

LONGI

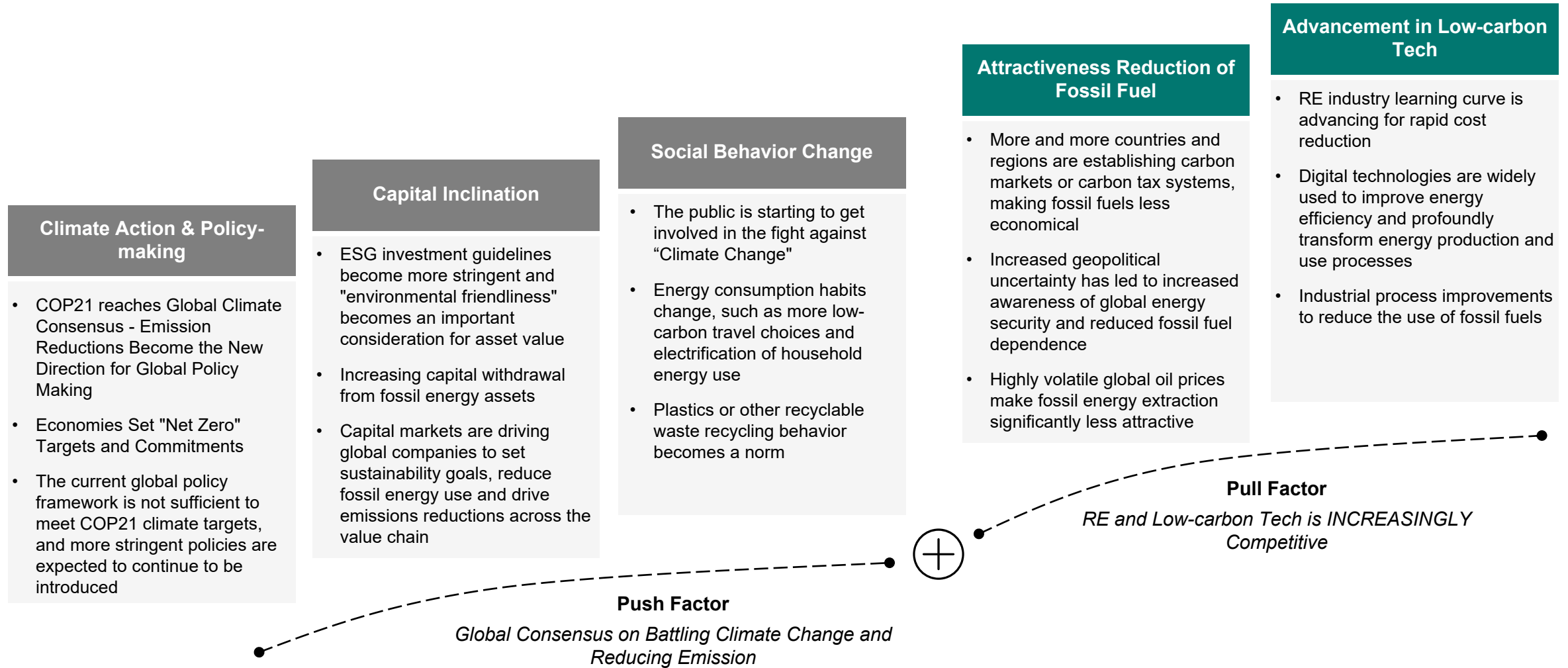
UNLEASH
THE **FUTURE**
TOGETHER

March · 2023 Switzerland

余海峰

Dennis She

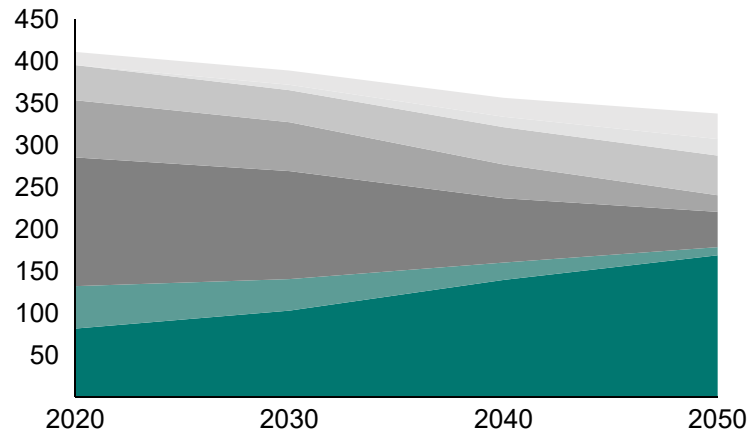
Driven by both the climate consensus and the increasing competitiveness of low-carbon techs, Energy Transition is inevitable and destined to be a prosperous undertaking



Continued learning curve advancement and industry scale effect will make solar PV increasingly cost-competitive, driving market demand to scale up unprecedentedly

