

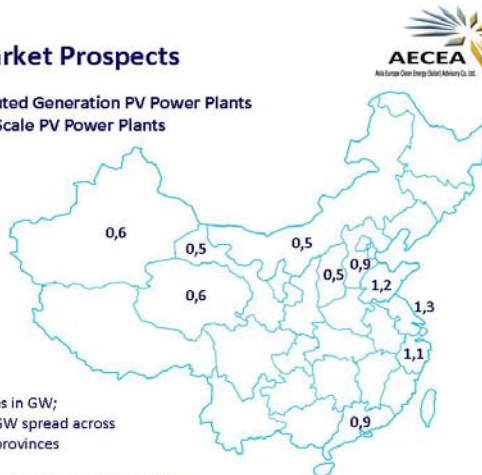
Will China exceed 10 GW of new solar PV installations in 2014?

Early November the National Development and Reform Commission (NDRC) and National Energy Administration (NEA) announced that it has set a target of 12 GW of new solar PV installations in 2014. Accordingly, the 12 GW shall be made up by 8 GW of Distributed Generation (DG) types of projects while the remaining 4 GW shall be made up by utility-scale ground-mounted systems.

2014 Market Prospects

8 GW Distributed Generation PV Power Plants
4 GW Utility-Scale PV Power Plants

Indicated Values in GW;
Additional 3,8 GW spread across
non-indicated provinces



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Will the former be installed in eastern provinces e.g. Jiangsu (1.3 GW), Shandong (1.2 GW) Zhejiang (1.1 GW) will the latter be installed e.g. in Qinghai, Xinjiang and Gansu. The government’s intention to favour DG installations compared to central power stations derives from the concern that even more solar PV installations will have to wait a considerable amount of time until the systems will eventually be connected to the grid. In 2012 out of approx. 5 GW installed power plants approx. 1.5-2 GW could not be connected to the grid, due to prevailing curtailment constraints.

January 2013 the NDRC / NEA made public to annually support 10 GW of solar PV installations from 2013 through 2015. AECEA is of the opinion that, due to the fact that essential policy regulations were released at a relatively late stage e.g. new FIT’s are effective since Sept 1, 2013 and the 50% VAT rebate is just effective since Oct 1, 2013. Consequently, China may see under optimistic assumptions, taking next years FIT reductions into account which could trigger a year-end-rallye, approx. 8 GW and under conservative assumptions 6-7 GW of new installations in 2013, hence in order to make up the shortfall of 2 GW in 2013, the govt aims at 12 GW in 2014.

State Grid Corporation and China Southern Grid announced their Long-Term Grid Expansion Plan until 2020

In September China Southern Grid (CSG) released its 12th (2011-2015) and 13th Five-Year-Plan (2016-2020) of its power grid development plan until 2020. Accordingly, CSG aims to have e.g. installed “smart power grids”



Source: SCMP

throughout 80% of the cities within its operation area. Furthermore, the company announced to intensify its efforts to accommodate an anticipated accelerating deployment of renewable energy installations, notably wind and solar PV. CSG’s grid infrastructure covers roughly 20% of mainland China.

Late October the CEO of State Grid Corporation announced that his company aims to invest in excess of RMB 3 Trillion (approx. EUR 363 bln) until 2020, in order to complete the construction of in total 20 Ultra-High Voltage (UHV) transmission lines. The completion of these power grid infrastructure will increase State Grid’s power transmission

capacity to approx. 450 GW able to support approx. 550 GW of renewable energy transmission and 1,700 bln kWh of renewable energy distribution.

Both China’s Southern Grid and State Grid Corporation’s future grid infrastructure development plans will undoubtedly significantly help reducing the currently prevailing curtailment rate for both wind and PV power plants in the years to come. In this context, the commissioning of State Grid’s North-East – North-China transmission line in late 2012 helped e.g. wind farm operators in these areas to increase their utilization hours by up to 10%.

Distributed Generation

In order to further stimulate demand for DG type of projects the central government already in August 2013 approved in total 1823 MW spread across seven provinces and five cities to be executed by the end of 2015. In

Natl. Feed-in-Tariff Prospects

18 Demonstration Areas for Distributed Generation approved in Aug 2013

- 2013-2015 implementation period
- In total 1823 MW
- 2013: 793 MW alone
- FIT RMB 0.42 / kWh + local retail electricity tariff based on desulphurization + local subsidy
- Focus industrial & commercial systems
- Self-Generation – Self-Consumption Model



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the remaining months of 2013 almost 800 MW of projects shall be deployed. All projects shall be predominantly implemented in so-called “Industrial & Development Zones/Parks”, interestingly all of them are located in Eastern Chinese Province. Overall, according to Chinese estimates the rooftop potential in just such zones/parks throughout the country shall amount to approx. 80 GW.

