

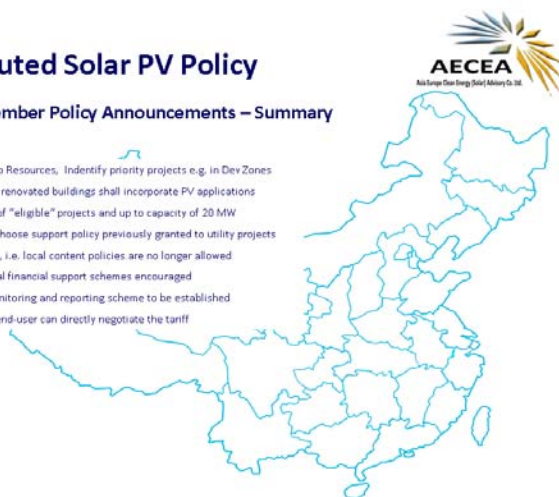
China Announces Distributed Solar PV Policy – Creates Clarity

Earlier in February, the National Energy Administration (NEA) announced that out of 14 GW to be installed this year at least 8 GW shall be made up by so-called “Distributed Solar PV” power generation projects. During the following months learning about the vast complexity and massive constraints associated with the execution of distributed solar PV projects made it clear that without further improving the regulatory landscape the

Distributed Solar PV Policy

2014 September Policy Announcements – Summary

- ✦ Conduct Rooftop Resources, Identify priority projects e.g. in Dev Zones
- ✦ Design of new / renovated buildings shall incorporate PV applications
- ✦ Broaden Scope of “eligible” projects and up to capacity of 20 MW
- ✦ Developer can choose support policy previously granted to utility projects
- ✦ Local Protection, i.e. local content policies are no longer allowed
- ✦ Establishing local financial support schemes encouraged
- ✦ Nationwide monitoring and reporting scheme to be established
- ✦ Developer and end-user can directly negotiate the tariff



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envisaged 10 x increase YoY (last year just 800 MW of distributed solar PV projects were realized) would have significantly fell short. Against this background, over the course of half a year NEA frequently met with representatives from both the industrial and financial sector, in order to learn first hand on how these barriers could be overcome.

A first adjustment of this years target were announced by the head of NEA in August during a conference in Jiaxing / Jiangsu that the govt is “now” aiming at 13 GW this year. Surprisingly, Mr Wu made no indication concerning the respective quota for utility-scale and distributed solar PV projects,

creating speculations whether e.g. the govt might adjust the respective quotas, i.e. increasing the share for utility-scale projects in particular, thus ensuring that at least the overall target of 13 GW will be achieved. Given China’s prevailing planning mentality, underperforming or failing to achieve a national target won’t let any govt institution look good.

On September 2nd, NEA finally published the long-awaited distributed solar PV policy update, seeking to address the most burning issues hampering the smooth execution of distributed PV projects. AECEA’s is of the opinion that the “new” policy is fairly comprehensive and sufficiently detailed allowing distributed projects to be developed at a much faster pace than previously. Relevant responsibilities have been identified and allocated accordingly. The emphasize of “quality” and the intended establishment of a nationwide monitoring and reporting system certainly adds pressure to developers and e.g. EPC service providers

to ensure that installed systems deliver a high performance on a long-term basis. NEA’s encouragement that all administrative levels shall implement further financial support policies will undoubtedly increase the financial viability and stimulate demand, whether it will prevent local govt from pursuing a local content requirement policy as being implemented in various jurisdiction remains to be seen. The latter offered local project financial support provided a fairly significant share of goods were locally procured. Overall, providing clarity supports a sustained market development, an all-around enforcement of the “new” policy is a different issue.

Although until the end of 2014 just four months are left, however the impact of “new” policy can already be seen. According to AECEA’s data, a growing share of projects designed to comply with distributed solar PV requirements stipulated in the policy announcement are being undertaken and will be realized before the end of this year. AECEA reiterates that China is on a good course to achieve it’s 2014 national solar PV target of at least 13-14 GW.

