



EnergyTrend Market Intelligence, 2Q18 Global Photovoltaic Market Overview - Demand

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CH1. Overview

1-1 Global Market Trend

China, the U.S., India, Japan, and Australia will be the top five PV power markets worldwide in 2018. Dampened by the new policy unveiled on May 31, China's PV demand would plunge to 31.6 GW in 2018, which is a far cry from the 42.7 GW forecast in the previous quarter, driving down the global demands to 91.28 GW in the year, compared with 2017's 100 GW. As a result of the ensuing oversupply, the supply-chain prices had begun to plunge in June, which will whet demands in some mature markets.

In 2018, affected by the less-than-expected impact of Section 201, the demands of the U.S. market will score small growth compared to 2017. The demands in the India market will only grow slightly in both 2018 and 2019, due to the uncertainties resulting from various policies. In the Japanese market, the scale of PV demand will drop further in 2018, while demands in Australia will pick up significantly, thanks to the construction of massive large-scale ground-mounted projects which are expected to be completed by 2020.

In 2018, despite the expansions of most PV markets worldwide, the growth in these regions will not be enough to make up for the plunge in Chinese demands this year. The overall global demands in 2019, however, is expected to rebound to over 100 GW as the global markets continue to expand.

Figure 1-1.1 Market shares of PV power market, worldwide in 2018 and 2019

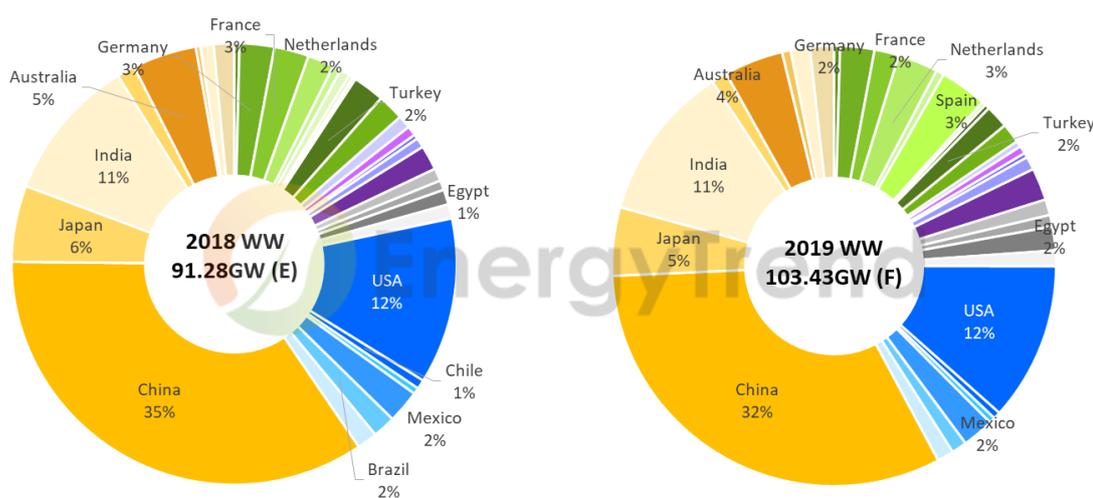
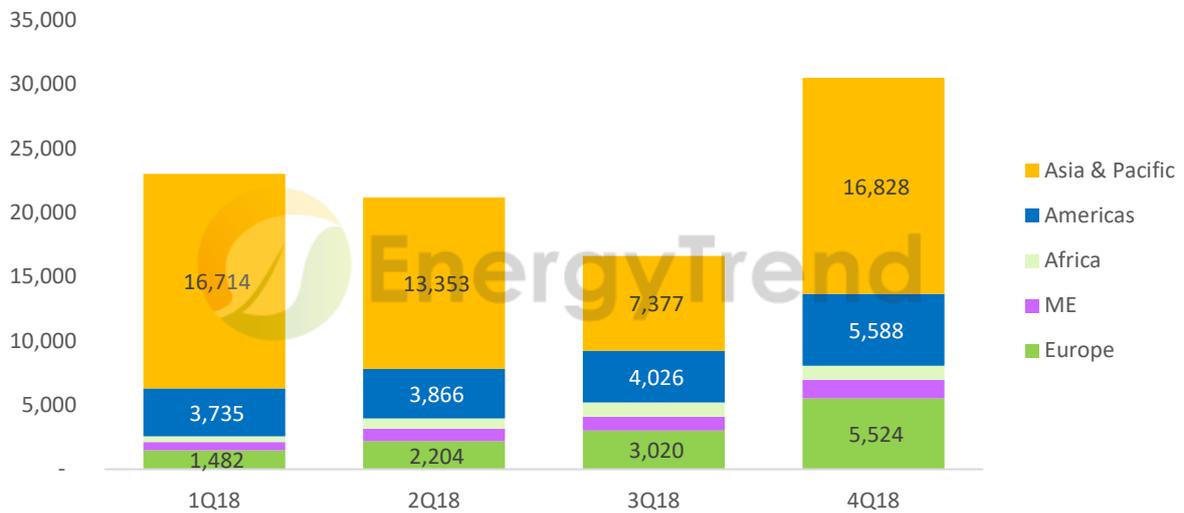