Global Energy Consumption, EJ

■ Electricity ■ Oil ■ Bio-fuel ■ Others
■ Coal ■ Gas ■ Hydrogen

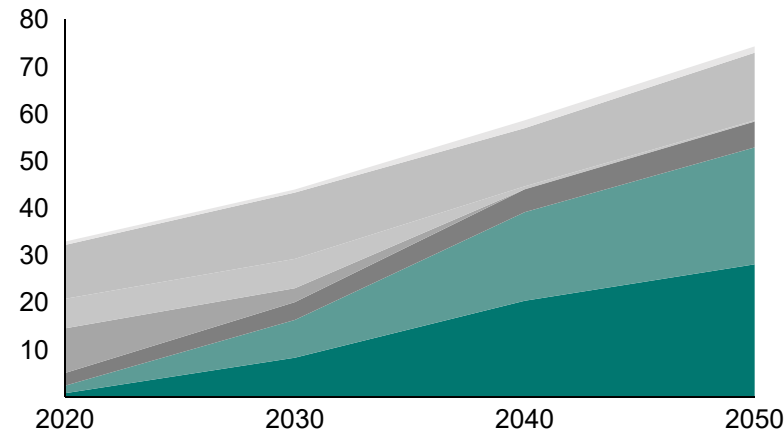


Source: IEA



Global Power Consumption, PWh

■ Solar ■ Nuclear ■ Gas ■ Others
■ Wind ■ Coal ■ Other RE



Source: IEA

Solar PV Cost (LCOE) Premium, %

	2020	2030	2040	2050
Onshore Wind	9%	-1%	-9%	-18%
Nuclear	-80%	-164%	-192%	-240%
Coal	-26%	-158%	-247%	-313%
Gas	-35%	-139%	-217%	-277%

Source: IEA

The electrification process is one of the most prominent features of the energy transition

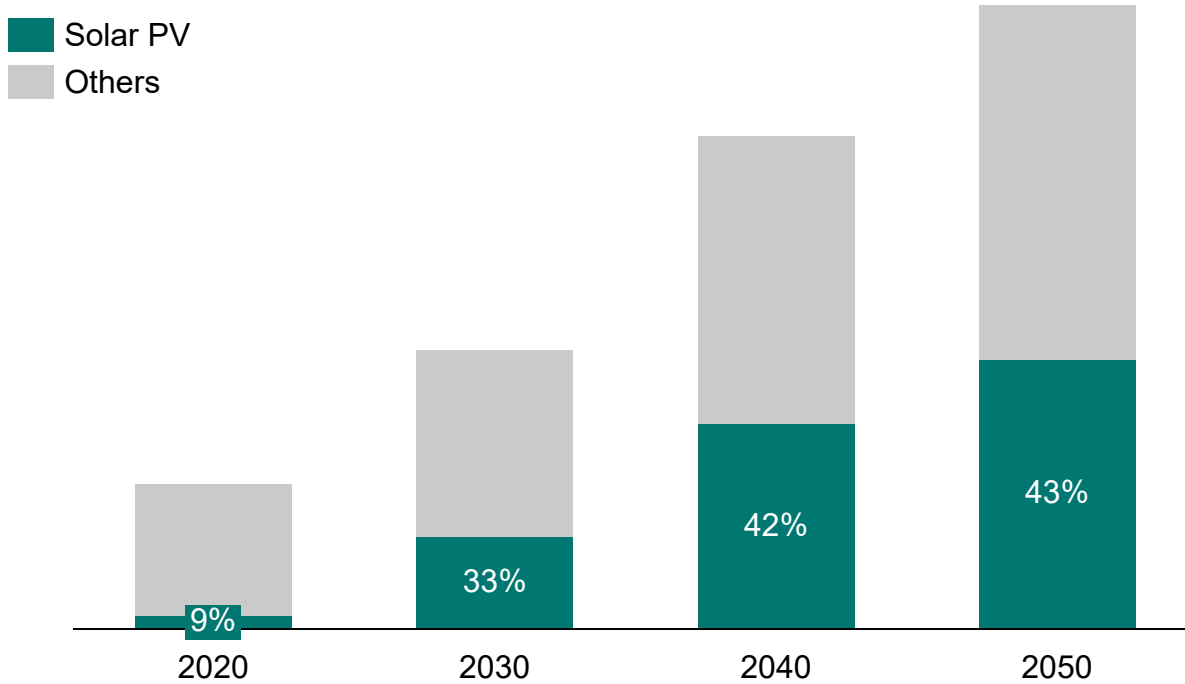
- The energy transition is accompanied by a massive electrification process that rapidly pushes up end power consumption
- Electrification mainly comes from transportation (EV, rail electrification), buildings (heat pumps, rising use of household appliances), green hydrogen production, etc.

The cost advantage of PV will drive the demand scale up rapidly, and the scale effect will feed the cost down

- PV has a more pure manufacturing characteristic than fossil energy generation, and can achieve cost reduction through the scale effect, while the cost of fossil energy generation depends largely on fuel costs
- Compared with other renewable energy sources, PV is better endowed with resources, and the scale of industry chain shipments is in an advantageous position, so it is more cost competitive

