Where next for China's energy transition?

China | A late rally boosted China's domestic solar installations in 2019 to a better-than-expected 30.22GW. But Frank Haugwitz asks whether a renewed interest in locally available coal and an economic slowdown could conspire to slow recent momentum in China's energy transition, in which solar has played a central role

Ever since when on 31 May 2018, China's National Energy Administration (NEA) abruptly and without warning decided to stop approving any new solar PV project until further notice, it was fair to assume that its domestic market would take a different course of development during the remaining period of the ongoing 13th Five-Year Plan (2016-2020). Back then, China was just halfway through with its 13th Five-Year Plan, but already exceeding its official solar PV target of 105GW by 2020 by approximately 47% (154.55GW); this decision was therefore a necessity, particularly in light of mounting financial obligations. The latter provided the reason to fix a budget in advance, earmarked for specific projects. Hence, during spring 2019 a total budget of RMB3 billion (US$436 million), including RMB750 million for residential PV, was set for the full year.

The year 2019 was characterised by a number of PV-related policy announcements, notably 30 April the new feed-in tariffs (FiTs) effective 1 July, 20 May the first batch of so-called grid-parity projects and 10 July the officially approved projects eligible for feed-in tariffs (FiTs). In summary, that amounts to approximately 41GW (including 3.5GW of residential PV) of solar PV power generation capacity to be deployed during 2019, thus somewhat roughly matching the 44.26GW installed in 2018.

On January 19, 2020, China's National Energy Administration (NEA) officially released its 2019 national power industry statistics. Accordingly, by the end of December 2019 China's cumulative installed solar PV power generation capacity amounted to 204.68GW, representing an increase of 17.4% YoY. Detailed information has yet to be released giving a breakdown of how many GW of utility-scale and distributed PV were installed, but the 204.68GW implies that China managed to install 30.22 GW last year, thus witnessing a 31.7% year-on-year decrease compared to 2018's 44.26GW. A total of 30.22GW for the full year 2019 could mean that in December alone up to 12GW were deployed, i.e. possibly exceeding the 11.4 GW installed during the entire first half of 2019.

Credit: GCL-SI

China's solar installations were better than expected in 2019 but prospects beyond 2020 remain unclear

Admittedly, AECEA did not estimate that up to 12GW would be installed in December 2019, in light of fairly low installations numbers in October (approximately 1GW) and November (approximately 0.5GW). A year-end rally is nothing unusual, however up to 12GW in one single month still beats all estimates. One factor which might have contributed is that projects that received approval up to two or even three years ago were finally executed, now taking advantage of fairly competitive module or overall system prices.

If compared to 2017-2018 deployment, when annual installations dropped by 16.4% YoY, the 30.22GW achieved in the 2018-2019 period represents almost double that drop at 31.7%. Nevertheless, 30.22GW is far better than anticipated and, given such a tailwind, AECEA is currently revising its 2020 estimate. Early indications suggest that during 2020 the Chinese PV market will experience a rebounding possibly in the order of 15-25% YoY.

2020 market drivers

In December 2019, a somewhat "first draft of the 2020 solar PV policy" was made publicly available. Accordingly, in principle 2020 shall be a continuation of 2019, i.e. first priority is grid-parity, second is utility-scale + distributed PV, with the distinction that distributed has to bid too, third residential PV and the fourth priority will be poverty alleviation, but subject to a different budget. The budget earmarked for 2020 could be with RMB1.75 billion (including RMB500 million for residential PV), approximately 42% less compared to 2019. To date, no information has been released indicating the potential 2020 FiTs.

According to AECEA's opinion, a reduction of the overall budget takes into account cost reductions for both technological advancements and general price erosions. As well, in an attempt to ensure that a 31 December 2020 deadline won't be missed (again), the quarterly reduction of FiTs till the end of 1H/2021, after which project development rights will be revoked, could be increased to RMB0.02

or even higher. Alternatively, possibly a hard deadline will be introduced, i.e. approved projects will be automatically cancelled, if not grid connected by 31 December 2020. Unclear is whether a second batch of grid-parity projects will be considered necessary, because the bulk of grid-parity projects (approximately 8.7GW in 2020) are still subject to execution and it appears fair to assume that the 5.2GW foreseen for 2019 were not entirely deployed either. In this context, the introduction of a base price + floating mechanism for the coal benchmark price scheduled to become effective on 1 Jan 2020 could become a challenge for such projects, because the coal benchmark can fluctuate by -15% and +10% annually; the latter only from 2021 onwards, in order to avoid a price increase for in particular the C&I sector in the first year of its introduction. Nevertheless, a drop of the local coal benchmark price by 15% could consequently challenge the competitiveness of such grid-parity projects and eventually may lead to postponements or even cancellation of such projects planned for next year.

