



# LONGi Solar Company Presentation



# About LONGi

The world's leading solar technology company

LONGi leads the solar PV industry to a new heights with **product innovations** and **optimized power-cost ratio** with breakthrough monocrystalline technologies. LONGi supplies more than **30GW** of high-efficiency solar wafers and modules worldwide yearly, about **a quarter of global market demand**. LONGi is recognized as the world's most valuable solar technology company with the highest market value. **Innovation and sustainable** development are two of LONGi's core values.



**Y2000**  
Established



**30000+**  
Employees



**\$186 Million**  
R&D Investment  
(5.60% of revenue, Y2018)



**\$3.3 Billion**  
Revenue  
(Y2018)



**\$386.5 Million**  
Net Profit  
(Y2018)



MIT Science and Technology Review  
50 Smart Companies



Forbes  
Top 50 Best Listed  
Companies in Asia



Fortune Magazine  
China's Top 500



Goldman Sachs  
New China NIFTY 50  
(\*The Only New Energy Enterprise on the list)

# Leadership

## World's leading capacity of monocrystalline solar products

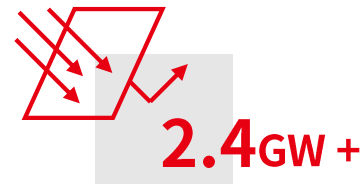
World's record for **P-Type monocrystalline** cell and module efficiency. World's largest scale in monocrystalline silicon wafers, monocrystalline modules and bifacial modules deliveries. World's healthiest solar company in financial strength, according to the latest BloombergNEF report. LONGi demonstrates 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**.



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



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



Total shipment of bifacial modules, ranked No. 1 worldwide by August 5, 2019



**BloombergNEF**

Altman-Z Score 3.01, highest of all Asia manufacturers (Bloomberg NEF 3Q-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.

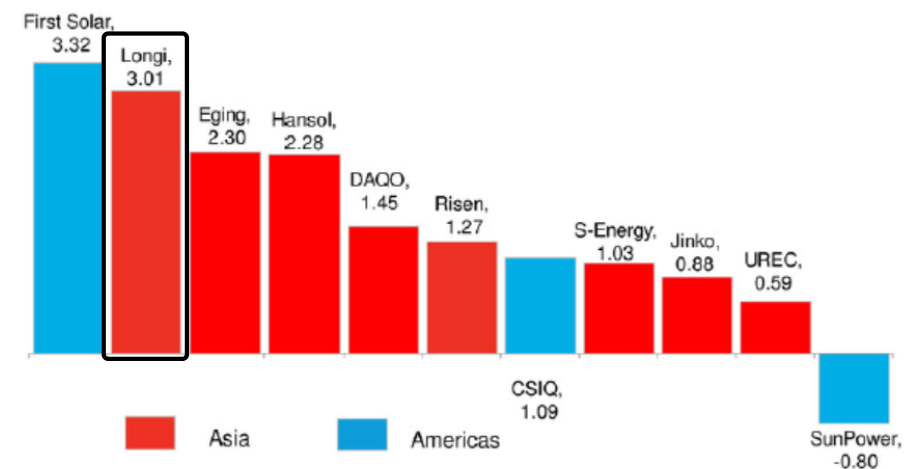
The strong return on asset, **good profitability** and **proven bankability** has been validated and recognized by industry authorities.

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

Firm/ brand	Annual module capacity, MW/year	Firm/ brand	Annual module capacity, MW/year
Longi*	15,000	Jinneng	2,000
Jinko*	10,800	REC Group*	1,500
Hanwha Q-Cells*	10,700	Waaree	1,500
JA Solar*	10,500	HT-SAAE*	1,500
Canadian Solar	9,400	Adani/Mundra*	1,200
Risen Energy*	9,100	Neo Solar Power/ URE	1,110
Trina Solar*	8,000	Vikram Solar*	1,100
First Solar*	6,200	Hengdian DMEGC	1,000
GCL System Integration Tech*	6,000	Jolywood	1,000
Talesun	5,800	ET Solar	1,000
Seraphim*	5,000	Lightway	1,000
Renesola	3,650	Boviet*	800
Chint/Astronergy*	3,500	Hansol Technics	600
ZNShine*	3,500	Vietnam Sunergy (VSUN Solar)	600
Akcome	2,600	S-Energy	530
LG Electronics*	2,500	AU Optronics	500
BYD	2,400	Shinsung	300
SunPower*	2,400	Heliene*	250
Eging	2,100	Sharp	210
Sumec/ Phono Solar*	2,000	Win Win/ Winaico	200
		<b>Total</b>	<b>139,050</b>

