



## **"Principales Retos y Oportunidades Mercado Colombiano"**

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# Leadership

## World's leading capacity of monocrystalline solar products

World's record for **P-Type monocrystalline** cell and module efficiency. World's largest scale in monocrystalline silicon wafers, monocrystalline modules and bifacial modules deliveries. World's healthiest solar company in financial strength, according to the latest BloombergNEF report. LONGi demonstrates its leadership in the PV industry in energy transformation. LONGi's products fulfilled **15% of new energy installations** in the world each year, and is the **world's largest supplier of power generation equipment in the PV sector**.



40%

Total capacity of monocrystalline silicon wafers, ranked No. 1 worldwide in 2018



7.1GW

Total shipment of monocrystalline cell and modules, ranked No. 1 worldwide in 2018



3.0GW +

Total shipment of bifacial modules, ranked No. 1 worldwide by December 2019



**BloombergNEF**

Altman-Z Score 3.60, highest of all manufacturers  
(Bloomberg NEF 4Q-2019 PV Outlook,)



**Photon**  
CONSULTING

No. 1 in Financial Health Index for successive quarters



**PVTECH**

AA Rating in the new PV ModuleTech Bankability  
(AA is currently the highest rating)

# Leadership

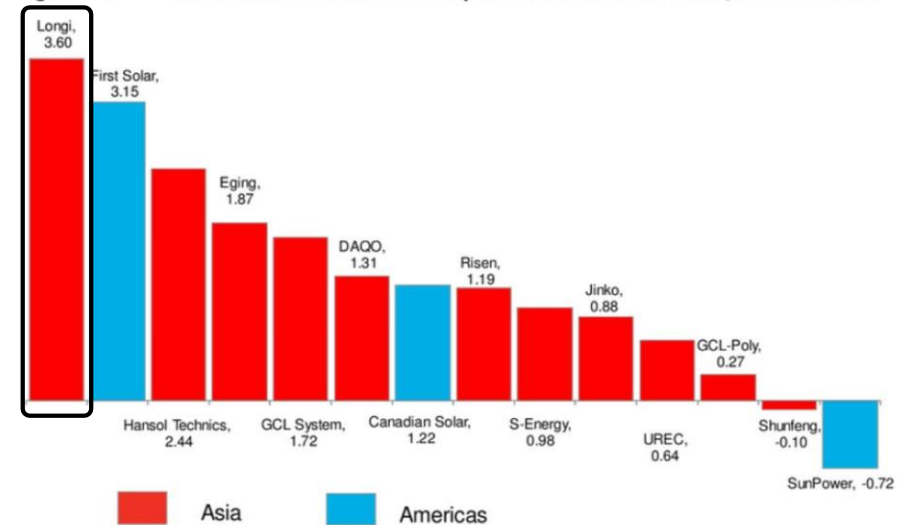
## Industry leading financial health

Adhering to the philosophy of **stable operation** and **sustainable development**, LONGi has maintained a low asset-liability ratio through the years. The strong return on asset, **good profitability** and **proven bankability** has been validated and recognized by industry authorities.

Table 3: BloombergNEF Tier 1 module maker list as of 4Q 2019

Firm/ brand	Annual module capacity, MW/year	Firm/ brand	Annual module capacity, MW/year
Jinko*	16,000	SunPower/ Maxeon*	2,400
Longi*	15,000	Sumec/ Phono Solar	2,000
Hanwha Q-Cells*	10,700	Jinneng/ Jinergy	2,000
JA Solar*	10,500	Waaree	2,000
Canadian Solar	9,400	REC Group*	1,800
Risen Energy	9,100	HT-SAAE*	1,500
Trina Solar*	8,000	Adani/Mundra*	1,500
GCL Systems*	7,200	Vietnam Sunergy (VSUN Solar)	1,500
First Solar*	6,200	Vikram Solar*	1,100
Talesun	5,800	Jolywood	1,100
Seraphim*	5,000	Hengdian DMEGC	1,000
Chint/Astronergy*	4,200	Boviet*	1,000
Wuxi Suntech*	3,900	S-Energy	530
Renesola	3,650	Recom	500
ZNShine*	3,500	Hansol Technics	480
Akcome	2,600	Shinsung	300
Eging	2,600	Hyundai	600
LG Electronics*	2,500	Sharp	210
BYD	2,400	Win Win/ Winalco	200
		<b>Total</b>	<b>149,970</b>