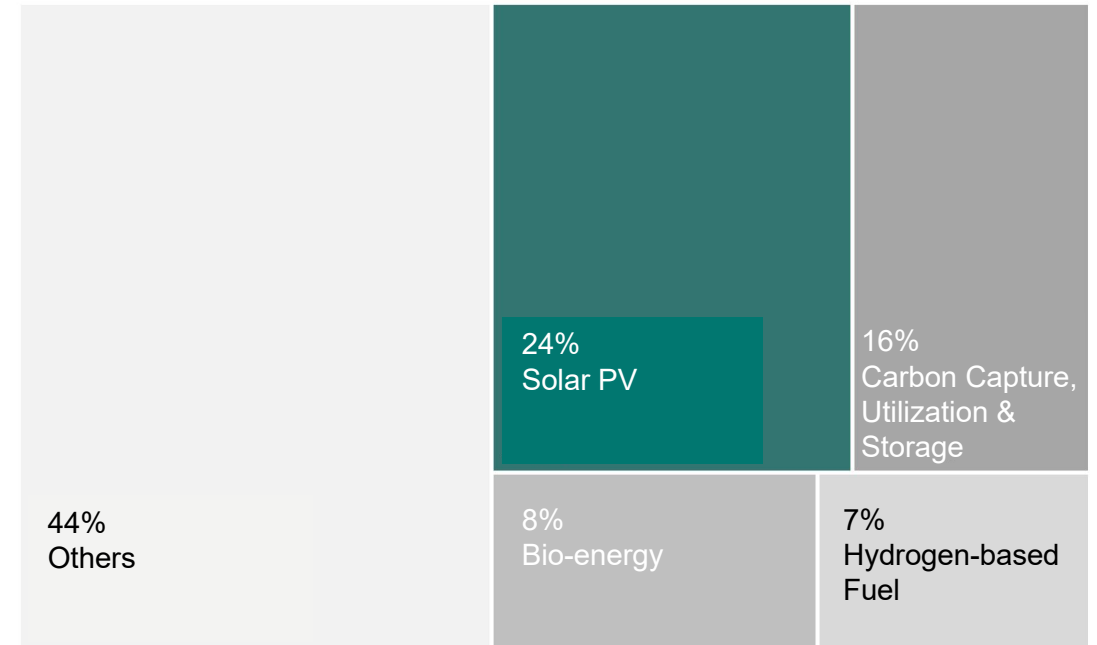
Solar PV is the cornerstone of the energy transition and indispensable for the Carbon Neutrality vision to become a reality – Without solar PV, human civilization is to falter under the climate challenge

1 In the carbon-neutral process, Solar PV is the world's top one energy source, a 45% of the world's generation fleet



Source: IEA

2 Solar PV contributes 1/4 of the total emission reduction



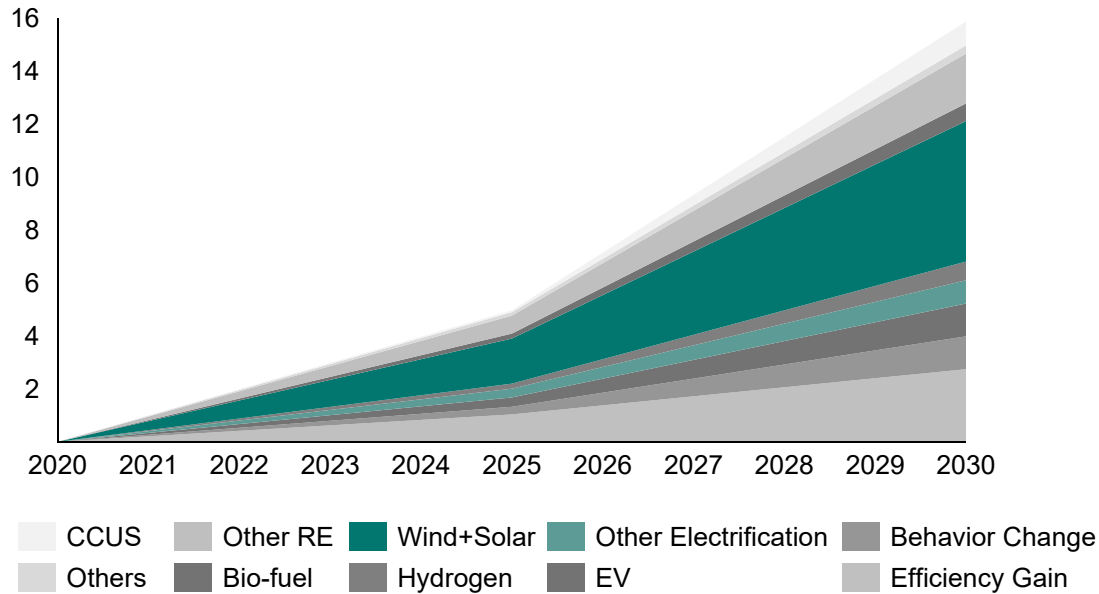
Source: IEA

Note: 1 – based on global power installation, 2 – under Net-zero path, cumulative emission reduction is 460 GtCO₂eq

The potential of solar PV is to be thoroughly unleashed and lead to drastic growth in the near future - By 2030, the annual PV installation will reach 1200-1500GW