Source: BloombergNEF Methodology [here](#). Note: \* denotes a company for which technical due diligence reports are available from PVEL. Contact [Tara.Dovle@pvel.com](mailto:Tara.Dovle@pvel.com) for details.

Figure 10: Altman-Z scores of selected solar manufacturers, 1Q or 2Q 2019



Source: Bloomberg terminal, BloombergNEF

## □ 2000~2005

Era: Accumulation of Semiconductor Technology

### 2000

Established

### 2005

Formation of annual production capacity of 30 tons silicon ingot

## □ 2006~2014

Era: Promoting Monocrystalline Silicon Wafers Technological Innovations

### 2012

A-share market listing

### 2014

World's No.1 in production of monocrystalline silicon wafer

- RCz Ingot pulling
- Diamond Wire Slicing Technology
- M1/M2 Silicon standard

# History

## Propelling the transformation

From its humble beginnings in Y2000, LONGi progressed from the first era of developing expertise in semiconductor technology, to the 2nd era of promoting technological innovations in monocrystalline silicon wafers; then to the 3rd era of promoting monocrystalline to the mainstream and finally to today's new era of using solar energy technology to re-green the earth's ecology. Every of **LONGi's successive technological innovations** brought about **industrial transformations**.



## □ 2015~2018

Era: Promoting Monocrystalline to the Mainstream

### 2015

Entered solar cell and module market  
World's No.1 in shipment of monocrystalline module

### 2018

The world's most valuable PV manufacturer

## □ 2018~Current

Re-Greening Earth's Ecology with Solar Energy Technology

- Achieve PV manufacturing scale
- Create PV community
- Promote wide understanding of PV technology
- Re-greening the ecology with PV technology

# History

## Propelling the transformation

With every milestone achieved, LONGi has driven the industry forward, **propelling the transformation** of the PV industry through innovations and sustainable developments.



# Global Reach

## Real-time solutions for local markets

Customer satisfaction is one of LONGi's core values. LONGi has photovoltaic manufacturing bases for **global scale in production** and a **worldwide marketing network** that provide customers with **localized services and support**, such as project design, product specifications, cooperation planning, business support, logistics and on-site services.



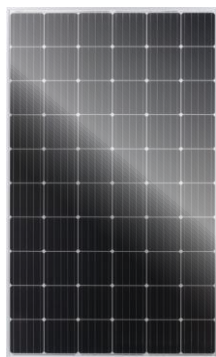
# Product Portfolio

## Industry Benchmark

From standard monocrystalline, PERC monocrystalline, bifacial, to the newly unveiled Hi-MO4 modules with the new M6 (166mm) wafer, every of LONGi's new product spearheads **the transformation of the PV industry.**

