IHS Markit®

ESG Research
25 June 2020
Issue 09

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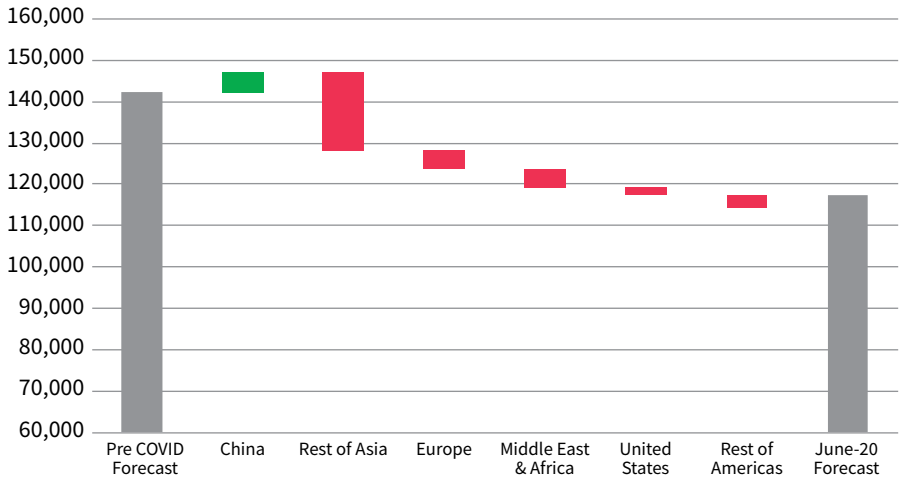
Climate and Sustainable Finance

The decline of solar PV installations in 2020 triggers oversupply and accelerates the consolidation of the Solar PV module manufacturing base

117 GW is the adjusted post-COVID 19 installation outlook for 2020.

Following the outbreak of COVID-19 in China in late 2019, solar manufacturing was severely disrupted in Q1 2020 as the Chinese national holiday was extended and restrictions were placed on movement. This reduced workforces, cut the supply of critical components for PV modules such as cells, connectors, or glass, and made it almost impossible to ship completed products due to the closure or partial closure of transport routes, ports, etc. As restrictions

Global PV installations in 2020 – Changes to forecast by region (MW)



Notes: IHS Markit PV installations forecast from April 2020, compared with forecast from December 2019.
Source: IHS Markit

gradually eased, manufacturing in China slowly resumed from late February, and has reached the end of the second quarter with almost full recovered capacity.

Throughout March, as the COVID-19 pandemic quickly spread around the world, disruption to supply has quickly turned to an unprecedented stall in global demand, switching the industry almost overnight from a sellers' market to a buyer's markets. Tight restrictions on people movement were quickly put in place by Governments in almost every major solar market in the world to curb the spread of the disease, making increasingly challenging to complete installations. In most markets, large projects originally planned for completion in H1 2020 have been impacted and delayed in some way, and roof-top installations will be disrupted in the second half of the year due to changes in the macro-economic conditions. The planning and kicking-off of new projects in H2 2020 will be impacted since the economics and business model of utility and commercial and industrial (C&I) projects need to be reassessed in the new Post-COVID 19 environment.

IHS Markit new solar PV outlook published in June 19th 2020 forecasts 117 GW in 2020, a 7% Y-o-Y decline from 2019 global installations. Our most-likely scenario assumed that restrictions will be slowly lifted throughout Q2 2020 and Q3 2020. IHS Markit predicts activity will return to the market in the second half of the year but gradually depending on segments and countries. Some markets may benefit from renewables being featured in the stimulus packages that will be required to help economies recover, but the general financial environment will impact heavily on demand for all types of PV systems. The hardest hit regions will be India, Southern Europe, and Rest of Asia Pacific given that they were some of the largest regions for solar deployment in recent years.

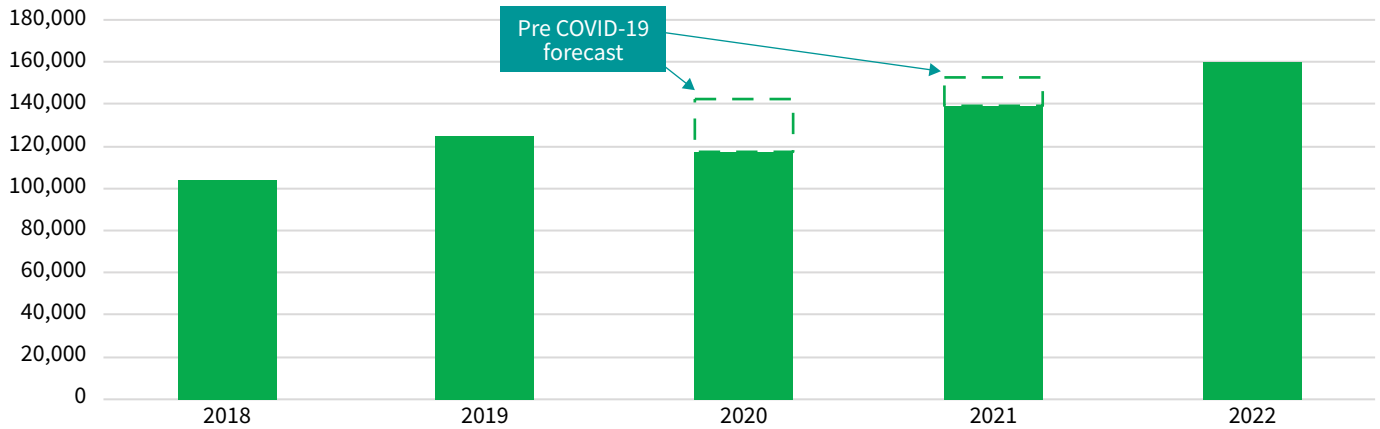
In great contrast to the rest of the world, IHS Markit is increasing its forecast for PV installations in China in 2020 to 45 GW - 5GW higher than the general market expectation. In this exceptional environment, it is assumed that a rapid recovery of demand in H2 2020 will be aided by Government support in order to protect its domestic manufacturing and installation base. If this is the case, China will once again account for close to 40% of global installations in 2020, as it did each year between 2016 and 2018. The United States will also have a strong installation year in 2020 since it has not seen its utility-scale PV projects impacted at a larger scale by Covid-19.