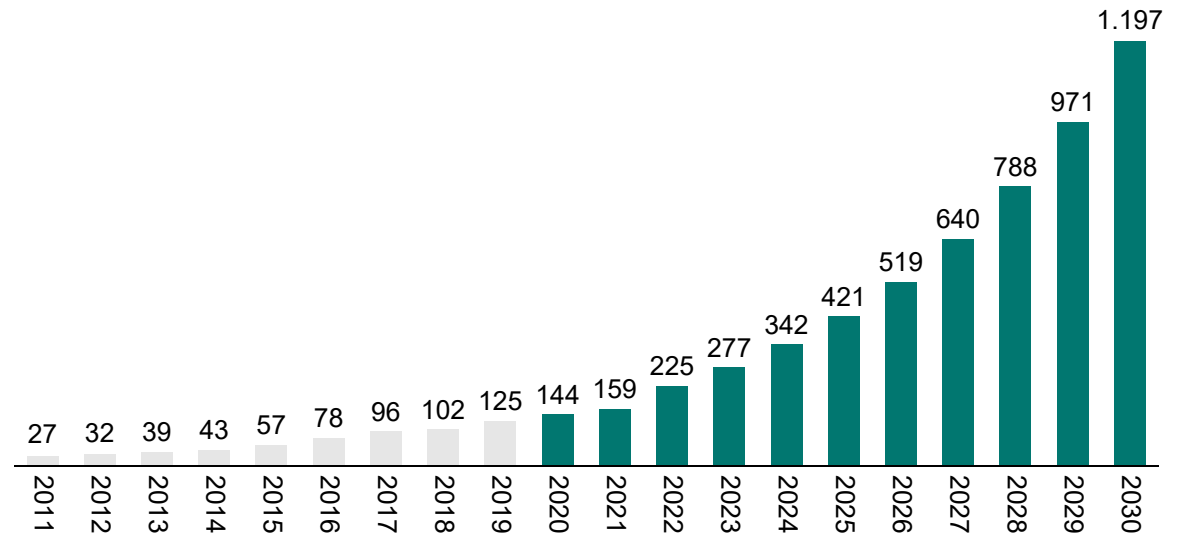


Carbon Emission Reduction, Gt CO₂eq



Source: IEA

2020-2030 PV Annual Installation Projection, GW



Source: IEA

LONGi represented PV industry has been insisting on technological innovation to drive down energy cost



LONGi sets the highest efficiency record for silicon solar cells

26.81%

LONGi HJT silicon solar cell Efficiency (November, 2022)

26.56%

LONGi P-type HJT Solar Cell Efficiency (December, 2022)

26.50%

LONGi HJT Solar Cell Efficiency (June, 2022)

26.09%

LONGi Indium-free HJT Solar Cell Efficiency (December, 2022)

25.21%

LONGi N-type Topcon Solar Cell Efficiency (June, 2021)

25.19%

LONGi P-type Topcon Solar Cell Efficiency (July, 2021)

24.06%

LONGi P-type PERC Solar Cell Front Efficiency (January, 2019)



LONGi Ranks NO.1 in PV production capacity and sales, and continues to contribute 1/3 of the original power of the PV industry – Equivalent to providing clean energy to 800 million people worldwide*



In 2022, LONGi continue to lead global PV Industry with the shipment of **46GW+**

NO.1

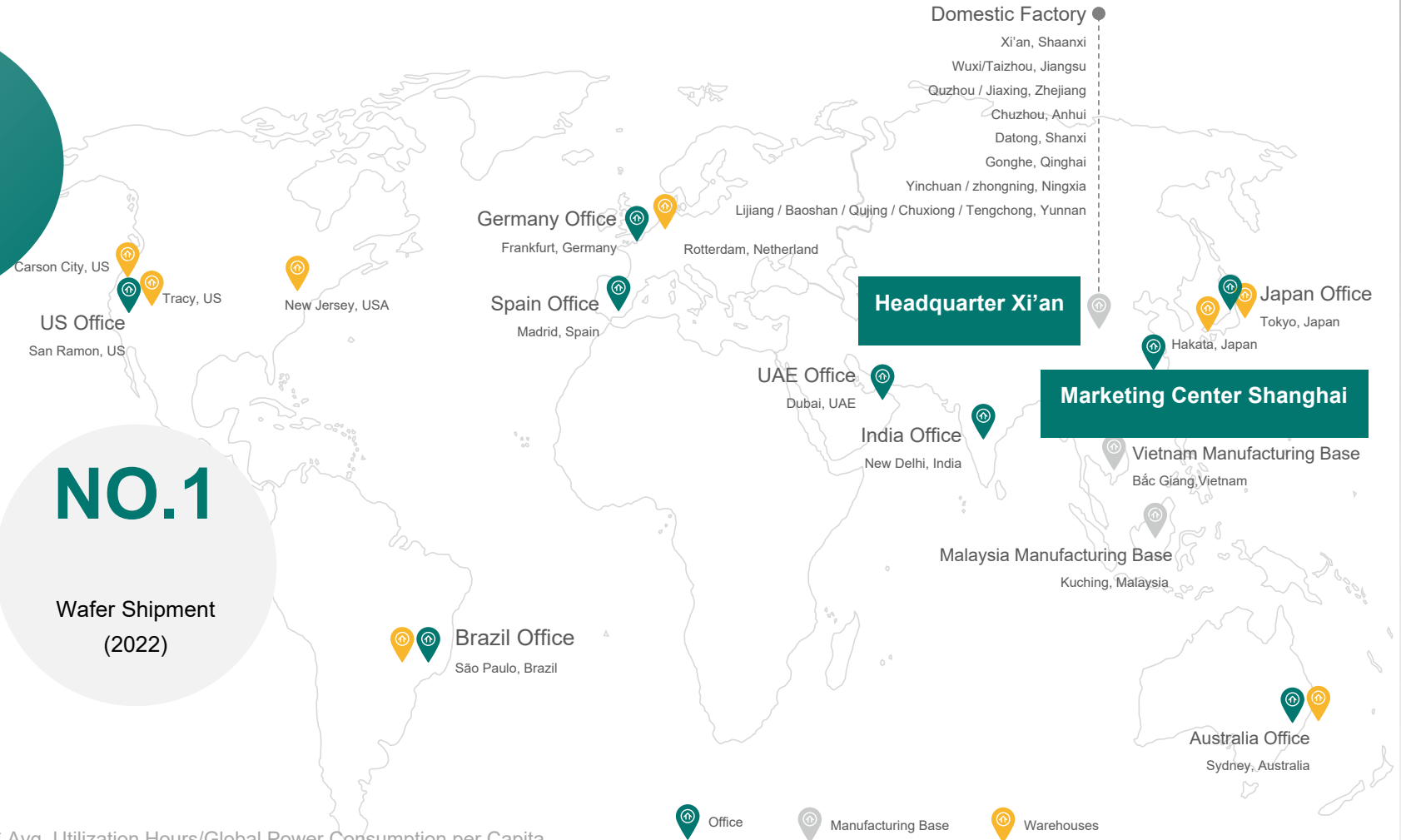
46.7GW
Module Shipment
(2022)

