May 2013 – Briefing-Paper – China Solar PV Development

2012 – China's Solar PV Installations – A Mystery?

Mid May, a representative of China's Renewable Energy Development Center (CRED) publicly described the communication of China's solar PV installation figures in 2012 as "chaotic", because until recently a number of central level governmental entities and affiliated institutions have reported installations figures which vary by a great degree.

Governmental Institution	Additionally Installed PV Power Generation Capacity in 2012	Cumulatively Installed PV Power Generation Capacity Dec 2012	Estimated 2013 Installations
National Energy Administration (NEA)	3.5 GW	7 GW	10 GW
State Electricity Regulatory Commission (SERC)	1.19 GW	3.5 GW	--
China Photovoltaic Industry Alliance (CPIA) // Ministry of Industry and Information Technology (MIIT)	4.5 GW	--	7-8 GW
Energy Research Institute (ERI)	3.5 GW	7 GW	--
Hydro China	5.04 GW	7.97 GW	--

The "mystery" is partly created by the fact that the respective govt. institutions apply different or individual counting regulations, i.e. depending on the type of systems (up to 10 kV or low-voltage systems 220 V / 380 V) the decision which system types are either being statistically counted or not at all is at the discretion of the individual institution.

To complete the "confusion" what remains unanswered is out of additionally installed PV power generation capacities in 2012 how much is actually connected to the grid and how many MW or even GW are still in the process to get connected. AECEA were commissioned to undertake a site-visit to Golmud "China's current Solar Eldorado" in the Province of Qinghai early April. According to a conversation with a representative of one of the so-called "Big 5 Local Power Utilities" out of their 30 MW ground-mounted PV power plant, back then only 10 MW were connected to the grid.

New Long-Term National Solar PV Target of 75 GW by 2020 ?

As of today, China's long-term solar PV target stipulated in official governmental documentations is calling for 50 GW (including 3 GW of CSP) of installed capacity by 2020. However, due to the current on-the-ground-dynamics in general and significantly reduced kWh generation cost in particular, apparently convinces the central government to deliberate an increase its national solar PV target to up to 75 GW by 2020.

China's Development of it's National Solar (PV/CSP) Targets in GW							
Document & Date of Publishing		Target 2010		Target 2015		Target 2020	
		PV	CSP	PV	CSP	PV	CSP
Mid- and Long-Term Renewable Energy Development Plan (2007/09)		0,3	--	--	--	1,8	--
11th Five-Year-Plan 2006-2010 (2008/03)		0,295	0,05	--	--	--	--
12th Five-Year-Plan 2011-2015	2011/03			5		--	--
	2011/04			10			
	2011/12			14	1	--	--
	2012/09			20	1	47	3
	2013/01				1	47	3
	2013/05			34	1	72*	3*

* AECEA assumes that the 3 GW of CSP remains unchanged even if the PV target shall be further increased.

2020/2030/2050 China Photovoltaic Development Roadmap

The China Renewable Energy Society has taken the lead among other involved Chinese institutions which have given the mandate from the central government to draft a "2020/2030/2050 China Photovoltaic Development Roadmap". The "Roadmap" was launched in January and shall be finalized by late 2013 or early 2014. On the contrary of its title, this roadmap will cover three types of solar applications (photovoltaic, low-mid temperature solarthermal, concentrating solar thermal) alike. The focus of this rather systematic approach will be less on quantifying the individual potential for deployment, but rather on framework conditions, supplementary regulations and mechanism designed to enable a sustainable deployment of solar applications in the near, mid and longer term.

2050 China National Renewable Energy Roadmap

The "China National Renewable Energy Center" (CNREC) has been commissioned by the central government to elaborate a "2050 China Renewable Energy Roadmap". Although the "roadmap" won't be finalized before the end of 2014, however first possible scenarios have been communicated.

Type	2015	2020	2030	2040	2050
Photovoltaic	35	50 (75)	750-900*	1400-1700*	2000-2500
Wind	100	200	--	--	1500-2000

Note: Values are cumulative and in GW | * are AECEA's estimates

In the context of the above, so far China has been working on for many years on assessing the potential of its Gobi desert area suitable to deploy solar PV on a truly "massive scale". However, given the fact of the poor correlation of high solar radiation in Western China and its load centers located throughout the Eastern provinces along China's coastline would add further significant strain on the already overstretched existing grid infrastructure, therefore the future deployment will be rather in the form of distributed solar PV systems accommodating China's continued urbanisation in the decades ahead.

China's Golden Sun Programme under Review

Early May, China's Ministry of Finance (MOF) issued an official notification requiring all provinces, municipalities directly under the central govt. and municipalities with independent planning authority to scrutinize the present status of subsidies awarded to so-called Golden Sun projects between 2009-2011. Accordingly, projects having completed construction, are grid connected, having passed final acceptance shall be cleared in terms of possible pending subsidy disbursements. In the event and projects shall have not have been finalized yet, or are in the process of being verified / to pass acceptance shall be cancelled and already disbursed subsidies shall be returned to MOF in due course, unless all types of proofs will be submitted by June 30, 2013. Projects facing "cancellation", however could apply for the forthcoming feed-in-tariff for distributed generation types of projects. According to unconfirmed sources apparently over 80% of these projects have not been completed on schedule and in excess of 100 projects are facing immediate cancellation, thus would be subject to return approx. RMB 10 bln (EUR 1.25 bln) to MOF.

