

China’s National Energy Administration released an updated RPS policy for the 13th Five-Year-Plan Period

China is home to a RPS policy since September 2007 and in the run-up to the announcement of the forthcoming 13th Five-Year-Plan (2016-2020) anticipation were high that China’s National Energy Administration (NEA) would make use of this “every-5-year-opportunity” to officially release an updated version of its existing Renewable Energy Portfolio Standard (RPS). On March 2nd, after more than 3.5 years of reviewing the NEA finally released its “Guidance of Non-Hydro Renewable Portfolio Standard” basically calling for a 9% target of non-hydro renewable energy share of total energy consumption by 2020. All utilities with a power generation capacity exceeding 5 GW are subject to the new RPS. The “updated” RPS clearly emphasize the guiding role of NEA, but throughout the doc stressed that the “responsibility for execution and achievement” is with the local provincial government. For instance, although the NEA will set the percentage

China’s Power Sector



National Renewable Energy Portfolio Standard (RPS) – Dev & Update

Updated RPS for the 2016-2020 Period (published 03/2016)	2015	2020
Grid Operators* (share of RE electricity excl. hydro)	1%	5%
Power Utilities** (share of RE power gen.-capacity excl. hydro)	4%	9%

- ◆ 09/2007: Mid- and Long-term RE Dev Plan announced setting targets of 3% and 8% for 2010 and 2020
- ◆ 05/2012: NEA announced that the 2007 RPS policy were under review, first details emerged
- ◆ 09/2014: First draft version of “update” submitted to State Council for consultation, early 2015 re-submitted
- ◆ 03/2015: Inner Mongolia and Hubei released revised provincial RPS Plans
- ◆ 03/2016: Update – Key Issues:

- ◆ Target: 9% share of non-hydro RE of total energy consumption by 2020
- ◆ Represents an approx. 17% CAGR for the 2015 through 2020 period
- ◆ Enforcement measures remains unclear
- ◆ No financial penalties for non-compliance stipulated
- ◆ North-Eastern & North-Western provinces subject to high curtailment rates today, are required to achieve the highest RE share



Note: * 2020 value not yet officially confirmed; ** * with capacities larger than 5 GW
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for each renewable energy source for each province, but does encourage the provincial government (incl. districts and cities) to aim at a higher renewable energy consumption target as allocated to them. The provincial government is expected to draft their own renewable energy development plan based on NEA’s guidance and once such local plans have received approval by NEA, the latter expects a strict implementation. Additionally, provinces shall elaborate a form of “reward mechanism” for local grid operator’s off-taking the locally generated renewable energy. Allowing utilities realizing their quotas NEA continues promoting the trading of “renewable energy green electricity certificates”, details have yet to be announced.

AECEA is of the opinion that the updated RPS policy underlines the central government’s commitment to further strengthen the role of renewable energies in the coming 5 year plan period. Principal driver is the 15% share target of non-fossil fuels in primary energy consumption by 2020, which was 12.2% in 2015 and shall reach 13% by the end of 2016.

Did a “draft version of the RPS” circulated in the fall of 2014 suggest that in particular Eastern Provinces shall play a leading role, today’s update rather requires provinces already subject to a high curtailment rate e.g. Gansu, Xinjiang, Inner Mongolia, Ningxia, Heilongjiang, Jilin and Liaoning to achieve the highest percentage of each 13%. Hence, it remains to be seen whether curtailment may even worsen in the short-term until to be built or already under construction long-distance ultra-high voltage (UHV) transmission lines will become operational. During the recent National People’s Congress (NPC) early March in Beijing, almost a dozen of provincial governments came forward with suggestions to construct new or additional UHV lines within their respective jurisdictions. One example is Shanxi Province which has started construction of 9 UHV’s and expects 4 to be operational by 2017, thus boosting their out-bound transmission capacity to close to 45 GW.

Surprisingly is the fact that the update does again not stipulate any clear measures on how to enforce the RPS policy and perhaps more important, if in case of non-compliance or non-fulfilment of a target what “financial” penalty the respective power/grid utility possibly may face. Moreover, at this stage it remains to be seen whether the local provincial government will indeed be capable in living up to its envisaged role in terms of facilitating and possibly realizing the RPS targets. As well in this context the equally crucial role of the local grid companies is not sufficiently elaborated in the updated policy announcement.

Against this backdrop, AECEA is cautiously optimistic and assumes that it may take one or two years until a measurable impact of the new RPS policy can be seen. Nevertheless, the new RPS will certainly drive demand for renewable energy power and all top five power utilities and two grid operators are expected to intensify their respective engagements.