**Hi-MO** Series | Leading the industry with Mono PERC technology

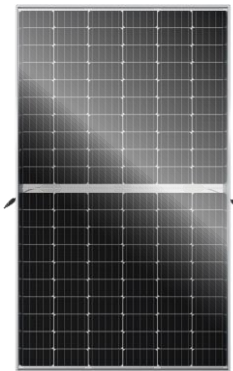
Hi-MO 1



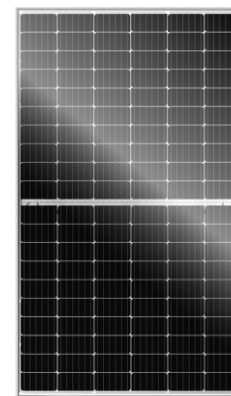
Hi-MO 2



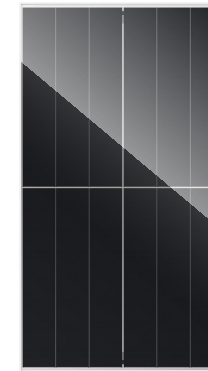
Hi-MO 3



Hi-MO 4



Hi-MO X





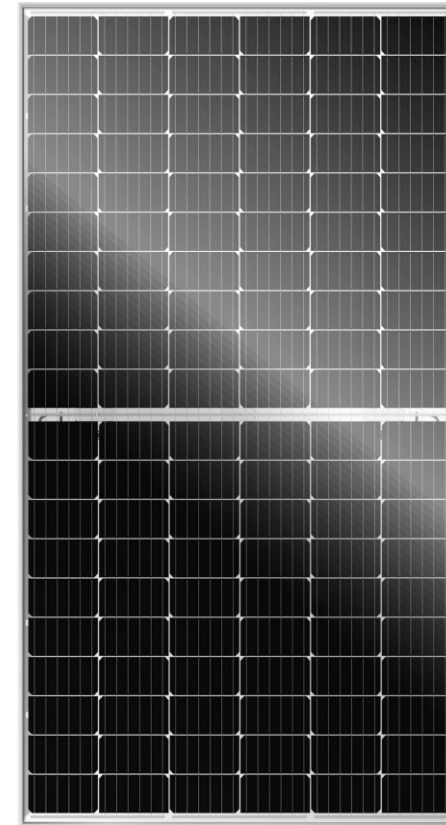
# Hi-MO 4

## 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-MO4m) variants*

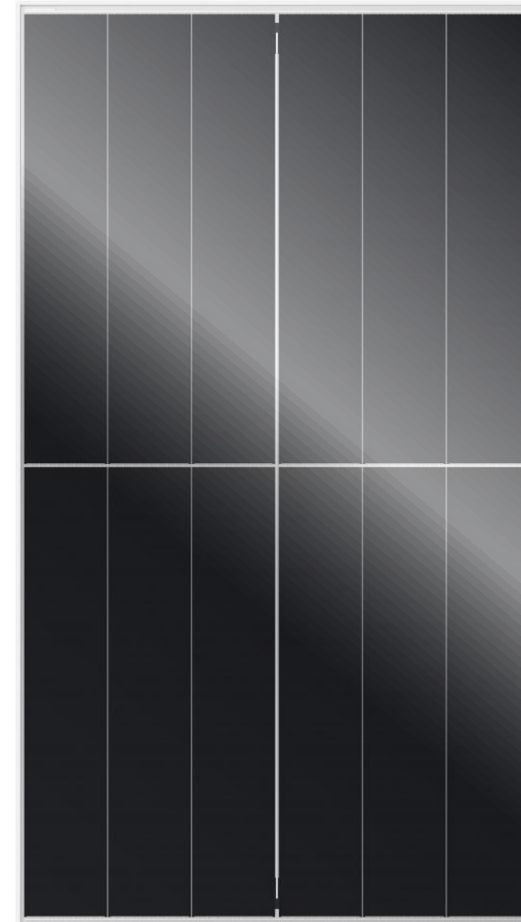
# Hi-MO 350W/400W

High power and aesthetics, perfect compliment for rooftops

LONGi Hi-MO X integrates the thress advantages of **high power density**, **innovative circuit design** and **sleek appearance**. It is a shingled module developed by LONGi over three years of research and development. Hi-MO X strikes a balance between aesthetics and efficiency, and perfectly compliments **rooftop applications**.