NO.1

96GW
Module Production Capacity
(2023)

NO.1

Wafer Shipment
(2022)



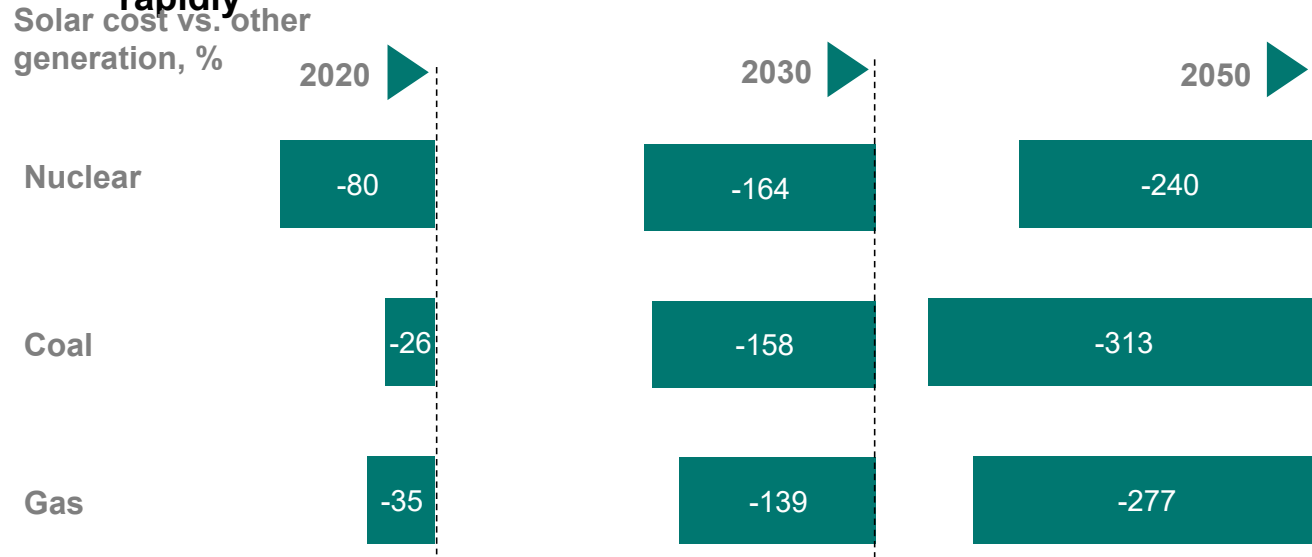
Note: LONGi Clean Energy Supply Population = LONGi PV shipment* Avg. Utilization Hours/Global Power Consumption per Capita

LONGi represented solar industry will create immense social values via tech innovation and industry scale effect

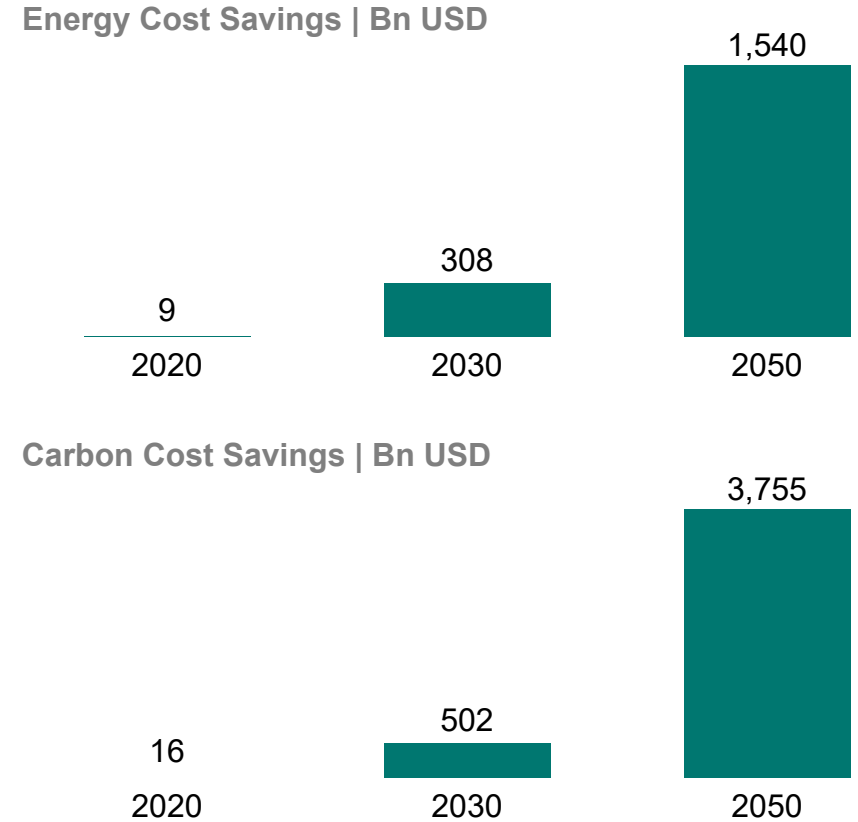
1 Cost advantage of solar PV pulls up market demand in a large-scale