Figure 14: Altman-Z scores of selected quoted solar manufacturers, 2Q or 3Q 2019



Source: BloombergNEF

# Hi-MO 4

## Highest power, lowest LCOE

LONGi Hi-MO 4 series products are monocrystalline bifacial modules using the new **M6 (166mm) silicon wafer** that delivers the highest power in the modules. LONGi's advanced R&D technology led the upgrade of silicon wafer size from M2 to M6, and ushers in the era of the 166mm standard. LONGi M6 silicon wafer technology enhances the power of the modules, with front side power up to **450W**. The results are BOS savings and the lowest LCOE for the photovoltaic project.

### Leading the era of M6 standard

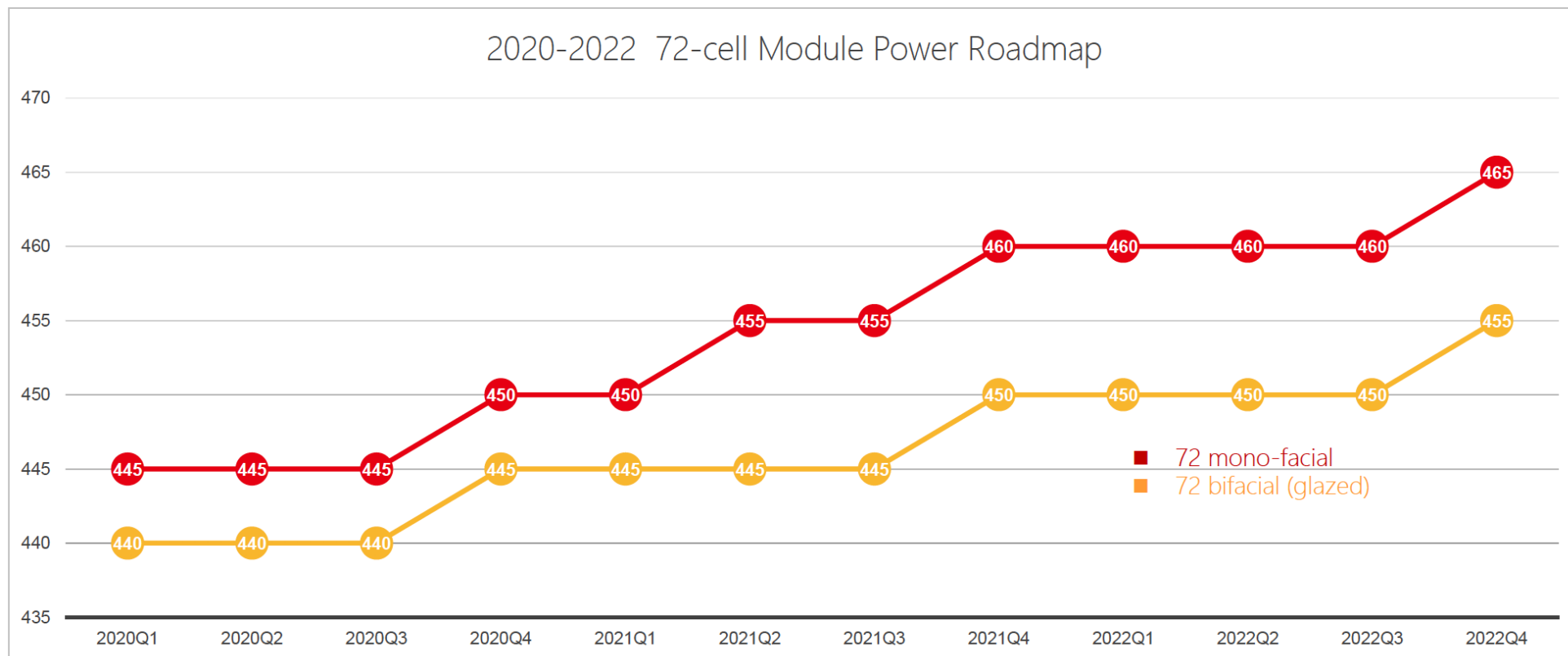
- Backside power generation gain
- Good electrical performance under shaded conditions
- Resistant to hot spots
- Adapt to high temperature and high radiation environments