## High density singled module

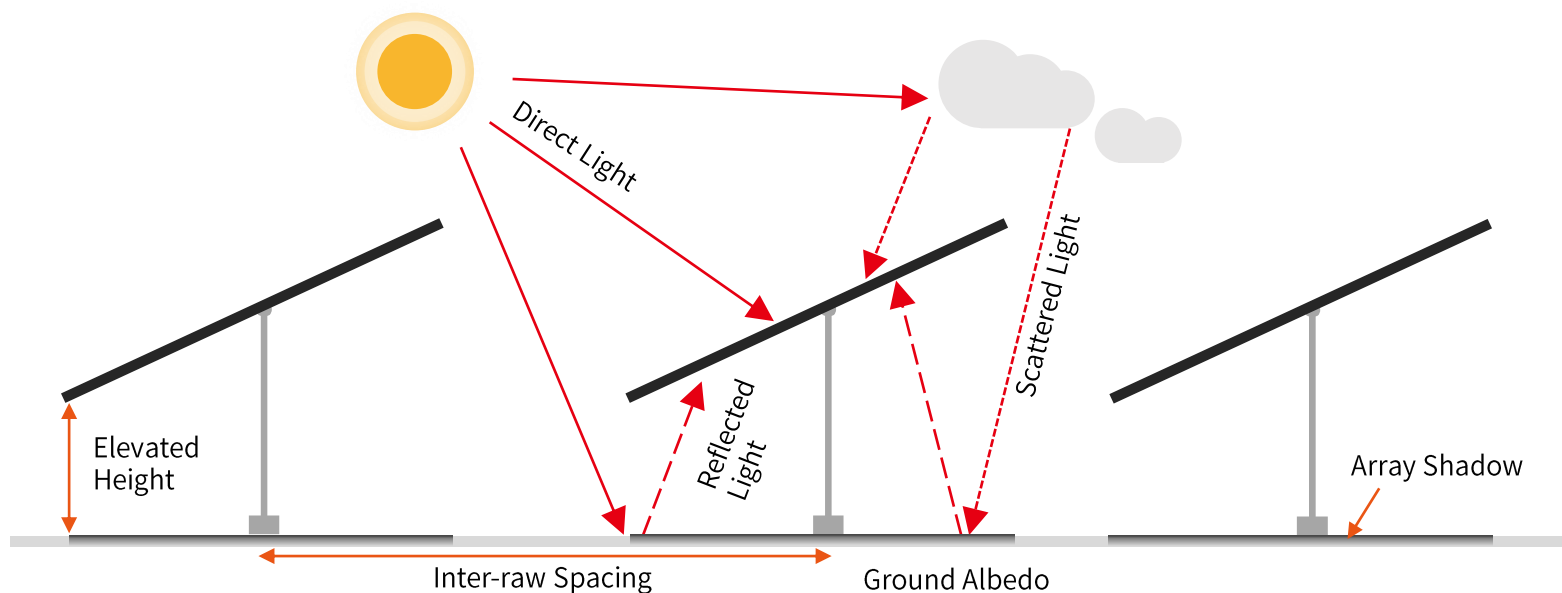
- Module efficiency >20%
- Seamless shingled, super-high density module technology
- PERC monocrystalline, low attenuation cell technology
- Sleek appearance with unique design



