009.

China has become home to the world's largest wind turbine manufacturing industry, with Sinovel Wind, Goldwind and Dongfang Electric each ranking among the world's top 10 manufacturers. It is also home to a large number of smaller manufacturers of generators, towers, blades and other components.

Observers predict that the domestic manufacturing industry is probably entering a consolidation phase, in part because of shrinking margins, and also because of draft regulations issued earlier this year that would require that all domestic producers be capable of manufacturing 2.5-megawatt turbines. Both developments are expected to put significant pressure on smaller, less technologically-advanced firms.

One of the domestic industry's biggest benefactors in its early years was the 2005 requirement that at least 70% of turbine equipment be domestically manufactured for wind generation projects to qualify for approval by the National Development and Reform Commission, or NDRC, China's principal economic planning organ. That requirement was scrapped in late 2009, although observers have noted that it has largely served its purpose of temporarily incubating a thriving domestic industry.

Another development of interest to turbine and component manufacturers is the elimination by the Ministry of Finance in the spring of 2010 of import duties on wind turbine (and hydro turbine) components. The duties were previously set at 3% to 30%. These components can now be imported duty free by turbine manufacturers capable of meeting size and technological requirements, which may incidentally add to industry consolidation pressure.

The government also changed its pricing policy for wind power. Its previous hybrid pricing mechanism in which feed-in tariffs were set after competitive bidding for projects has been replaced. Going forward, prices will be set at one of four national feed-in tariffs that vary from RMB0.51/kWh to RMB0.61/kWh, depending on the location of the project. (The renminbi was trading at press time at RMB6.79 to the US dollar.)

### Offshore Wind

A senior spokesperson from China's National Energy Administration said in June that the government has been accelerating plans for offshore wind development and expects capacity to reach as much as 5,000 megawatts by 2015 and 30,000 megawatts by 2020. China completed construction only this year on its first offshore wind pilot project.

The regulatory basis for this expansion was jointly issued by the State Energy Administration, or the SEA, and the State Oceanic Administration earlier this year. The Interim Measures for the Administration of Offshore Wind Power Development, referred to below as the "offshore measures," governs the full life-cycle of offshore projects, from the planning phase, to the project approval and construction process, to post-construction environmental and other reporting obligations.

A key consideration for foreign developers is that foreign-owned entities are prohibited from developing offshore projects, unless they do so from the minority position in a joint venture with a Chinese partner. That is, the Chinese entity must own at least 51% / *continued page 3*

## Renewables Update

*continued from page 2*

of any Chinese-foreign joint venture in the industry. This is in contrast to the onshore wind regulations, which do not expressly prohibit foreign-controlled developers (although in order to qualify for approval under China's clean development mechanism rules, such a structure may in fact be required in any event).

Under the offshore measures, concession development approvals are to be awarded primarily on the basis of the bid feed-in tariff, but also after consideration of the construction design and the developer's technical capability and performance record. This range of considerations reflects the added technological sophistication required for offshore projects and perhaps also lessons learned from onshore projects, which have typically been approved mostly on the basis of price.

Public tenders for the first four offshore concessions located off Jiangsu province began in May and the process is expected to conclude sometime in September. In order to avoid some of the below-cost pricing seen by some as plaguing the onshore concession tender process, the SEA has indicated it will eliminate the highest and lowest bids and set a target price tied to (but less than) the average of the remainder. This, combined with the multi-factor approach in evaluating bids, is expected to result in more moderate pricing for approved projects.

### Solar PV

Mainland China-based, United States-listed solar PV manufacturers Suntech Power Holdings, Yingli, JA Solar and Trina Solar each rank among the world's top 10 solar PV manufacturers based on 2009 production, and the Chinese industry as a whole supplied 43% of the world total last year.

