China's future solar ambitions – at home and abroad

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By Frank Haugwitz - 21 May 2015

This year is the last of China's current 12th Five-Year Plan for Solar Development (2011-2015) and both provincial and central governmental institutions have been engaged in the preparatory work of the approaching 13th Five-Year Plan (2016-2020) since last autumn.

Unprecedented in the history of China's five-year plans, the national target for installed solar PV to be achieved by the end of 2015 was raised in total four times, from an initial 5GW in March 2011, to 10GW in April 2011, to 20GW in September 2012 to a final 35GW in January 2013. Estimates suggest that by the end of this year China could be home to approximately 43-45GW and therefore not only overtaking Germany, but as well exceeding the national target by more than 20%.

China's National Energy Administration (NEA), the lead government institution in charge of energy policy formulation based in Beijing, already communicated a 100GW target of installed solar PV capacity by the end of 2020, which the author argues shall be rather considered as a minimum target instead of a maximum target, therefore implying there may be room for more. And room for more was indeed suggested by the end of December last year, because after two years of preparation a number of involved institutions officially submitted to the State Council "China's Renewable Energy Roadmap 2050" and called for 200GW to be installed by 2020 according to their optimistic scenario. Interestingly, at the same time targets set for Concentrating Solar Power (CSP) are almost negligible – 5GW (baseline) or 10GW (optimistic scenario) by 2020.

Overall, 2015 is considered a crucial year for solar PV in China. First, in early March this year the State Council of China released its "Opinion on Deepening the Reform of the Power Sector", which identified numerous issues and constraints preventing the power sector from being more efficient and competitive and able to offer lower end-user tariffs. The council outlined a number of key tasks, among them abolishing the discrimination against renewable energies in dispatch terms (even though the official dispatch order stipulates that renewable energy should come ahead of other sources such as coal), direct trading of power (in certain development zones, direct trading of PV is already allowed) and establishment of a market-based price mechanism, to intensify the implementation of the renewable energy law and to actively promote distributed generation including storage.

The latter is certainly most relevant to solar PV, because over the last two years the NEA was clearly favouring distributed solar PV versus utility-scale ground-mounted systems. Distributed generation has been identified as a key priority for the coming five-year plan and it is anticipated that a series of related policies will be issued in due course. Surprisingly, the council's 'opinion' explicitly mentions that the scaling up of its PV industry production capacities were inconsistent with the actual demand. In this context, the 2015 official credit policy guidelines issued by the People's Bank of China still regards the PV industry as subject to massive over-capacity.

Second is the possible impact of the revised Renewable Portfolio Standard (RPS). Introduced in September 2007, the current RPS has been under review since May 2012 and the amended version might become effective either later in 2015 or early 2016, in order to coincide with the 13th Five-Year Plan. Two provinces just recently issued an outline of their respective provincial RPS targets and others are expected to follow suit. Once effective, the RPS will most likely require local power utilities (generation and grid operators) to have a larger share of PV, next to other renewable energy, in their respective portfolios. This is expected to drive demand for solar PV, because according to the old RPS the decision on how to comply with the RPS quota was left to the utilities and they preferred to choose lower-cost hydro power.

Third is the impact of the US-China Climate Change Agreement signed last November. Under this, China made a commitment that by 2030, 20% of its final energy consumption would come from renewable sources (up from

11.1% in 2014) and its greenhouse gas (GHG) emissions would reach their peak.

Achieving this ambitious target requires bold actions, and a representative of a climate change research centre affiliated with the National Development and Reform Commission (NDRC) suggested in April that this could translate into annual solar PV installations of up to 40GW in the years and decades to come. Being the world's largest emitter of GHG emissions and considered to be among those countries most affected by future climate change, facing unprecedented levels of environmental pollution, China's need to aim for and attain a larger share of renewable energy in its energy mix is considered a necessity.

Chinese solar overseas

Due to the fact that today approximately 70% of manufactured modules go for export and having dealt with multiple trade disputes over the last three years, China is actively promoting and encouraging its PV industry to seek opportunities abroad. The so-called "go out strategy" formulated by Beijing-based institutions suggests companies establish and localise production in foreign countries, at the same time seeking opportunities to get engaged in local infrastructure projects.

To this end, over the course of the last three to four years China has facilitated aid projects feature solar in close to 40 countries around the world.

Support is granted for instance by China's Import-Export Bank, the China Development Bank and Sinosure. Furthermore, earlier this year in total 13 countries with whom China has friendly relationships were identified to host Chinese solar PV companies in their respective 'Overseas Economic and Trade Cooperation Zones". The bulk of these countries are located in Southeast Asia, Africa and South America. At this stage it remains to be seen how many companies will indeed follow that call to "go out" and become more internationalised, for example by setting up production facilities abroad.

Parallel to the "go out strategy" is the so-called "Silk Road Economic Belt and 21st Century Maritime Silk Road", also known as "One Belt, One Road" promoted by China's President Xi Jinping since late 2013. It is the aim of this "One Belt, One Road" strategy to promote green and low-carbon infrastructure construction, cross-border power supply networks and power transmission lines, regional power grid upgrading and identified mutual power investment areas covering hydropower, nuclear, wind, solar and other renewable energy sources in Eurasian countries along old and new trading routes.

In mid April, China's Banking Regulatory Commission in Beijing held a meeting inviting representatives of the country's three policy banks and five national banks to discuss the future role of PV in the context of the "One Belt, One Road" strategy. This promotion has been met with the rollout of a US$40 billion Silk Road Fund and a US$50 billion Asia Infrastructure Investment Bank (AIIB). Capitalising on this funding is on the minds of numerous Chinese PV companies representing both up and downstream.

China's Xinjiang Autonomous Region is anticipated to become one of the biggest winners, due its historical role along the ancient Silk Road and its natural geographic advantages. Sharing a border with Pakistan, Chinese companies are already actively building hydro, wind and solar projects in Pakistan under the framework of the so-called "China-Pakistan Economic Corridor" valued at US$45 billion.

China's ambitions to promote the deployment of solar PV at home and abroad are undeniably growing. Although coal will remain king for decades to come, to meet future domestic power demands will mean the deployment of distributed clean energy solutions and in this context PV will be king. Under China's ongoing urbanisation, 20 million people each year are moving from rural to urban areas and estimates suggest that by 2030 approximately 1 billion people will live in cities, thus creating an enormous demand for on-site power generation and on-site storage solutions.

A significant export dependency and ability to meet local demand more quickly in various emerging markets are just two reasons why China is encouraging its industry to set up local production facilities abroad. The "One belt, One Road" strategy and the "China-Pakistan Economic Corridor" are just two examples that might encourage Chinese companies to pursue a larger global footprint. In an initial stage the author argues Southeast Asia could be the primary region for such an engagement.

In summary, the approaching 13th Five-Year Plan (2016-2020) may set the framework for an even stronger push towards distributed generation at home and a stronger push to tap international markets through a local presence for both production and infrastructure projects.