Distributed Solar PV Policy

2014 September Policy Announcements – Selected Eligible Project Types



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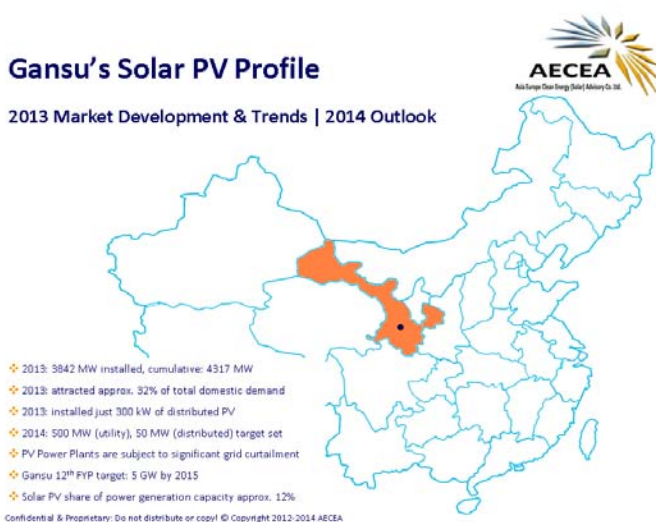
Gansu Province Solar PV Development – A Snapshot

Last year, China's western province Gansu was the most favoured destination for installing solar PV power generation capacities. According to statistics published by the National Energy Administration (NEA) in late April a staggering 3,84 GW were installed representing an approx. 800 % increase YoY and amounting to a cumulative installed capacity of 4,31 GW replacing neighbouring province Qinghai which hold the pole position since 2011. By the end of 2013, installed PV power plants represented approx. 12% of Gansu's total power generation capacity, ranking fourth after coal (46%), hydro (21%), and wind (20%). An installed 4,31 GW managed to contribute 15-16% of electricity which constitutes an increase of 510% YoY.

Northern Gansu endowed with solar irradiation levels among the best in the country, however power consumption is rather concentrated in Southern Gansu, around its provincial capital Lanzhou. Given the relatively long distance btw areas of power generation and consumption and a relatively developed grid infrastructure, it doesn't surprise that numerous PV power plants are subject to grid curtailment, which has been estimated to be in the range from mid single digit to double digit levels. February 2014, NEA set a 500

Gansu's Solar PV Profile

2013 Market Development & Trends | 2014 Outlook



MW (utility) and 50 MW (distributed) target for Gansu in 2014. Comparatively speaking, whether Gansu will slow down from 3,84 GW installed last year to just 550 MW this year remains to be seen, especially if in March/April one single county announced to have approved already 480 MW leaving just 20 MW to the rest of the entire province. AECEA is of the opinion that such ambitious "first-mover-action" won't deter other jurisdictions across Gansu from approving projects anyway.

According to Gansu's 12th Five-Year-Plan for Renewable Energy, by the end of 2015 Gansu shall be home to 5 GW of solar PV. State Grid Corporation of China (SGCC) has

undertaken efforts to keep the surging grid curtailment under control e.g. in 2013 approx. 10% of wind power was wasted, but two long-distance transmission lines were already built and more are planned to be constructed. AECEA estimates that it may take 2-3 years until the grid curtailment may have reached an acceptable level. In the meantime, Gansu's attractiveness may suffer, since the impact on project developer's cash flow and revenues deriving from the prevailing grid curtailment is certainly not something to be accepted so easily.

Widespread Quality Issues of PV Power Plants Gives Reason for National Concerns

China's current regulatory landscape results in the usual year-end-rush, e.g. Q4/2013 witnessed the construction of approx. 6.4 GW of PV power plants, representing almost 50% of total 2013 installations. To ensure that PV plants are grid connected by the end of the year, otherwise in the case of last year they were subject to a 10% FIT reduction, Western regions already experiencing the approaching winter in Oct, the constant pressure to reduce cost, among other reasons may have caused that during a just three months construction period quality were compromised.