Perhaps foreshadowing even greater visibility in world markets among Chinese manufacturers, Yingli announced in July that an affiliate was negotiating RMB36 billion (US\$5.3 billion) in loans from China Development Bank to fund domestic and international expansion. Similar deals with CDB have been inked by Suntech, which in April announced a "non-binding" agreement for RMB50 billion (US\$7.33 billion) in new loans over five years, and Trina Solar, which has announced a deal with CDB worth RMB30 billion (US\$4.4 billion).

However, despite the growth of the solar PV manufacturing industry within China, only about 10% its manufacturing

capacity was previously geared toward serving the domestic market. This situation has been changing over roughly the past year, in part as a result of several new policy and regulatory initiatives.

Most significant for the development of domestic solar projects has been the introduction at the national level in 2009 of the "Golden Sun" program of subsidies for domestic solar PV installations and related transmission and distribution systems. The subsidies range from 50% of the total investment for grid-connected projects, to 70% of the cost of standalone off-grid projects. In each case, projects must have a minimum generating capacity of 300 kilowatts at peak. The availability of the subsidies is capped provincially, and they are available through 2011 based on approvals to be granted on a project-by-project basis.

The Golden Sun program complements a set of similar incentives aimed at promoting rooftop and other building-integrated solar installations.

In addition to national-level programs, several provinces and regions have implemented their own solar PV incentives that are expected to stimulate further development of the domestic industry. For example, Zhejiang and Jiangsu, home to many of China's leading solar PV manufacturers, have implemented province-wide preferential tariffs for solar-powered electricity generation. In Zhejiang, they amount to RMB0.07/kWh.

Meanwhile, Jiangsu has introduced a three-year solar PV development plan with the target of achieving approximately 440 megawatts of installed solar PV generating capacity by the end of 2011 when the program expires. Preferential tariffs in 2009 ranged from RMB2.15/kWh for ground-based solar systems, RMB3.7/kWh for roof-based systems and RMB4.3/kWh for building integrated systems. The tariffs are scheduled to be reduced in 2010 and 2011 and eliminated thereafter.

Other provinces and regions are also offering various incentives to developers. In July, Shandong announced it would buy power from solar PV generators for RMB1.7/kWh, joining both Ningxia Hui Autonomous Region and Inner Mongolia in offering provincial-level incentives.

In 2009, the government began a competitive tendering process for its first batch of utility-scale solar projects similar to the process used earlier in the wind sector. Also similar to the wind sector experience, the government set target tariffs on the basis of bidding by potential developers during the tendering process, with feed-in tariffs / *continued page 4*

## Renewables Update

*continued from page 3*

reaching as low as RMB0.07/kWh. Observers have suggested that the aggressive pricing is likely in part the result of the “mandated market share” provisions under the 2006 Renewable Energy Law, which will require larger power firms to allocate at least 3% of generating capacity to non-hydro renewables by this year and 8% by 2020.

Bidding began in June and was underway as of press time to build and operate a second round of 13 utility-scale solar PV generating projects located in six provinces. The combined generating capacity of the 13 projects of 280 megawatts almost equals China’s total installed generating capacity as of the end of 2009.

In much the same way that pricing for wind projects graduated to feed-in tariffs from “government guided” pricing arising from the tendering process, the solar industry is also expecting a national solar feed-in tariff program to be introduced. It was previously reported that the NDRC would bring the national solar feed-in tariff system into effect last year. However, as of press time, there has been no announcement and no new developments are available. It is expected that, when announced, the measures will include separate regional tariffs based on solar generating capacity.

### Biomass

In July, the NDRC announced a new national feed-in tariff program for power generated from biomass. The new program sets a nationwide tariff of RMB0.75/kWh for biomass-fueled power, replacing the 2007 tariff that provided generators RMB0.25/kWh over the prevailing local rate for coal-fired power. The announcement signaled the NDRC’s intention to make biomass power generation a profitable alternative, especially in rural regions where agricultural biomass is abundant, but generation from coal is less costly.