China announced its “Renewable Energy Purchase Guarantee Policy”

On March 28th, China’s National Development and Reform Commission (NDRC) released framework details on how and under what conditions generated renewable energy shall be purchased or can be sold in future. Above all, NDRC’s motivation is that more, if not all, generated renewable energy shall be consumed and this policy aims to ensure that. Today, main constraints hampering an offtake of “all generated renewable power” are e.g. despite the existence of a clear dispatch priority formulated by NDRC/NEA, that in too many cases across the country energy from fossil fuels enjoy preference on a local level for various reasons, as well severe grid curtailment caused by insufficient grid infrastructure capacities, dispatch mismanagement, frequent grid maintenance, etc. Facing such constraints RE power producer not only incur significant financial losses, but to make matters worse an official compensation scheme was as well not really in place to date.

Regarding the new RE purchase policy, first of all, knowing that not all generated renewable power can be locally consumed, NDRC took the decision to separate generated renewable energy into two categories, a “Guaranteed Purchased Volume” for which the Energy Dept. of the State Council will determine the guaranteed utilization hours and a “Tradable Market Volume”. At present, the policy lacks on how high/low the guaranteed utilization hours will be which would have allowed developers to determine “a more or less fixed annual financial return”, as well a breakdown of these two categories is not fixed yet and might be still subject to negotiation. The new policy furthermore clearly identifies responsibilities if in the in the event and not all generated renewable energy power can be purchased, whether the local power utilities or local grid operator have to compensate the RE producer.

AECEA is of the opinion that the fact that the Energy Dept. of the State Council is officially tasked with the job to determine the guaranteed utilization hours clearly underlines the central govt commitment of the highest level, in particular in addressing the prevailing grid curtailment. Equally encouraging, power generated from distributed solar PV is not subject to the tradable market volume and all such power generated shall be fully purchased by local grid companies. Nevertheless, the “tradable market volume” gives reason for concern for utility-scale solar, because the trading of “excess power” could cause a race to the bottom line among the stakeholders involved, hence eventually leading to low(er) profit margins. Furthermore, how such “trading” will be scheduled is unclear. As well, in case a developer shall receive financial compensation regardless from the power utilities or grid operators, how quickly could such cases be settled and will the local government act in their favour? If such a settlement may take as long as the FIT payments, that could create another balance sheet challenge! Interesting will be as well the direct negotiation between developers and end consumer, i.e. will it be only possible if the end consumer is basically in the vicinity of the solar PV plant or could the end consumer be an entirely different location perhaps a 1000 km away? This is a question relevant to e.g. intl companies intending that their local manufacturer peers go “green or CO₂” free!

Overall the release of such a policy was long overdue. That fact that last year on average 12% and 20% of power generated from solar and wind respectively was curtailed and effectively wasted made the release more than ever necessary. AECEA expects once sufficient experience has been generated a further fine-tuned policy will follow.

The Emergence of solar PV Public-Private-Partnership (PPP) projects across China

November 2013 in the course of the Third Plenary Session of the 18th Central Committee of the Communist Party of China the central government stressed the decisive role market forces should play in the Chinese economy in future. One year later China’s State Council in issuing its “Guiding Opinion on Innovating Key Areas

China’s RE Purchase Guarantee Policy



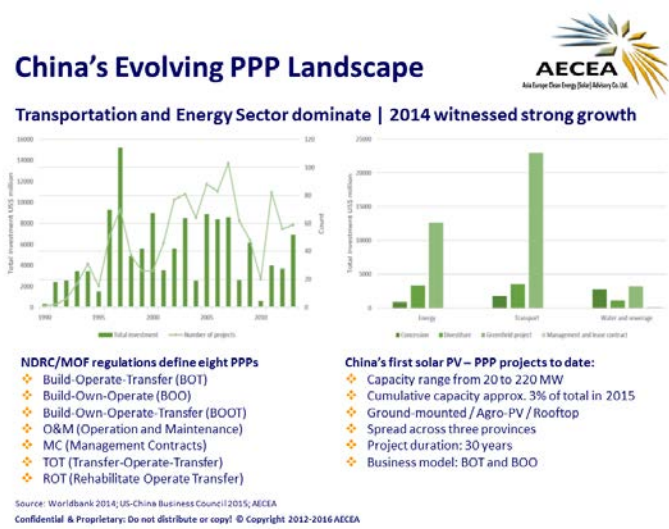
A Summary of Key Issues (based on NDRC’s announcement March 28, 2016)