Implications of the new 2020 outlook:

1. PV module supply chain to see major oversupply in 2020

The solar manufacturing industry had been preparing for a record year in demand, with major capacity expansions announced to be ramped up in the second half, particularly at the wafer and cell levels. The updated 2020 solar installation forecast, reflecting the impact of the COVID-19 outbreak, has instantly positioned the module supply chain in an overcapacity situation. After a decade of solar PV installations growing at double-digit rates each year, IHS Markit's new outlook means that solar will decline for the first time this year.

Global PV installation forecast (MW) 2018-2022



Notes: IHS Markit PV installations forecast from April 2020, compared with forecast from December 2019.
Source: IHS Markit

Installations are projected to drop 7% Y-o-Y, but global module manufacturing capacity will be 15% higher than it was that year. The three major immediate consequences of oversupply in the second half of the year will be (i) delay of some capacity expansion plans until 2021, (ii) idling of older capacity, mostly multicrystalline, due to low demand for this technology, and (iii) significant component price declines.

2.Solar PV module manufacturing base accelerates its consolidation in 2020

In 2019, global PV module shipments grew by 30% and reached 138 GW . The share of the top 20 players continued to increase, reaching 71% of total shipments and continuing the trend of consolidation throughout the supply chain seen throughout the last decade. This indicates that the total volume shipped by the top 20 players has increased more than nine times since 2010.

Over the past decade, the top player rankings (by shipment volume) have changed significantly with Chinese module manufacturers becoming dominant among the top ten suppliers and with Japanese and North American companies moving away from the top positions. Despite dominance by Chinese manufacturers, there has also been significant shifts within the top companies. Trina Solar is the only company that has remained in the top five throughout the last decade, with JinkoSolar, JA Solar, LONGi, and Canadian Solar holding the rest of the top positions in 2019.

Top 20 module players are expected to gain market share again this year since Chinese tier-1 manufacturers will continue to account for the vast majority of capacity expansions in 2020, and the overcapacity will mostly affect smaller tier-2 players, higher-cost manufactures, and multicrystalline producers.

At the end of May 2020, China's Ministry of Industry and Information Technology (MIIT) released the draft document for new PV industry manufacturing standards. This new 2020 draft differs greatly from the preceding document dated 2018. If approved, it will set very strict standards for the solar module supply chain and will speed up concentration within the solar supply chain in China.

2019 top 20 module players by shipments (in alphabetical order)

- Astronergy
- Canadian Solar
- Eging PV
- First Solar
- GCL SI
- Hanwha Q.Cells
- JA Solar
- Jinko Solar
- Kyocera
- LG
- LONGi
- Panasonic
- REC Solar
- Risen
- Solar Frontier
- SunPower
- Suntech
- TaleSun
- Trina Solar
- Yingli Green Energy

Information contained in this graphic is contained in the IHS Markit Solar PV Module Service

Shipment record

Global solar PV module shipments grew by **30%** to reach **138 GW** in 2019.

Top 5 demand regions

- China mainland
- Europe
- United States
- India
- Japan

Concentration

Shipments from Top 20 module players increased **9 times** in the past decade.