Alternatively, room for optimism comes from an announcement released late November 2019 by China's National Development and Reform Commission (NDRC) seeking comments regarding the "Supervisory Measures for Grid Companies to Fully Guarantee Purchase of Renewable Energy". Overall, the measures shall clarify the responsibilities for the grid companies, power companies and power dispatch centres to ensure the full purchase of renewable energy. The new measures explicitly state that grid companies shall be responsible for any unjustified economic losses they cause for renewable energy power generation companies and are liable for providing compensation.

Equally impactful could be China's official renewable energy obligation policy jointly announced by NDRC and NEA on 10 May 2019. Accordingly, each province is subject to a mandatory renewable energy electricity consumption quota set by the national government. Such a legally binding obligation shall accelerate the overall renewable energy development. Furthermore, surplus quota can be traded, and the system can integrate into future spot power markets. It also considers the interaction with voluntary green certificates and energy consumption controls, in order to make implementation more flexible. The official monitoring and assessment process will start in 2020 and each province is asked to report to NEA in February 2021. Depending on the local situation, it may trigger additional demand for solar PV in 2020, in order to ensure compliance.

A potential new growth area in 2020 for solar PV could be that e.g. 11 provinces that account for more than 40% of China's coal consumption will have to stay within absolute limits according to their "Blue Sky Defence Plans" for 2018-2020. Given the increased coal consumption since 2017, the proportion of coal used for power generation increased by 8% year on year in 2018, meeting these caps is likely to require strong measures.

An additional new growth area in 2020 could be "solar-storage-charging", where power generated by, in particular, distributed solar PV is first being stored and later used to charge electric vehicles (EVs). During 2019 numerous projects were put into operation across almost a dozen of provinces. In the context of China's EV target, the estimated electricity consumption by EVs is approximately 5TWh in 2019 and shall increase to 32TWh per year by 2025.

2021-2025 transitional prospects

At the time of writing, it is too early to say how China will continue supporting the local deployment of renewable energy technologies in the future. A first indication in writing will be provide by the upcoming 14th Five-Year Pan (2021-2025), which will define the country's economic, development and energy policies.

In the context of the latter, China's premier Li Keqiang, who chaired a meeting of the National Energy Commission (NEC) early October 2019, re-emphasised coal as China's primary source of energy security. Furthermore, he stressed that an enhanced domestic oil/gas exploration and utilisation shall play an equally crucial role in the years to come, while downplaying the importance of a rapid energy transition towards a low-carbon economy. In the course of a similar meeting in 2016, Li Keqiang stressed the need to increase the share of renewables in its energy mix and accelerated energy transition. However, during last October's meeting the future role of renewable energy was not mentioned at all.

The renewed focus on domestic fossil fuel consumption possibly derives from China's increasing dependence on energy imports and its overall economic slowdown. In 2018, China's oil consumption was 3.4 times the domestic output and its import dependence reached an all-time high of 72%. In comparison, its import gas dependence reached 45.3% and total electricity consumption reached 6.846TWh, representing an 8.5% increase YoY and the highest annual growth since 2012. The debate about potential energy targets for the upcoming 14th Five-Year Plan has been initiated. Corresponding five-year plans for different industrial sectors will be published in 2021-22 and shall include detailed targets for different energy sources, power generating capacity, share of coal in total energy, etc., amongst them the potential adoption of a CO2 emission cap for 2025.

Against this background, China's Ministry of Ecology and Environment (MEE) has included five priority tasks explicitly addressing climate change to the 14th Five-Year National Economic and Social Development Programme Outline and the 14th Five-Year Ecological Environmental Protection Plans. The five priority tasks are covering the following aspects:

1. Encourage local government and major industries to formulate clear targets, roadmaps and implementation plans for carbon emission peaking
2. Achieve stable and effective operation of the national carbon market
3. Improve formulation of climate change laws and regulations and strengthen the capacity of local authorities and official
4. Promote global climate governance under the principle of fairness, joint but differentiated responsibilities and respective capabilities, while continuing to provide support to developing countries
5. Place equal importance on climate mitigation and adaptation and update China's national adaptation strategy

In summary, China's apparent re-focus on locally available fossil fuels, notably coal, combined with an anticipated prolonged economic slowdown, thus the need to maintain its overall macro-economic competitiveness, has the potential that China's initiated energy transition during the 13th Five-Year Plan (2016-2020) period may lose its momentum in the not too distant future. ■

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