In an attempt to further stimulate demand through increasing the financial attractiveness of DG projects late November the National Energy Administration (NEA) released an official notification offering tax reliefs. The notification contains a number of detailed support measures designed to accelerate the

deployment of distributive PV power generation. AECEA is of the opinion that the fairly comprehensive set of just released regulations and support measures will create sound demand for distributed generation of PV.

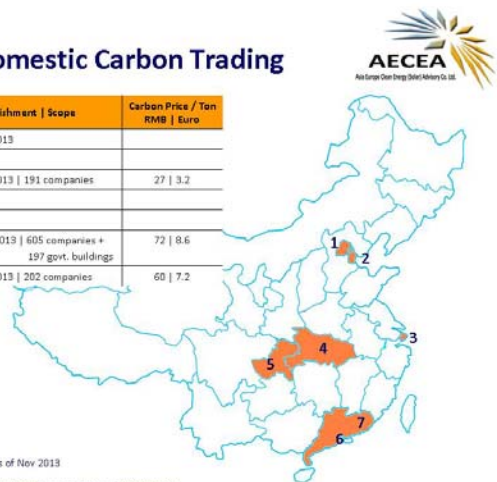
Could China’s Domestic Carbon Emission Trading Market become a new Financing Scheme for PV ?

Today, China is the largest emitter of greenhouse gases (GHG) worldwide. By 2020, the country targets a reduction of it’s carbon dioxide emissions per unit of gross domestic product by up to 45% from 2005 levels; an interim target calls for 17% by 2015. To realize this target late November Shanghai and Beijing launched a carbon market and the province of Guangdong is scheduled to follow these examples this very December. In total 202 companies including state-owned local power utilities located in Guangdong shall limit its carbon dioxide emissions to 350 Mio tonnes this year. China aims to have in total seven pilot carbon trading markets by 2014.

Upon establishment these “seven domestic carbon trading markets” shall regulate approx. 700-800 Mio tonnes of carbon dioxide annually, an amount roughly equal to that of Germany. The domestic pilot carbon trading areas accounts for nearly one third of China’s national GDP. In the longer term the central government is planning to have a national trading scheme which could be the world’s largest. Already since 2009 Chinese solar PV companies are taking advantage of the so-called “Clean Development Mechanism” (CDM), in order to generate additional revenues through this international carbon emission trading scheme.

China’s Domestic Carbon Trading

Location	Establishment Scope	Carbon Price / Ton RMB Euro
1 Beijing	Nov 2013	
2 Tianjin	2014	
3 Shanghai	Nov 2013 191 companies	27 3.2
4 Hubei	2014	
5 Chongqing	2014	
6 Shenzhen	June 2013 605 companies + 197 govt. buildings	72 8.6
7 Guangdong	Dec 2013 202 companies	60 7.2



Source: RMB/Euro values as of Nov 2013

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Given the central governments intention to use “market mechanism” in order to reduce its domestic carbon dioxide emissions AECEA expects that an increasing number of companies will join this carbon trading in future. Among other reasons to join that it will be mandatory for companies to participate, such a domestic scheme won’t be subject to any currency fluctuations unlike the CDM and companies would like to enjoy a “greener image”. However, not all pilot provinces are equally attractive, in particular Chongqing Municipality and Hubei Province are not endowed with favourable environmental conditions calling for large-scale PV deployment or have been major destinations for local PV production either.

Further concern about the scheme's effectiveness is given that e.g. Guangdong utilities are rumoured for not being too excited to be subject of their provincial trading scheme or in other words "what if local power utilities and state-owned-enterprises refuse to comply"? AECEA is of the opinion that such a domestic carbon trading scheme will very likely generate interest among both national Chinese and international PV project developers to get engaged, even if at this stage a certain degree of uncertainty on how the scheme will roll out remains. Solar PV companies like GCL already assessing internally the impact of such carbon trading scheme despite the fact that GCL's production mainly takes place in Jiangsu.