*Hi-MO 4 is available in bifacial and monofacial (Hi-MO 4m) variants*



# Power Roadmap



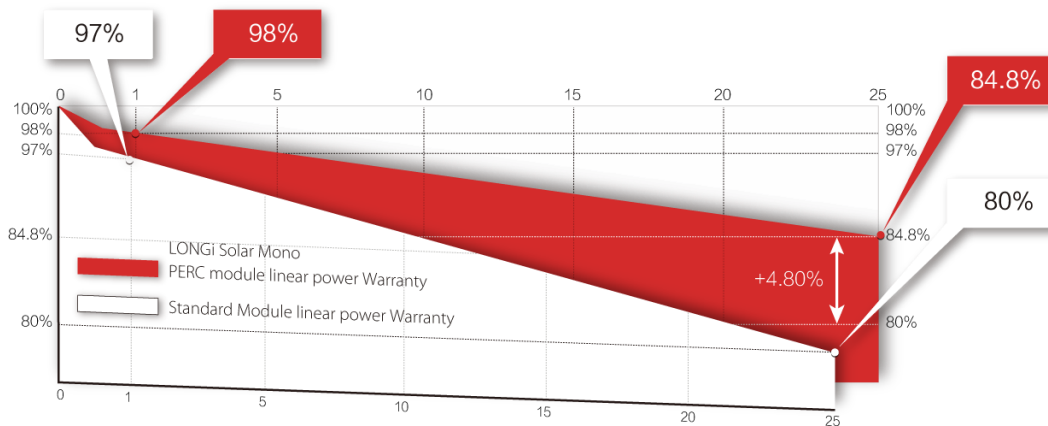
\*\* Upcoming 500W module in Q2 2020.

# Quality

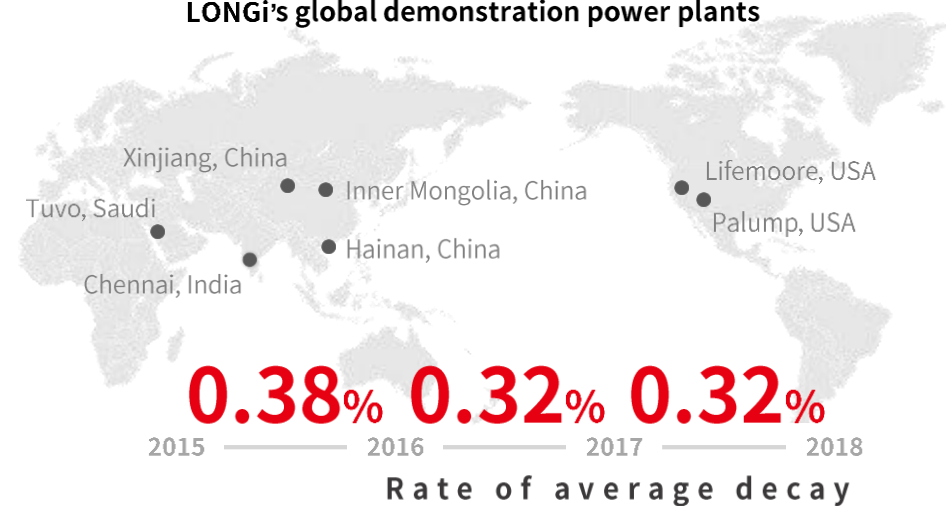
## Proven Value

**High power generation** and **excellent reliability** throughout the product life cycle are fundamental to LONGi's products. From silicon wafer technology with lowest degradation to module design technology that can resist the harshest environments, LONGi tests product quality rigorously and validate them independently. LONGi works with third-party organizations, set up demonstration power stations around the world and continuously tracks the performance of every product in their lifecycle.