Against this background, during a recent PV conference in China's capital a significant number of speakers expressed concern about the quality of installed PV power plants. According to non-verifiable sources out of last year's 13 GW of installations a significant share is already experiencing severe quality issues. A senior representative of NEA's RE Dept. underlined the importance of quality; otherwise the financial sector will keep reluctantly investing. He further stressed the urgency to apply a quality management and the establishment of an independent third party inspection, acceptance, and certification scheme.

During the same conference mentioned above one official speaker shared a few findings of their site investigations conducted earlier this year.

| Observed Quality Problem | Module Power Degradation 5-10% | Module Power Degradation above 10% | Module Power Degradation above 20% |
|--|--------------------------------|------------------------------------|------------------------------------|
| Percentage of in total 11 Utility-Scale Ground-Mounted PV Power Plants operating for one year so far | 51% | 30% | 8% |

Recently AECEA had a discussion with a representative of China’s State Grid Electric Power Solar Energy Research Center located in Jiangsu / Nanjing and learned that currently a significant number of national standards are under review and are expected to become effective in 2015/2016. Anticipating stricter standards / requirements designed to ensure high quality PV power plants, consequently the average system price is expected to increase. Overall, raising the quality bar of PV power plants, may help to convince and eventually assure in particular both domestic and international financial sector to grant greater financial support.

China’s aims at least at 100 GW of Solar PV by 2020

If the central government of China sets a national target, usually it won’t be subject to frequent changes during the course of the respective 5 Year-Plan period. However, the 12th Five-Year-Plan (12th FYP) covering the 2011 through 2015 period and the national solar PV target certainly proves the opposite. Initially NEA set a very moderate target of just 5 GW in early 2011, but due to internal and external factors today China aims at 35 GW by the end of 2015, a target according to AECEA most likely to be realized one year ahead of plan. Today, just a little bit more than one year until the 13th Five-Year-Plan (2016-2020) will come into effect, NEA is already contemplating about a possible solar PV target. In this context, first information has been made available and as of today NEA aims at least at 100 GW of solar PV power generation capacity by 2020. Recent developments expecting a greater share of installed distributed solar PV power will certainly play a significant role when finalizing the share between utility-scale and distributed PV power.

| | 12 th Five-Year-Plan Period (2011 – 2015) | | | | | Air Pollution Prevention Action Plan 2014 – 2017 | 13 th Five-Plan Period 2016 – 2020 (Draft) | AECEA Estimates until 2020 |
|---|--|------------|----------|-----------|----------|--|---|----------------------------|
| Time of Announcement | March 2011 | April 2011 | Dec 2011 | Sept 2012 | Jan 2013 | 2014/06 | 2014/08 | 2014/09 |
| GW | 5 | 10 | 14 | 20 | 35 | 70 | 100 | 135-150 |
| Share btw Distributed & Utility-Scale in GW | -- | -- | -- | -- | 20 + 15 | 35 + 35 | -- | 75 + 60 80 + 70 |

Looking beyond the 13th Five-Year-Plan (2016-2020) the NEA early 2013 commissioned the “China National Renewable Energy Center” (CNREC) to elaborate a “2050 China Renewable Energy Roadmap” anticipated to be finalized at some point before the end of 2014. First possible scenarios have been communicated.

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

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

In the years and decades ahead, the role of solar PV in China’s energy mix can just grow. AECEA expects that the “to be revised” RPS policy, once effective, will certainly among the key drivers. The International Energy Agency (IEA) in a webinar held on Sept 29, 2014 predicted that by 2050 China may have approx. 2100 GW of solar PV power generation capacity installed, corresponding to approx. 21% of the entire power generation mix.



AECEA – Internal Affairs

Upcoming Activities *****



Asian Development Bank

Organized by the Asian Development Bank, AECEA has been invited to speak during the upcoming 7th Asia Solar Energy Forum in Seoul, Korea from Oct 15-17, 2014.



AECEA will attend the upcoming Solar Power International in Las Vegas; Oct 20-24, 2014.



AECEA – Internal Affairs

Recent Activities *****



AECEA were invited to review a forthcoming China Renewable Energy related study undertaken by the International Renewable Energy Agency (IRENA).

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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