China wins shares

- Local supply chain
- Large domestic market
- Scale & new capacity
- Technology and R&D

Top ten PV module manufacturers by annual shipments

2010	2019
Suntech Power	Jinko Solar
First Solar	JA Solar
Sharp Solar	Trina Solar
Yingli	LONGi
Trina Solar	Canadian Solar
Canadian Solar	Hanwha Q-Cells
Hanwha Q CELLS	Risen Energy
Kyocera	First Solar
SunPower	Astronergy
SolarWorld	Talesun

3.Installation of new manufacturing capacity outside of mainland China

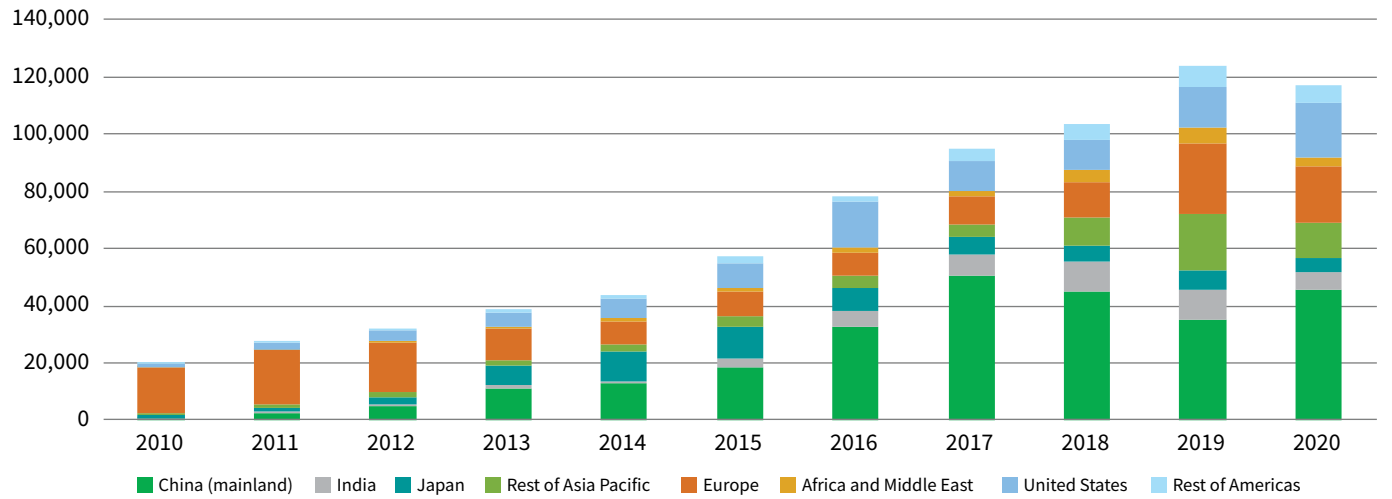
There is an ongoing debate about the likely emergence of new political and economic measures in the post-COVID-19 world aimed at encouraging the localization of manufacturing, that could trigger the growth of capacity expansions outside of mainland China to reduce the current over-reliance on this region. Although it is too early to tell if some additional trade barriers, protectionist measures, or local incentives might increase solar manufacturing attractiveness outside of mainland China in regions like Europe, IHS Markit analysis underscores that based on current capacity and announcements, mainland China will continue consolidating its dominance across the entire module supply chain in 2020 concentrating 70% of total module manufacturing capacity and even higher for upstream nodes (i.e. polysilicon, wafers). Southeast Asia and India are the only regions with a sizeable projection of module capacity expansion, but they still relatively modest in comparison to China mainland figures.

Conclusion: Outlook for Solar PV beyond 2020

2020 will be a critical year that will reshape the Solar PV module manufacturing landscape. Many trends that had already been taking place will be accelerated, with a different collection of companies and preferred technologies emerging after the pandemic has eased.

Beyond the short-term disruption that solar will face in the remainder of 2020, the broader question is whether there will be a fundamental change to the outlook for solar worldwide under a new economic scenario with low-priced conventional resources. Our view is that, after this major short-term disruption, installation growth will resume from 2021 to continue the growth trajectory that solar PV has seen in the last decade and there will be a recovery of utilization rates in 2021 across the entire module supply chain. The market is predicted to rebound strongly in 2021 growing by 20%. However, this is still nearly 10% lower than what had been forecast prior to the COVID-19 pandemic.

Global annual PV installations by region - June 2020 forecast (MW)



Source: IHS Markit

It is true that the world has changed dramatically within a very short period. The solar industry, like so many others, has been faced with a number of immediate challenges that have caused huge disruption to both supply and demand, and led to an abrupt contraction of the industry.

However, many of the fundamental benefits of solar remain. It provides a low-carbon, reliable, and local source of electricity with no reliance on global fuel supply, with stable, predictable, and low maintenance costs in comparison with conventional power generation. These benefits will arguably be even more relevant post COVID-19 than they were before. In this vein, IHS Markit still projects solar PV to be the most installed technology for new power generation capacity added from now until 2050.

Dr. Edurne Zoco is an executive director for the Clean Technology & Renewables team at IHS Markit, leading the group's research activities across renewables, batteries, and energy storage.

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Dr. Zoco provides experience, analysis, and actionable insight to our customers on the solar PV supply chain and the development of global demand for PV and its role in the wider energy transition. She contributes to a broad range of deliverables across the research team, including both subscription products and custom research and consulting projects. Dr. Zoco has been involved in the solar industry for over a decade and has presented at leading industry events and conferences since 2007. Prior to joining IHS Markit, she was employed by Trina Solar, a leading PV manufacturer where she held global positions within corporate and strategic marketing. She holds a Ph.D. in Political Science from the University of Notre Dame, United States. She speaks English, French, Spanish, and Italian.

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