LONGi offers a first-year power warranty of  $\geq 98\%$  for PV modules



LONGi's global demonstration power plants





# Quality

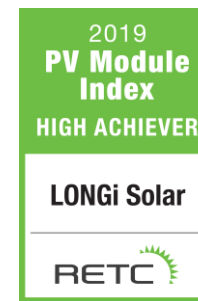
## Proven Value

In addition to standard tests, LONGi's photovoltaic products demonstrated **excellent performance** in rigorous stress tests conducted by independent third parties.



Ranked first in TÜV Rheinland PV module power generation simulation for two consecutive years 2016, 2017

First place in TÜV Rheinland PV energy simulation in the Monocrystalline group in 2018



RETC 2019 High Achievement Manufacturers



First rank in empirical power generation in PV Magazine outdoor power generation evaluation



Highest score in Module manufacturing technology (2019, PV-TECH)

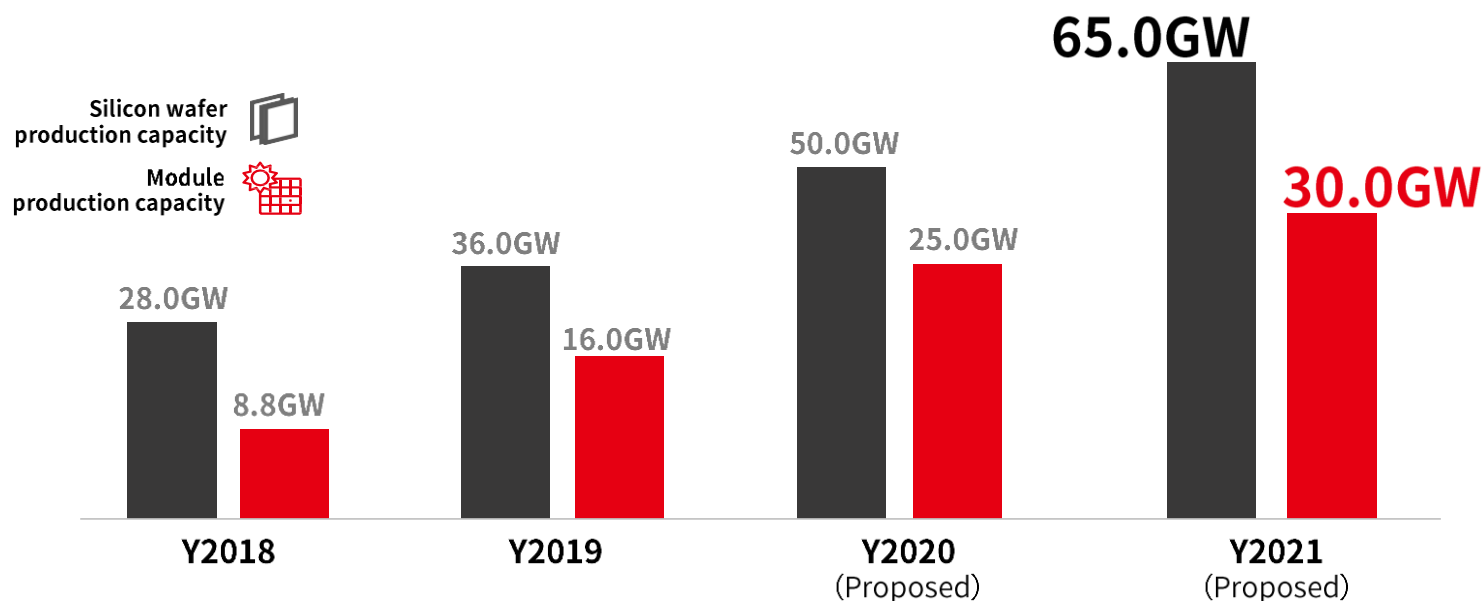


Top Performers for All extended reliability tests

# The Future of LONGi

## Expansion to meet the needs of energy reform

Solar power has become the largest new source of electricity installed each year since grid parity is achieved in many regions. **The trend is accelerating.