Figure 1-1.2 Grid-connection forecast by quarter in 2018 (MW)



The global share of China would plummet to 35% in 2018 and 32% in 2019, which is a far cry from the peak level of 53% in 2017. In general, the share of the Asia-Pacific market will be in decline in the coming years, when the demands of Europe, Latin America, North Africa, and the Middle East will be on the rise (figure 1-1.3). The global demand will be less than 100 GW in 2018 before rebounding to over the mark in the following years (figure 1-1.4).

Figure 1-1.3 2017~2019 Change in shares of regional markets 2017-2019

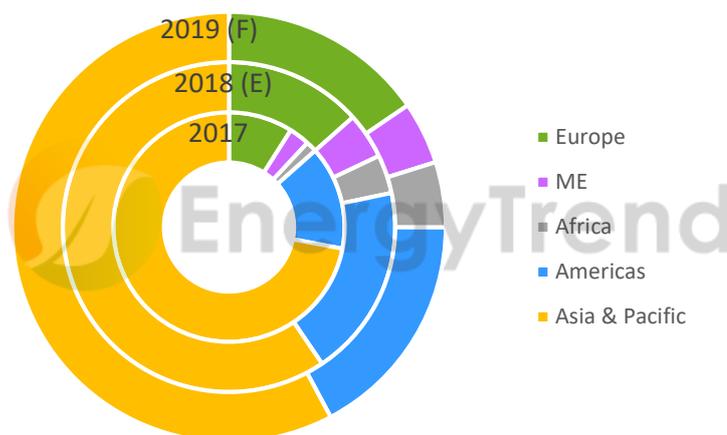
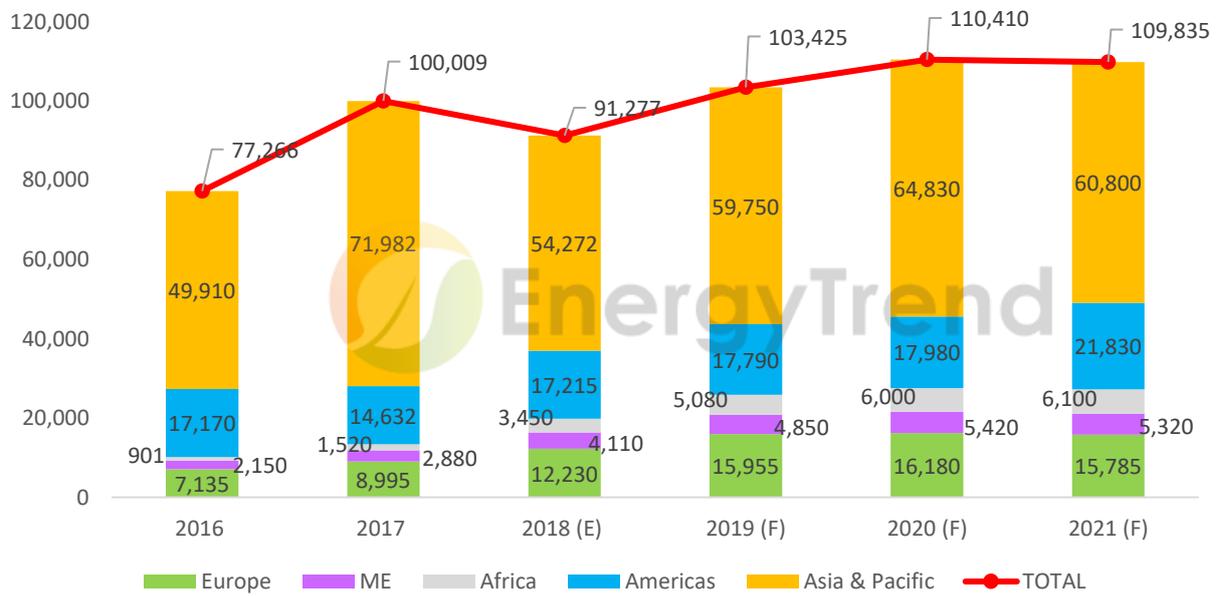


Figure 1-1.4 Trend of the global market (MW)



1-2 Industry Dynamics

The capacity expansions that have been proceeding in the polysilicon and wafer sectors so far in 2018 are the largest in scale compared with expansion efforts across the solar supply chain. Furthermore, the capacity expansions of these two upstream sectors are almost all located in China. The upstream suppliers are especially aggressive in building up their capacity for mono-Si products. Moreover, the expansion announcements made by polysilicon and wafer suppliers in 2Q18 were almost all related to raising the output of mono-Si products. The leading multi-si product supplier GCL has also stated that the company will take on an additional 20GW of production capacity for mono-Si ingots. These plans by the upstream suppliers thus indicate a shift in the direction of the industry's development. Besides capacity expansions, numerous upstream suppliers are also persuading their downstream clients to form strategic alliances by signing long-term contracts and agreements that allow switching of products.