- ◆ Based on that the Energy Department of the State Council will determine guaranteed utilization hours, generated renewable energy will be separated into;
 - ◆ **Guaranteed Purchased Volume:** fully purchased by grid companies at fixed benchmark RE tariffs
 - ◆ **Tradable Market Volume:** volume & tariff will be directly negotiated btw producer & end consumer
- ◆ If the “guaranteed purchased share” is already being taken up by other non-renewable energy producers, the applicable renewable energy on-grid tariff shall be applied as a benchmark in order to determine the compensation of the renewable energy producer
- ◆ RE producer are encouraged to participate in the trading of power exceeding the guaranteed purchased volume
- ◆ Regions/Provinces subject to grid curtailment; provisional purchase utilization hours will be determined under the consideration allowing the producer a reasonable rate of return
- ◆ If the RE producer faces curtailment, despite the setting of provisional purchase volumes, because the offtake of power from fossil fuels negatively impacts e.g. the grid capacities, traditional / fossil utilities have to compensate the RE power producer up to the amount the provisional purchase volume would have allowed; in case of grid maintenance, the grid company have to compensate the RE power producer

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of Investment and Financing Mechanism” emphasized the significance and importance of Public-Private-Partnership (PPP) as a means of mobilizing private capital. The following month, China’s National Development and Reform Commission (NDRC) officially released its “Guiding Opinions on Executing Public-Private-Partnership” projects which were backed-up by a batch of 30 mainly infrastructure projects (water, heating, sewer systems, garbage disposal, etc.) worth approx. USD 30 bln announced by China’s Ministry of Finance (MOF). Overall, the concept of PPP is not new in China and dates back to the late 80s when in Shenzhen the Shajiao B power plant, a BOT project, came into operation.

In general, the central government champions the PPP model as a form to invite private capital to participate in infrastructure building and public utility projects especially in the context of China’s rapid ongoing development which aims at a 60% urbanization rate by 2020. As well at a time when in particular local government debt has increased substantially. Sectors where private contribution is encouraged include environmental protection, agriculture, water, municipal infrastructure, transportation, energy, grids, telecommunications and public services. Both, domestic and foreign investors are allowed to take part in such projects. Today, all local-level Development and Reform Commissions must establish a PPP project registry and report monthly to NDRC on the progress of PPP projects in their areas. Currently, NDRC is working on a new “Law on Infrastructure and Public Utilities Franchises”, anticipated to be announced during 2016, expected to play a crucial role in further promoting PPP in future.



According to AECEA, to date, just a handful of solar PV – PPP projects were tendered and are not yet operational, however if these projects turn out to be successful, more will follow, in particular at a time the government prioritizes distributed generation. The fact that these few projects represent all project types, i.e. utility-scale ground mounted, Agro-PV, commercial

and industrial rooftop in the double-to-three-digit MW range, offers a good opportunity to serve as reference cases. Are nowadays the majority of projects throughout the country subject to grid curtailment, perhaps the involvement of public funding may ensure that such projects will enjoy preferential treatment, provided a potentially incurred financial loss is of local concern? As well, whether the involved private partners, regardless of domestic or foreign origin are considered equal to the involved local gov/public partners, i.e. will decisions taken in the spirit of an equal public-private partnership or could the local government dominate relevant negotiations?

AECEA is of the opinion that the recent emergence of solar PPP projects has the potential to change the domestic market landscape in the near to mid-term. If such projects will be successful the PPP model will certainly be replicated by more domestic developers.

AECEA – Internal Affairs

Upcoming Activities



AECEA will be on a two week trip to Myanmar (Burma) the second half of April.

AECEA will attend the forthcoming 10th SNEC PV Power Generation Conference & Exhibition scheduled to take place in Shanghai from May 23-25, 2016



March 2016 – Briefing-Paper – China Solar PV Development



AECEA – Internal Affairs

Recent Activities



Organized by the Asian Development Bank, AECEA gave a presentation on “Germany’s Solar PV Market Development” during the 9th Asia Solar Energy Forum in Beijing, China from March 21-23, 2016 which was attended by the Nur Bekri, head of China’s National Energy Administration (NEA) and vice-minister Liu Qi of China’s National Development and Reform Commission (NDRC).



Organized by the Sustainable Energy Development Authority (SEDA) of Malaysia, AECEA were invited to speak on “China’s Rethinking of Future Energy” and on “Solar PV Policy: What are the Lessons Learned in the case of China” during the 3rd International Sustainable Energy Summit held in Kuala Lumpur on April 5-6, 2016.

Global PV Market Report 2016-2020!

AECEA joined the “**PV Market Alliance**” an alliance formed in 2014 by well-known regional PV experts from the US, Europe, Japan, and Latin America. The PV Market Alliance was formed at the end of 2014 by the Becquerel Institute, AECEA, Creara, RTS and SPV Market Research to provide research on the global markets for photovoltaic, CSP and CPV technologies from the perspective of experts in these markets. The “PV Market Alliance” will publish an annual “**Global PV Outlook**” report on global PV markets. Next edition is due 06/2016!

The PV Market Report Alliance



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) in HK. 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>