** As the pace of transition from fossil fuels to electricity increases, the world's demand for electric energy is also undergoing a new round of transformation. In order to meet this strong, continuous demand brought by the energy transformation, LONGi has made **an ambitious capacity expansion plan**, adhering to the business philosophy of "**leading, expanding production with advanced technology**", where every new production capacity is a new upgrade of product technology.



*\*According to the current projection, the production capacity of silicon wafers will be reached one year ahead of schedule, achieving 65GW by the end of 2020.*



# Main Tendencies PV Modules

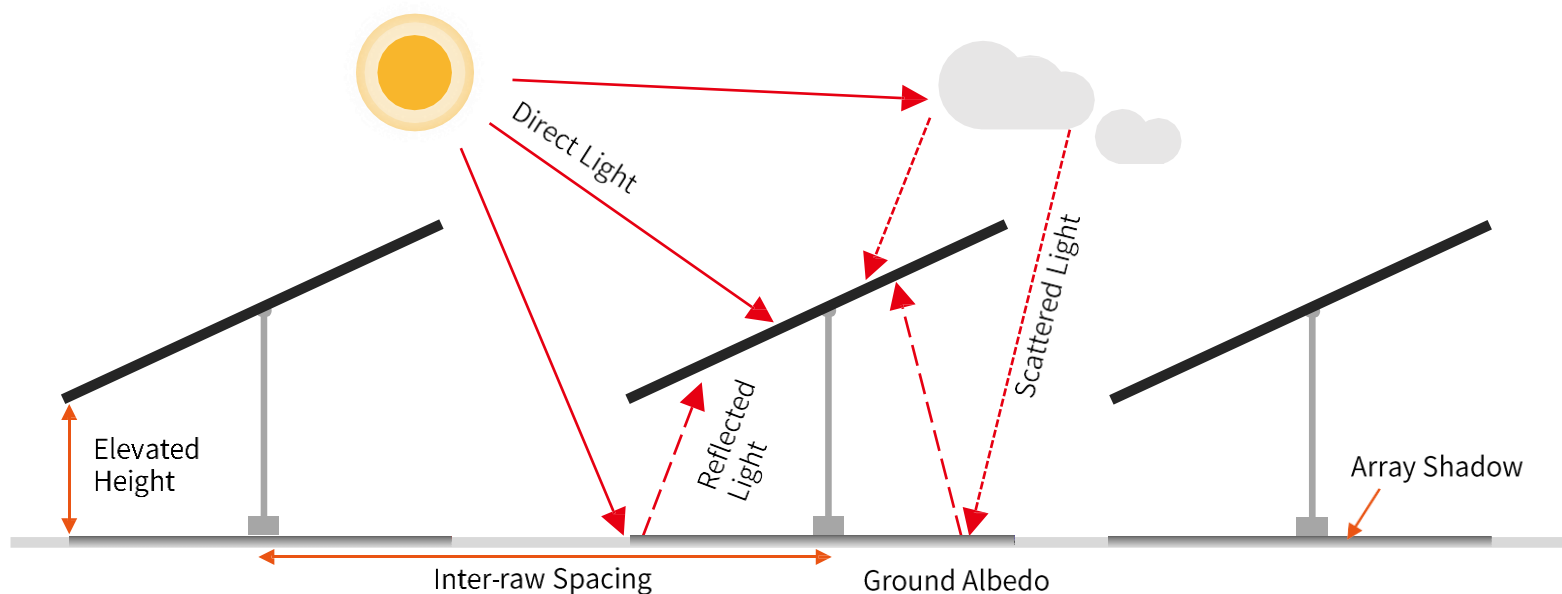
- Higher power modules
- Bifacial modules
- Wafer / Cell Size



# Bifacial Technology for Hi-MO series

No. 1 in bifacial modules worldwide shipments

The highest cost-performance ratio of bifacial modules is achieved with **P-type mono PERC technology** of which LONGi has led in large-scale commercialization.