2 Driven by tech innovation and scale effect, solar cost decreasing rapidly



3 Solar PV creates excessive social values



Note: 1 – based on LCOE, 2 – Energy cost savings of solar PV is calculated based on coal LCOE, 3 – Carbon cost savings of solar PV is computed in benchmark to coal plant carbon intensity, carbon price used (IEA, 2021), USD/t 25 (2020), 90 (2030), 200 (2050)

LONGi believes that "Green Power + Green Hydrogen" is the best solution to achieve carbon neutrality

2018

- Carried out strategic researches to the hydrogen industrial chain
- Developed technology of electrolysis hydrogen equipment with science and research units at home and abroad

2021

- Mar. 31, registered in Xi'an Hi-tech Industrial Zone. Hydrogen production equipment plant locates in Wuxi, Jiangsu

2022

- May, won the bid for the world's largest green hydrogen project
- Nov., the thousand-cubic level electrolyzer passed the customer's on-site acceptance
- Nov., joined hands to formulate the "Evaluation Standard System for Key Technologies and Equipment of Hydrogen Energy"
- Dec., the capacity reached **1.5GW**
- **Global rank No.1**
- **Sales volume in China Top 3**

2025

- Scheduled capacity from **5** to **10GW**

In addition to technological innovation for green power and green hydrogen, LONGi are also committed to public service initiatives overseas, such as Free PV Academy, to help developing countries transit to clean energy



◀ Solar PV Academy Hold by LONGi and Energy Training and Research Center (ETRC), Pakistan

This two-month training program, conducted by LONGi and ETRC, will provide free training to 20 local PV practitioners in Lahore, Pakistan, helping them to learn cutting-edge technology and operational skills in the industry.

Those who pass the training will not only receive a training certificate jointly issued by LONGi and ETRC, but will also be offered and recommended employment opportunities by LONGi after the course.



ETRC is a non-profit organization focused on energy policy and training in Pakistan. Faiz Bhatta, the chairman of ETRC, is a well-known figure in the Pakistani solar industry, a technical advisor to several multinational companies and a visiting professor at several national universities, with a track record of personally training over 3,000 new energy students.

By building a sustainable ecology, we hope to contribute to the global sustainability development – Donation to the Alaqua Animal Protection Base in South Africa