# 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.

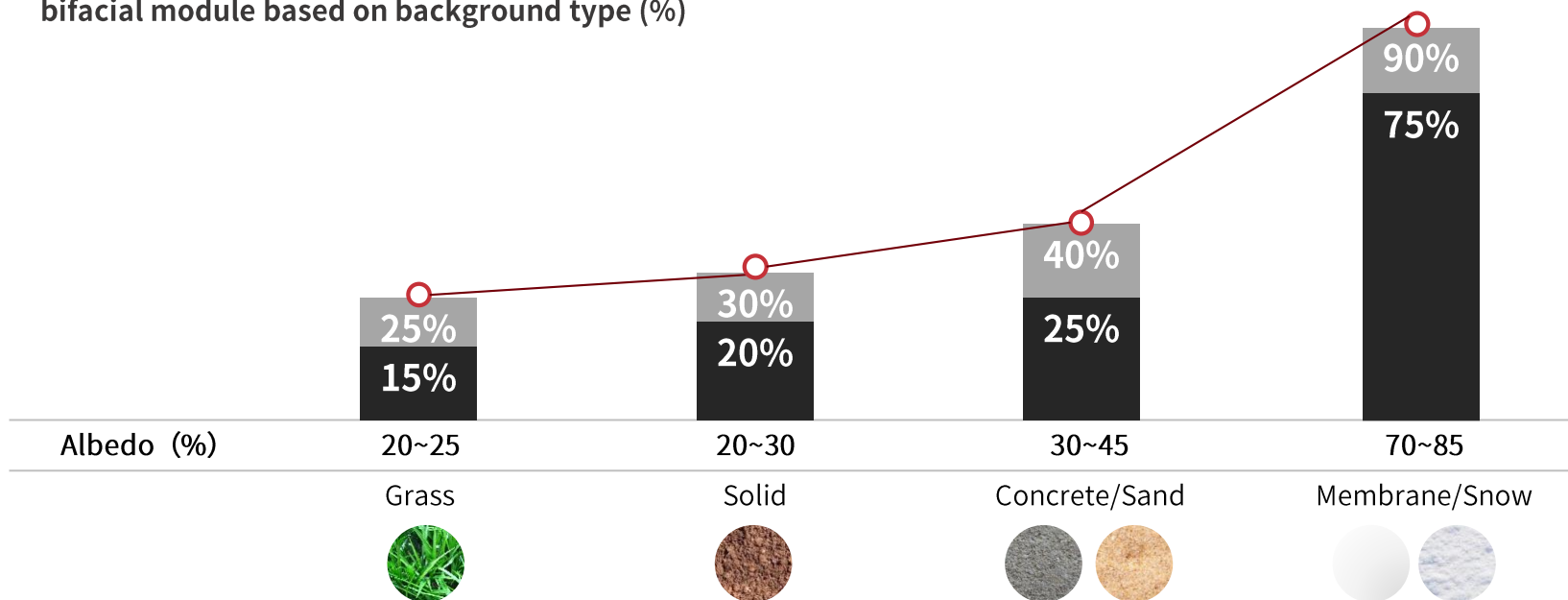


# Bifacial Technology for Hi-MO series

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 **2.4GW**, ranking **1st** in the world.