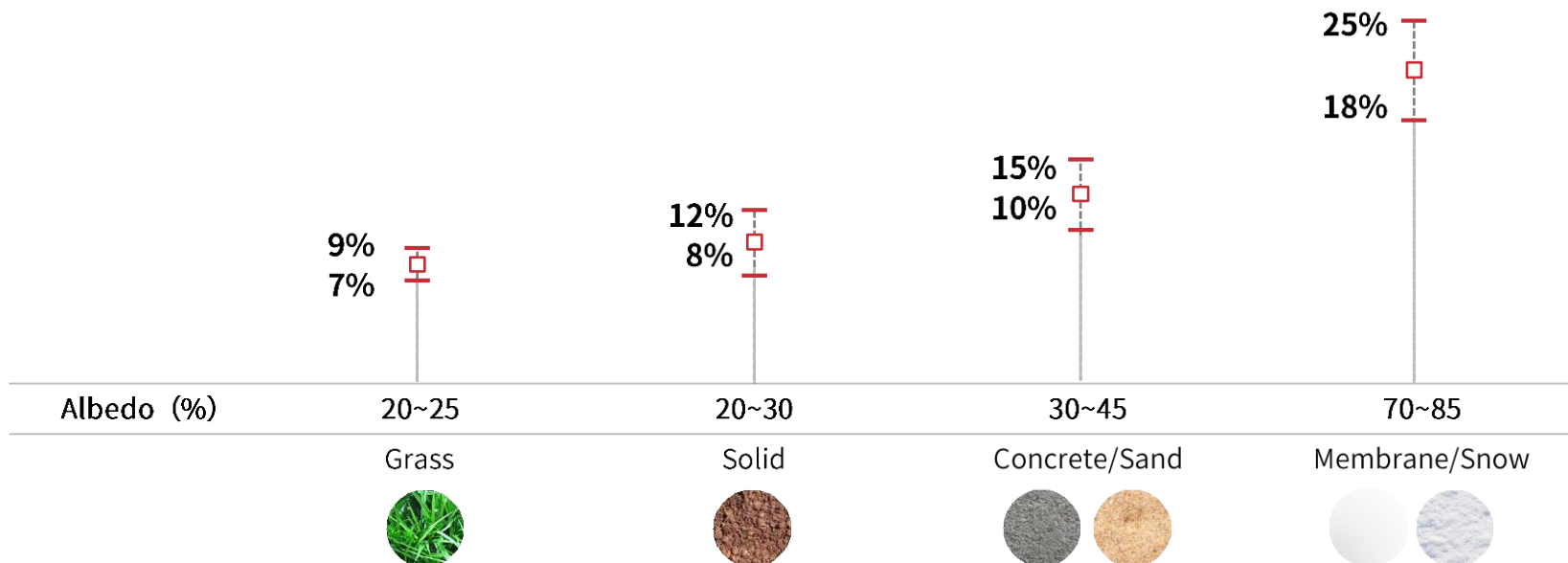


# Bifacial Technology for Hi-MO series

**No. 1 in bifacial modules worldwide shipments**

Bifacial modules' low attenuation, high rearside energy and the **additional albedo gain** provide the optimal cost-performance ratio, making this one of the standardized product types today. As of August 2019, LONGi's shipments of bifacial PERC modules have exceeded **3.0GW**, ranking **1st** in the world.