China’s biomass industry is small compared with wind. However, it remains a focus of development, with several small biomass-fired facilities being constructed, leading to modest growth in China’s installed capacity, which in 2009 reached 3,200 megawatts.

### Renewable Energy Law Amendments

Amendments to the 2006 Renewable Energy Law took effect in April, with industry players now awaiting publication of a series of implementing regulations that will be required to flesh out the details. However, initial reaction to the amend-

ments has generally been positive.

By way of brief background, the broad strokes of the regulatory regime for the renewable energy sector were introduced in 2006 with the enactment of the Renewable Energy Law, which set out a framework for the regulation of the industry that was intended to be supported by subsequent measures enacted by various national- and provincial-level bodies. The Renewable Energy Law has several main pillars:

**Renewable energy targets.** Generation targets must be set by the energy authority of the State Council (China’s cabinet) both on an economy-wide basis and for specific renewable energy technologies. In addition, “mandated market share” provisions require major power generators to meet targets for purchasing power from renewable sources.

**Grid connections.** The law requires that grid companies provide grid connections for renewable energy projects developed within the geographic scope of their grid systems.

**Cost sharing and incentives.** The law sets out the general framework for subsidizing renewable power plant development, power generation and grid connection and allocates the cost between the generators and end users. The law envisages that incentives will be managed through future legislation on pricing arrangements, direct subsidies and tax incentives. Some incentives will be allocated directly through a government-managed fund.

The amendments are intended to deal with some of the most pressing problems arising from the industry expansion brought on by the Renewable Energy Law. A vivid illustration of these issues is the fact that an estimated 30% of China’s total installed wind capacity is not connected to the grid, and where grid connections do exist, developers have been plagued by transmission bottlenecks. Without action on the policy and regulatory front, these problems were expected to intensify as China implements its plans to continue to develop renewable projects at a rapid pace. The new projects will include, for example, seven wind mega-projects, each with 10,000 megawatts of generating capacity, several of which will be located in sparsely populated regions with lower transmission capacity such as Xinjiang, Inner Mongolia and Gansu.

The amendments have three principal purposes.

First, they improve coordination among central, provincial and local government agencies on renewable energy development. Local governments must develop renewable energy plans that are consistent with the frameworks set out by the national government by requiring that

*/ continued page 5*

## Renewables Update

*continued from page 4*

the local plans be filed with the SEA. Coordination is also to be improved among the bodies responsible for renewable energy planning and development and those responsible for energy planning and development more generally.

Second, the amendments renew and strengthen the obligation of transmission companies to provide grid connections to renewable energy installations. The absence of reliable connections has resulted in, at least temporarily, a significant amount of unutilized generating capacity and inefficient capital investment. This is in part the result of the natural reluctance on the part of the transmission companies to make the required investment to expand capacity to more remote locations where many renewables projects are located. The amendments aim to address this issue primarily by reiterating and strengthening the guarantee imposed upon transmission companies to purchase, pursuant to interconnection agreements, all power generated by renewables projects within their grid systems. This guarantee is backed up by a quota system requiring that a minimum amount of power be generated from renewable sources.

Grid companies are also required to improve the ability of the grids to handle increased loads through expansion and

technological improvements. Generating firms are similarly required to ensure that the electricity produced complies with the technical standards required by the grid company and to cooperate with the grid companies in maintaining the stability of the grid.

Finally, the amendments fine tune and strengthen the program of financial incentives and their administration. They strengthen a fund established under the 2006 law to provide grants for the development of renewable energy projects, fund the incremental cost of energy from renewable sources and support technological research.

The fund, which is administered by the Ministry of Finance, was previously financed through a surcharge levied on power prices, but those amounts alone fell short of costs. The amendments address this issue by allowing the fund access to additional funds from the general government budget to cover the spending shortfall. The amendments also permit the fund to be used for other purposes. For example, assistance may be provided to grid companies to alleviate the financing pressure arising from the fact that costs incurred in grid expansion may not be recouped until power is sold to the end-user. ©

September 2010