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

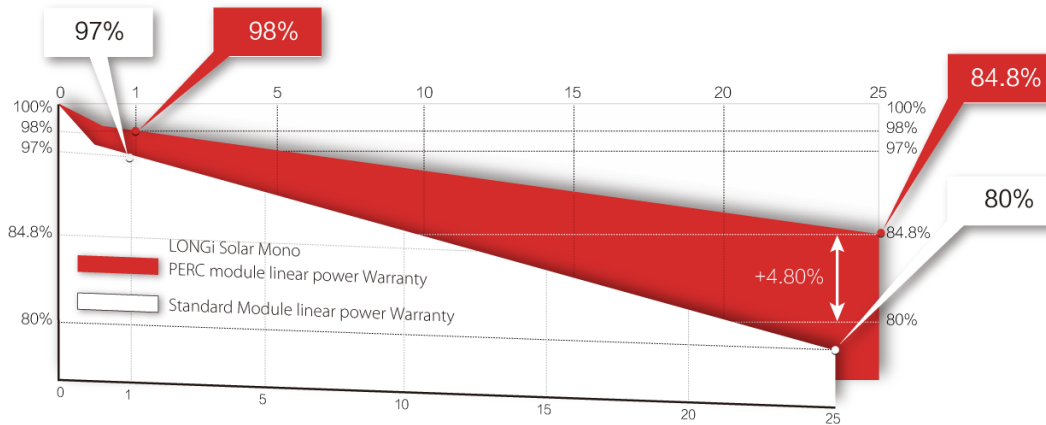


# Quality

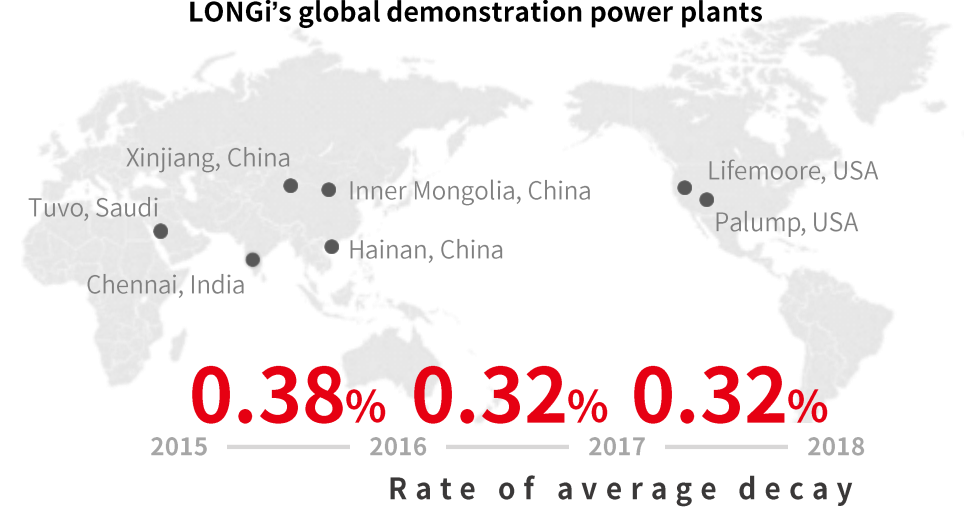
## Proven Value

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



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



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



DNV·GL  
Top Performer

# Innovations

## Continuous technology innovations on open platforms

LONGi's innovations are not just limited to technology. The company hopes to **integrate innovations and create an open, collaborative platform**. This is essentially a new way to connect with industrial partners, universities, research institutes, PV start-ups, as well as customers and colleagues. In a **ecosystem**, all elements come together in active collaboration and interaction that enables us to design **innovative solutions** to drive **the solar-led energy transformation**.