 Additional power gain from bifacial module based on background type (%)

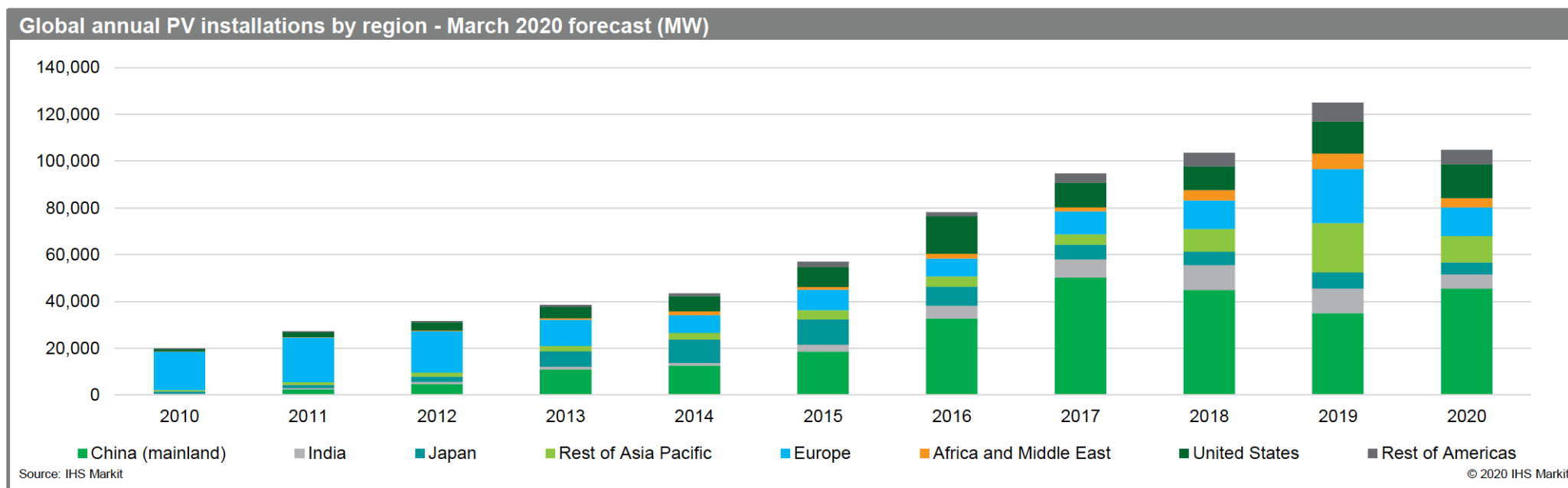


# PV Module Global Situation

- PV Module Offer / Demand dynamic 2020.
- IHS – Global PV Installation forecast from 142GW to 105GW. Market starting again end of Q2 in China.
- Utility Scale projects will be delayed.
- Low Oil Prices. OPEC agreement to cut 9.7 million barrels per day.



# PV Module Global Situation



# PV Module Global Situation

- Lockdown until June/July.
- Colombia
  - Exchange Rate
  - More than 8GW projects under development subscribed in UPME.
  - 10% Renewable Energy Capacity for Distributors by 2022.





**100MW**

Project Type  
**Ground-Mounted Solar Plant**

Project Location  
**Shanxi, China**



**120MW**

Project Type  
**Ground-Mounted Solar Plant**

Project Location  
**Concord, USA**





**33.6MW**

Project Type  
**Ground-Mounted Solar Plant**

Project Location  
**Agrestina, Brazil**



**13.89MW**

Project Type  
**Ground-Mounted Solar Plant**

Project Location  
**Shika Machi, Japan**





**3.60MW**

Project Type  
**Ground-Mounted Solar Plant**

Project Location  
**San Felipe, Chile**





**170MW**

Project Type  
**Ground-Mounted Solar Plant**

Project Location  
**Karnataka, India**





**7.50MW**

**Project Type**  
**Commercial Rooftop**

**Project Location**  
**California, USA**





**1.26MW**

Project Type  
**Commercial Rooftop**

Project Location  
**Asan City, Korea**





**Propelling** the transformation.