Despite the ongoing capacity expansions in the upstream, the downstream demand for mono-Si cells is still not fully met by the current supply. Furthermore, China's new regulations that were announced on 31 May 2018 are not expected to dampen the demand momentum of the mono-Si segment. Hence, EnergyTrend anticipates that upstream suppliers will continue with their plans to increase their mono-Si capacity.

The competition between the mono-Si and the multi-Si camps with respect to production capacity, production volume, technology, and pricing has heated up significantly since 2Q18. The average conversion efficiency rate of mono-Si PERC cells that are on the market has now surpassed 21.3%, while the average conversion efficiency rate of multi-Si black silicon (BS) cells has also reached 19.2%. At present, mono-Si PERC products have the best overall C/P ratio. With polysilicon and wafer suppliers taking on additional capacity, the total worldwide shipments of mono-Si PERC cells are forecast to soar by 268% YoY in 2018.

China's new policy have introduced turmoil in the global solar market, though the market as a whole had been fairly sluggish before the Chinese government announced the policy changes. At present, the market is generally in a severe oversupply situation due to the capacity expansions in the upstream and mid-stream sectors. The glut is particularly worse for the multi-Si supply chain that has seen relatively weaker demand. The supply-driven pressure has repeatedly sent prices of polysilicon through the floor since this June, dragging down prices along the multi-Si supply chain. Mono-Si product suppliers have also been compelled to lower their prices in order to maintain reasonable price differences.

Additionally, companies across the supply chain starting from the polysilicon section have lowered their capacity utilization rates in order to control their inventory levels. For second- and third-tier companies and companies that are technologically behind, they are struggling to cope with the current wave of changes in the market. Some of them may be forced to exit from the competition in the near future. China's revised solar policies after 31 May will hasten the industry shakeout – leaving mostly companies that are technologically advanced, good at cost control, vertically integrated, and globally present.

China's revised solar policies have also prodded the entire industry to redouble efforts to achieve the goal of grid parity, even at the expense of their profit margins. On the international market, the lowest inquiry price for module orders has already fallen to US\$0.26/W, while the actual spot prices of mono-Si and multi-Si modules have come to around US\$0.39/W and US\$0.34/W, respectively. The trend of declining prices is squeezing the supply chain, but developers of utility-scale projects in the downstream do not regard this as bad news.

1-3 Global Trade War

There were no notable changes in the development of the global trade war during 2Q18. This June, the US government released its latest list of Chinese imports that would be subject to a 25% tariff in accordance with Section 301 of the Trade Act of 1974. Although PV cells are on this list, they are already barred from the US market due to the impositions of the anti-dumping and countervailing duties (AD/CVD) and the safeguard tariff under Section 201 of the Trade Act of 1974. The additional penalty in connection with Section 301 will have little effect on the industry.

India's Directorate General of Trade Remedies (DGTR) publicized the result of its investigation on solar imports this July. The report by DGTR on this matter recommends a 25% tariff on imported PV cells and modules for the first year, but this proposal is still pending official approval by the Indian government. For now, the trade barrier that has the most influence on the immediate development of the global market is the minimum import price (MIP) and anti-dumping (AD) measures implemented by the EU against Chinese solar imports. The flows of module imports into Europe and other regional markets in 4Q18 will depend on whether the MIP and AD measures imposed by the EU will expire as per original schedule (on 3 September 2018) or be extended for a longer period.

Table 1-3.1 Developments of Solar Trade Barriers Worldwide (Until June 2018)