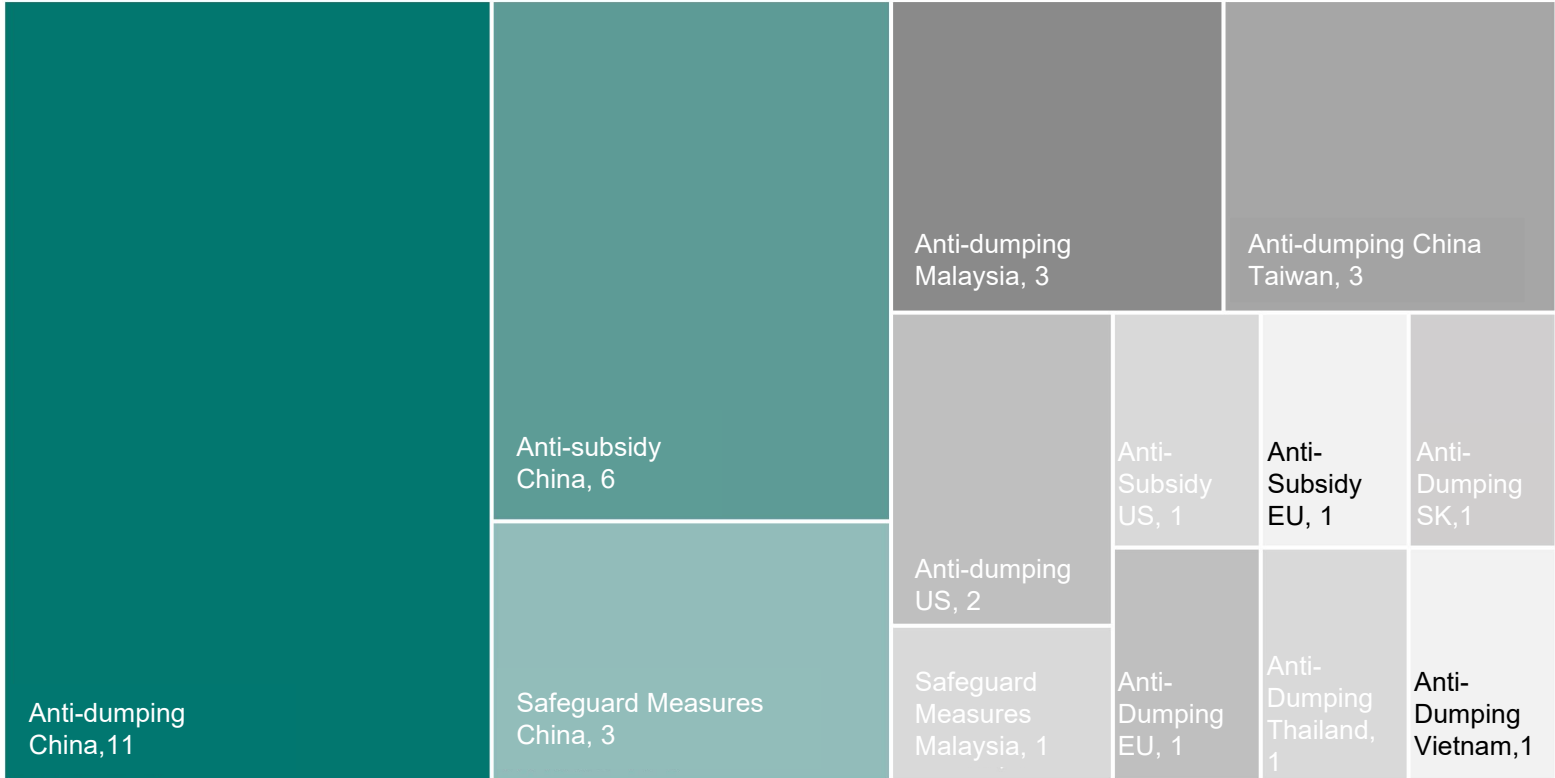
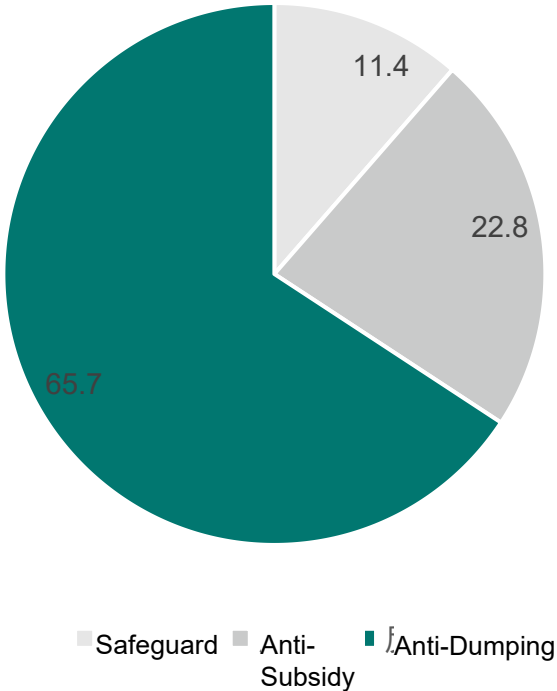
◀ **LONGi's Donation to the Alaqua Animal Protection Base**

LONGi donates photovoltaic system to Aquila to build a photovoltaic power station at the center of the habitat and provide clean water for wildlife



The global PV industry is experiencing international trade bottlenecks, making the spread of clean energy even slower and more expensive, considerably hampering the process of the global green energy transition

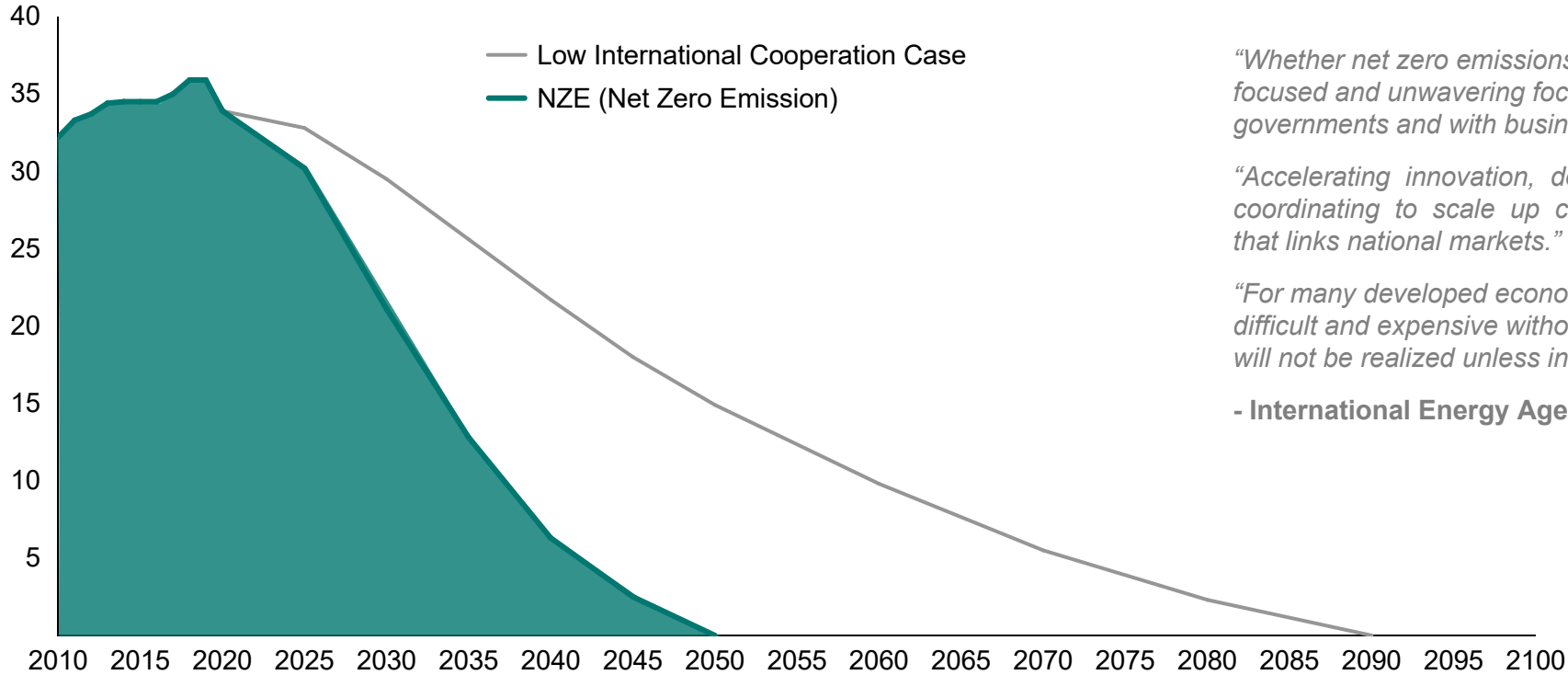
2010-2021 Global Trade Remedy Case Type, 2010-2021 Global Sued Trade Remedy Case Type by country/region %