3rd Plenary Meeting of the 18th Central Committee | Innovation | Green Development | Power Sector Reform

November 2013 witnessed the 3rd Plenary Meeting of the Communist Party's 18th Central Committee. The outcome of this meeting was a formulation of China's economic agenda for the next decade to come. In the run-up to this meeting the State Council's Think Tank the "Development Research Center" published a so-called "383 Plan" because its proposal covers three reform areas (market, government, corporations), eight key sectors and three packages. Next to the identified key sectors the 383 plan in particular stressed "to support indigenous innovation designed to achieve industrial upgrading and to pursue an overall innovation driven and green path of future social and economic development".

Upon concluding the 3rd Plenary Meeting of the 18th Central Committee an official document outlining 60 tasks which the party aims to accomplish by 2020 were released. Among others, by 2020 the central government plans to establish a market-oriented pricing system for electricity. Accordingly, the government shall give the market the right to set prices and shall only keep prices for public utilities and services under its control. To date, NDRC e.g. sets wholesale power prices and tariffs for residential and industrial usage.

In the context above one example highlighted in the 383 plan under the heading "to focus on abolishing the prevailing monopoly in the power sector, promoting competition and reshaping regulations, and accelerating basic industry sector reform" is e.g. the introduction of large-consumer direct purchase of electricity, to establish real competitive generation market, deepen the power system reform, and the "bidding" mechanism. The formation of a competitive electricity market of a bilateral contract market-oriented, supplemented by real-time competition. Promote price formation mechanism reform, tariff established by competition in the market or by the bilateral contract between the power generation enterprises and the large customers; transmission and distribution tariff are controlled by the government to form the independent price to reflect the efficiency of power grid enterprises on electricity transmission and distribution; residents and small businesses selling price is still subject to government guidance. The first step is to achieve the financial separation on transmission and distribution business, then to carry out a pilot based on the progressive realization of completely separation of transmission and distribution.

China Development Bank grants USD 32 Mio Loan for 20 MWp HCPV Project in Xinjiang Autonomous Region

Late November the China Development Bank (CDB) granted RMB 200 Mio loan (approx. USD 32 Mio) for a 20 MW High-Concentrating Photovoltaic (HCPV) project undertaken by the Chinese developer Focusic New Energy Holding Co., Ltd. in Hami / Xinjiang Autonomous Region.



Focusic is building the 20 MWp project in partnership with the French company Soitec which supplies the full dual-axis CPV systems. Already since summer 2013 one section of the CPV system is connected to the grid allowing Focusic to monitor the performance under operational conditions. According to the developers schedule 3 MWp (Phase 1) shall be connected by the end of 2013, whereas by the end of the next phase (Note: To date, Focusic has ordered 8.5 MWp of Soitec's CPV modules for which Focusic has secured the CDB financing) shall be grid-connected in 2014. China is home to approx. 500,000 square miles of high DNI territory.

Nov 2013 – Briefing-Paper – China Solar PV Development



AECEA – Internal Affairs

Upcoming Activities *****

AECEA will be on holiday from mid Dec to early Jan 2014.

Recent Activities *****

Bank of America / Merrill Lynch (BAML) commissioned AECEA, in order to advise Hong Kong (HK) and Singapore (SG) based institutional & private equity investors, all clients of BAML, on the recent China solar PV market developments. During the so-called “Strategic Access Road Show” on September 3-4 and October 29-30 in HK and SG respectively, close to 35 companies participated in either group or one-on-one meetings. Greatest interest were the anticipated impact of the new feed-in-tariff (FIT) support scheme for both, ground-mounted and industrial / commercial rooftop (distributed generation) systems effective since September 2013 in the near and longer-term. Furthermore, price developments in both up and downstream sector as well the anticipated industry consolidation.



Company Profile

Frank Haugwitz is an independent solar energy consultant based in Beijing since 2002. In his early years in China he was seconded by the German govt. and involved in a bilateral solar / PV energy technical cooperation program. Following this assignment he was responsible for the renewable energy component of the EU-China Energy & Environment Program until the fall of 2009. Since then he has been consulting foreign enterprises and international organizations on the development of renewable energies in general and solar / photovoltaic in particular in China. Since early 2010 he works for the organizer of Intersolar as their Head of Intersolar Conference Development.

From late 2009 until August 2012 he worked as a director in the Deutsche China Consult Co. Ltd. (HK) and in October 2012 he founded his company “Asia Europe Clean Energy (Solar) Advisory Co. Ltd. (AECEA). His services include working with individual clients to apply his extensive China photovoltaic energy-focused insights to their specific needs. Industry experience and in-depth analysis shall assist strategy development and corporate decision making. Focus is on the regulatory framework conditions, policy, as well market and business development. His advisory services provide objective and independent research.

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