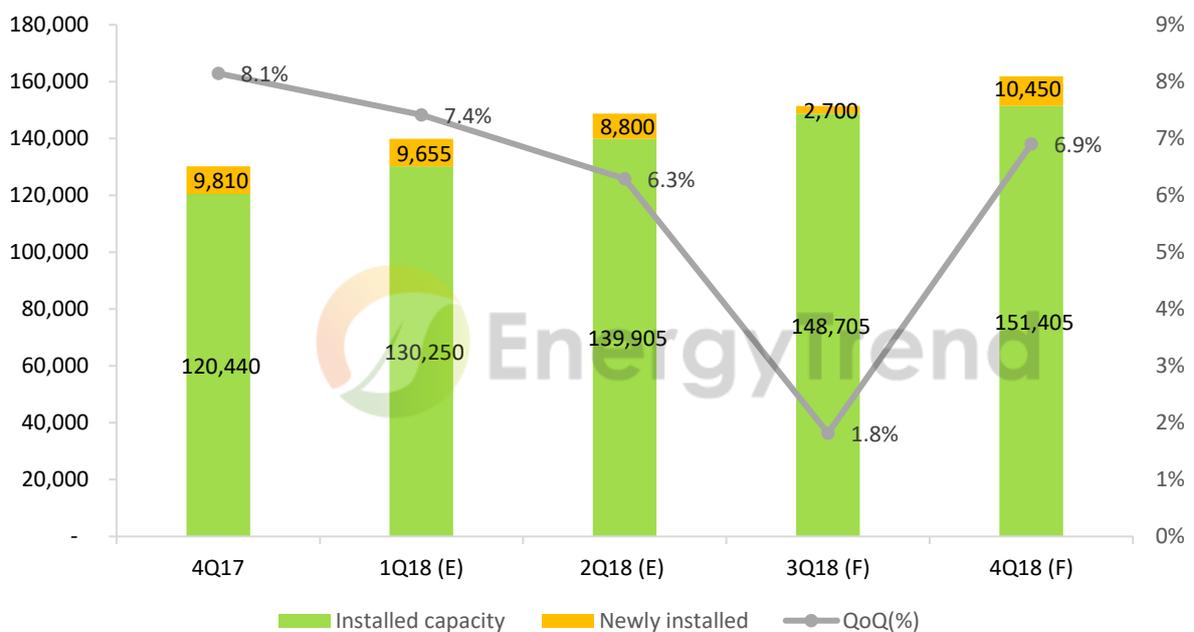
	India-Safeguard	Turkey AD	USA - 201	USA -AD/CVD	Europe AD/MIP
Cell Origin	Tariff	Tariff (module)	Tariff	Tariff	Measurements
China	15-25%	27%	30%	61.61%+	MIP
Taiwan	15-25%	0%	30%	1.07%	N/A
S. Korea	15-25%	0%	30%	0%	N/A
Malaysia	15-25%	0%	30%	0%	N/A
Vietnam	0%	0%	30%	0%	N/A
Thailand	0%	0%	30%	0%	N/A
Philippines	0%	0%	30%	0%	N/A
Indonesia	0%	0%	0%	0%	N/A
India	0%	0%	0%	0%	N/A
Turkey	0%	0%	0%	0%	N/A
US	15-25%	0%	0%	0%	N/A

CH2. Top Five Markets

2-1 China

Demands from the Chinese market have been lower than expected since early 2018. Although China's PV grid-connected installation volume reached 9.65 GW in 1Q18, the majority of this amount was from the distributed generation (DG) systems which had already been installed during 4Q17. In 2Q18, China's PV demand was similarly weak. With the official release of the Chinese government's "Notification on the PV industry for 2018" (referred to as the "May 31st Policy" from here on), which was jointly announced by the National Development and Reform Commission (NDRC), the Ministry of Finance, and National Energy Administration (NEA), the PV market's performance is expected to be further impacted in the near future. In light of the policy, EnergyTrend predicts that the demands from the Chinese market in 2018 will reach only 31.6 GW, of which 12.2 GW will come from distributed generation systems, and 8.75 GW will be from the common ground-mounted plants (this includes the amount for the PV poverty-alleviation projects transferred from the quota for ground-mounted plants in 2017). The Top Runner Program and PV poverty-alleviation projects are the two major sources of demands in 2H18, with the total quota scale hitting 47 GW for 2018-2020.

Figure 1-1.1 Trend of PV demands in China (MW)



1. "May 31st Policy" Analysis

Table 1-1.1 Policy summary

Table 1-1.2 Policy Scheme and Impact

Table 1-1.3 New FiT scheme of "May 31st Policy"

Figure 1-1.1 Forecast of quarterly grid-connected installation volumes for various PV power systems in China during 2018 (MW)

2. Market outlook

Figure 1-1.2 Forecast of quarterly grid-connected installation volumes for various PV power systems in China during 2019 (MW)

Figure 1-1.3 Forecast of quarterly grid-connected installation volumes for various PV power systems in China during 2020 (MW)

Figure 1-1.4 Forecast of new demands for various systems from 2018-2020 (MW)

Figure 1-1.5 Forecast of accumulated installation capacities by the end of 2020 (MW)

3. PV Poverty-alleviation projects

Figure 1-1.7 China's poverty-alleviation PV quotas, by batch (MW)

4. Top Runner Program

Figure 1-1.7 Distribution of winning bids for "Top Runner Program" projects in 2017 (6.5 GW in total)

Figure 1-1.8 Shares of winning bids for "Top Runner Program" projects in 2017 (8,000 MW in total)

Table 1-1.4 Results of winning bids for technology-based "Top Runner Program" projects in 2017



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