Central and Western Regions – New Foreign Investment Guidelines will come into effect on June 10th

The National Development and Reform Commission (NDRC), China's most important economic planning agency and the Ministry of Commerce (MOC) jointly published revised investment guidelines for foreign invested companies on May 9, 2013. These new guidelines shall become effective on June 10, 2013 and will replace the previous version issued late Dec 2008. The new guidelines will offer a host of favourable policies and incentives designed to encourage foreign enterprises to invest across 22 provinces and regions. Overall, this policy aims to support the development of new competitive industrial infrastructures in Central and Western China. Against this background, in total 8 provinces and regions explicitly encourage foreign companies to invest into high-end equipment solar/PV manufacturing facilities. Among them the Province of Gansu announced that its incentive policy will cover both equipment manufacturing and solar power generation alike. At present, close to 3 GW of solar PV installations are either under construction have been built and or are already connected to the grid in Gansu.

State Council delegated approval authorities from central to provincial government entities

Mid May China's State Council published in total 133 items which either no longer require procedural approval at all from the corresponding central government entity or has been delegated to local authorities on the provincial level. The overall intention of the State Council is to streamline and decentralize, hence increase the efficiency of the government's administration. Primary beneficiaries will be companies which will be able to save time, thus reduce cost. Accordingly, out of 117 publicly announced items (pending law amendments and state secrets make up the remaining 16), the National Energy Administration (NEA) delegated 2 items, whereas the National Development and Reform Commission (NDRC) relinquished the most items (26) including investment for wind power plants to the local investment bureau.

By the end of 2015, the State Council aims to reduce up to 1/3 of approx. 1700 approval requirements. Due to the relatively "young" domestic solar market and the involvement of numerous central level administrations, at this stage, it remains to be seen when the entire approval authority for solar projects will be transferred to respective local levels. Taking the present overall situation into account AECEA anticipates that by 2016 when the 13th Five-Year-Plan (2016-2020) will come into effect such a decision will taken into consideration.

AECEA – Internal Affairs

Upcoming Activities **********

Intersolar Europe 2013 - Briefing Seminar: Doing solar PV business with and in China and Latin America
AECEA (Frank Haugwitz) and SPV Market Research (Paula Mints) will jointly organize a two hrs briefing seminar in Munich / Germany on Thursday June 20, 2013. Pls see the attached document for further information.

The Asian Development Bank (ADB) will host for the 8th time its annual "Asia Clean Energy Forum" in Manila from June 25-28, 2013. AECEA has been invited to be a panellist of the 5th Meeting of the "Asia Solar Energy Forum" on June 25th and to give a presentation on "China's Solar Energy PV Energy Policy Prospects and it's Domestic Market Impact until 2015" on June 27th.

Recent Activities **********

Bank of America / Merrill Lynch (BAML) commissioned AECEA, in order to advise Hong Kong based institutional & private equity investors, all clients of BAML, on the recent China solar PV market developments. During the so-called "China Energy & Clean Environment Corporate Day" on May 2nd close to 20 companies participated in either group or one-on-one meetings. Greatest interest were on the possible future design of the currently revised feed-in-tariff (FIT) support scheme for both, ground-mounted and industrial / commercial rooftop (distributed generation) systems and it's likely impact on the future domestic market development in the near term.

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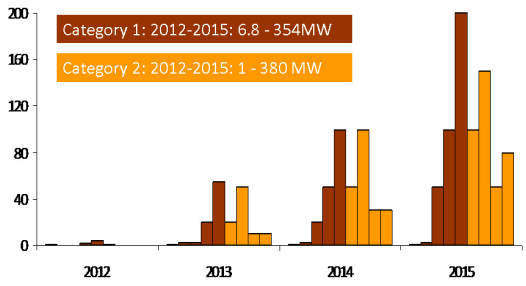
9. International Conference on Concentrator Photovoltaic Systems

The 9th International Conference on Concentrator Photovoltaic Systems (CPV-9) took place in Miyazaki, Japan from April 15-17, 2013. Frank Haugwitz attended this conference and presented "China's CPV Development & Trends during the 12th Five-Year-Plan (2011-2015)" on Monday, April 15th.



As of today, China's existing solar PV related support schemes do not explicitly favour CPV, i.e. no distinction is made in terms of deployed photovoltaic applications, thus CPV is enjoying the same feed-in-tariffs as e.g. wafer-based/thin-film systems. Until recently the majority of executed projects were hardly larger than a few kW, but due to a growing interest among local power utilities, driven by the desire to pursue greater technological diversification in their downstream sector undertakings among other reasons, systems under implementation today are up to 50 MW large, thus making them the largest in the world. In the mid-term China until 2015 is expected to become the largest market for CPV based projects. Established and new entrants in this market segment are in the process of forging partnerships with local project developers.

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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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→ Previous versions of the "Briefing Paper – China Solar PV Development" are available at http://www.aecea.com.de/downloads.html

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