### Industrial Partner



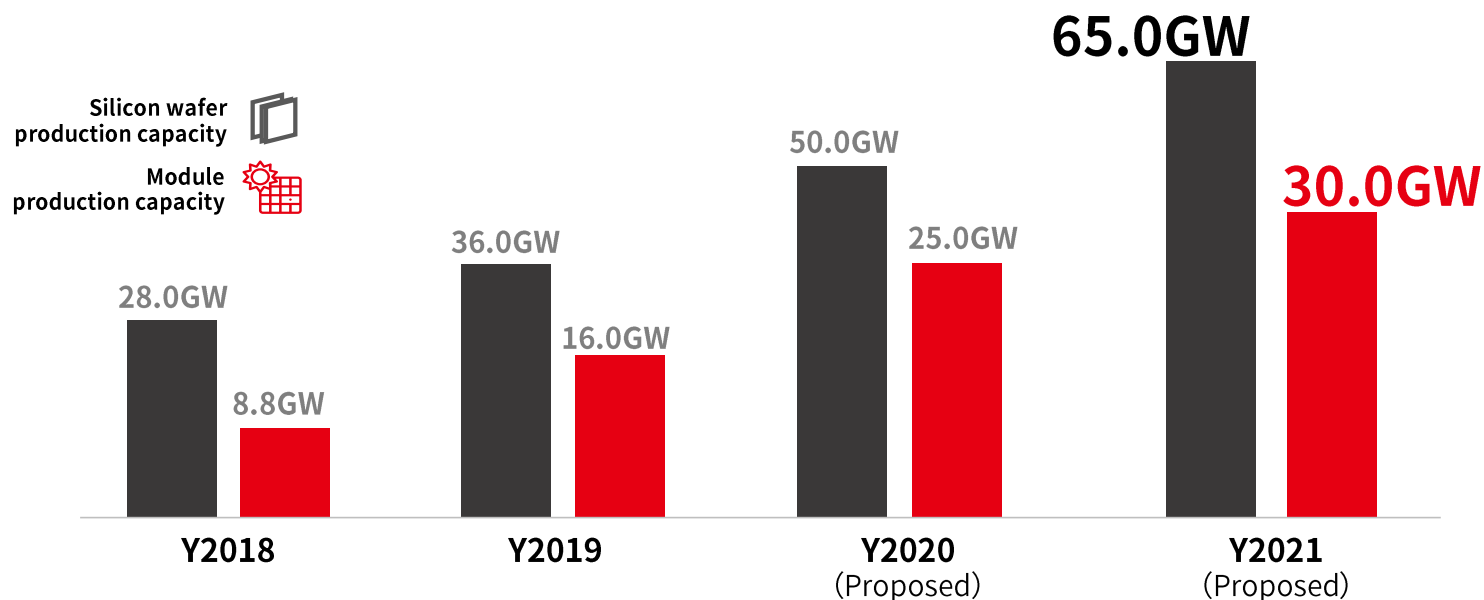
### Research Institute



# 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.



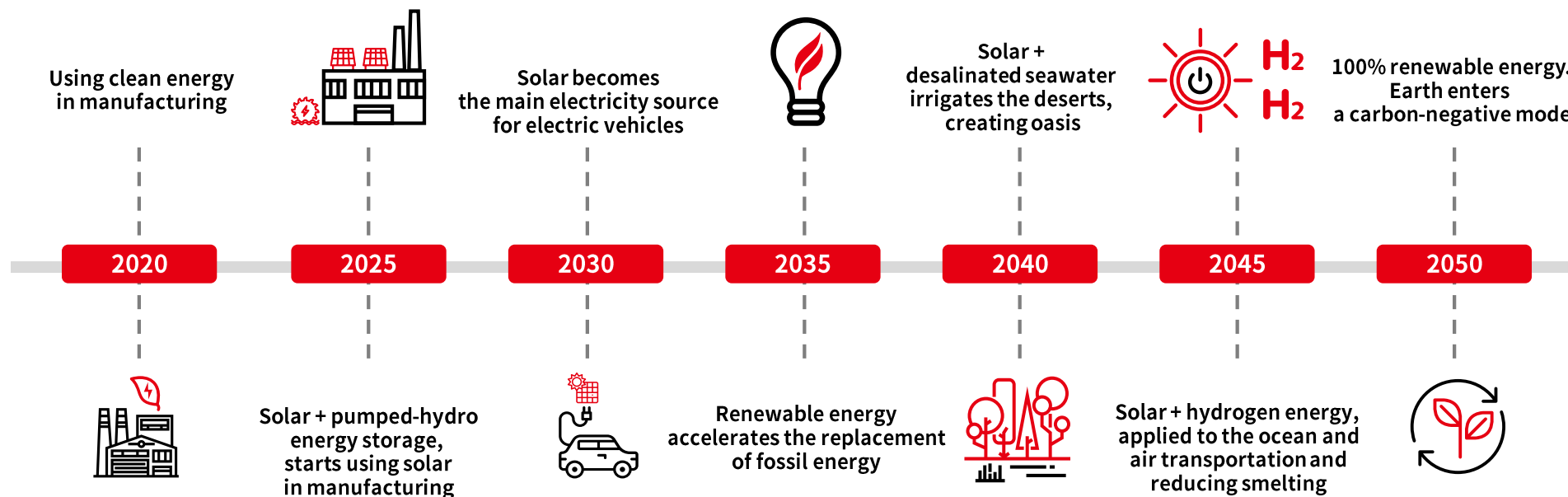
*\*According to the current projection, the production capacity of silicon wafers will be reached one year ahead of schedule, achieving 65GW by the end of 2020.*



# The Future of LONGi

## Sustainable Development Strategy

With “Solar for Solar”, LONGi is building towards achieving **100% in clean energy consumption**. LONGi always had **sustainable management** as a core criteria for business decision-making, including continuous investments in innovation and research, advocating an open corporate culture and promoting scientific institutional research. At the same time, LONGi has been leading continuous changes in electric power and energy, promoting the **sustainable development of the planet and mankind**. It is LONGi’s vision and roadmap that Earth will be completely green and self-sustainable in the first half of this century.





**150MW**

Project Type  
**Floating System**

Project Location  
**Anhui, China**



**200MW**

Project Type  
**Ground-Mount**

Project Location  
**Ningxia, China**



**100MW**

Project Type  
**Ground-Mounted**

Project Location  
**Shaanxi, China**



**120MW**

Project Type  
**Ground-Mount**

Project Location  
**Concord, USA**



**33.6MW**

Project Type  
**Ground-Mount**

Project Location  
**Agrestina, Brazil**

**13.89MW**

Project Type  
**Ground-Mount**

Project Location  
**Shika Machi, Japan**



**3.60MW**

Project Type  
**Ground-Mount**

Project Location  
**San Felipe, Chile**





**170MW**

Project Type  
**Ground-Mounted Project**

Project Location  
**Karnataka, India**



**7.50MW**

**Project Type  
Commercial Rooftop**

**Project Location  
California, USA**



**160kW**

Project Type  
**Commercial Rooftop**

Project Location  
**Hongkong, China**



**1.26MW**

Project Type  
**Commercial Rooftop**

Project Location  
**Asan City, Korea**

**LONGi**

**Propelling** the transformation.