* From 2010 to 2021, a total of 34 trade remedy cases have been initiated against PV products globally under the WTO framework. Among them, 23 are anti-dumping, 8 are anti-subsidy and 3 are safeguard measures. The countries/regions being sued include: China, Taiwan, Malaysia, Korea, Vietnam, Thailand, EU and USA.

We are calling for greater connectivity between global markets and increased international cooperation to accomplish the global vision of net zero by 2050

CO2 emissions in the Low International Cooperation Case and the NZE | Gt CO2eq



“Whether net zero emissions will become a reality depends on a highly focused and unwavering focus by governments on cooperation among governments and with businesses, investors and citizens.”

“Accelerating innovation, developing international standards and coordinating to scale up clean technologies needs to be done in a way that links national markets.”

“For many developed economies, achieving net zero emissions will be more difficult and expensive without international cooperation. Net-zero by 2050 will not be realized unless international cooperation has been expanded.”

- International Energy Agency

International Energy Agency

“To develop the Low International Cooperation Case, technologies and mitigation options were assessed and grouped based on their current degree of maturity and the importance of international co-operation to their deployment. Technologies and mitigation options where co-operation is needed to achieve scale and avoid duplication, that have a large exposure to international trade and competitiveness, that depend on large and very capital-intensive demonstration programs, or that require support to create market pull and standardization to ensure interoperability, are assumed to be deployed more slowly. Compared with the NZE, these technologies are delayed by 5- 10 years in their initial deployment in advanced economies”

The real beauty must hand with nature, on the other hand, consistent with the ideal.

— — *Egon Schiele*

「 Austrian Expressionist Artist 」

Appendix

Appendix – Sustainability of LONGi



With “Solar for Solar”, LONGi officially joined the Global Initiative RE100, EV100, EP100, and will keep 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.

RE100

LONGi has committed to using 100% renewable power across its entire global operations by 2028.

EV100

In the coming 10 years, LONGi will install adequate power charging facilities for vehicles to encourage the employees to change family vehicles into electric vehicles.

EP100

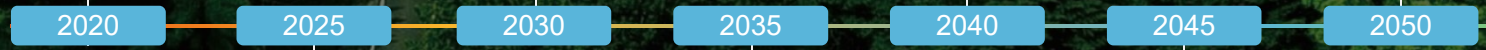
LONGi has committed to completing its energy management system (EnMS) by 2025, as well as a 35% energy efficiency improvement in 2025 from the 2015 level.

Using clean energy in manufacturing

Solar becomes the main electricity source for **electric vehicles**

Solar + desalinated seawater convert deserts into Greenland irrigates the desert creating oasis

100% renewable energy. Earth enters a carbon-negative mode



Solar + pumped-hydro energy storage, starts using solar in manufacturing

Renewable energy accelerates the replacement of fossil energy

Solar + hydrogen energy, applied to the ocean and air transportation and reducing smelting



Appendix - LONGi's ESG practices have been recognized by mainstream rating agencies as the best in the industry

LONGi's overall performance in all major mainstream rating systems ranks first in China's PV industry and is close to that of Apple

Rating Agencies	MSCI	Refinitiv	FTSE Russell	S&P	CDP
	BBB	80	3.8	37	A-
	BBB	78	3.0	23	B
Industry Avg.	B - BB	40 - 50	2 – 2.5	15 - 20	-

LONGi's ESG Awards

PV Industry

NO.1

Green Supply Chain and Corporate Climate Action CATI Index

PV Industry

NO.1

2022 Clean200 Global Inventory published by Corporate Knights and AsYouSow

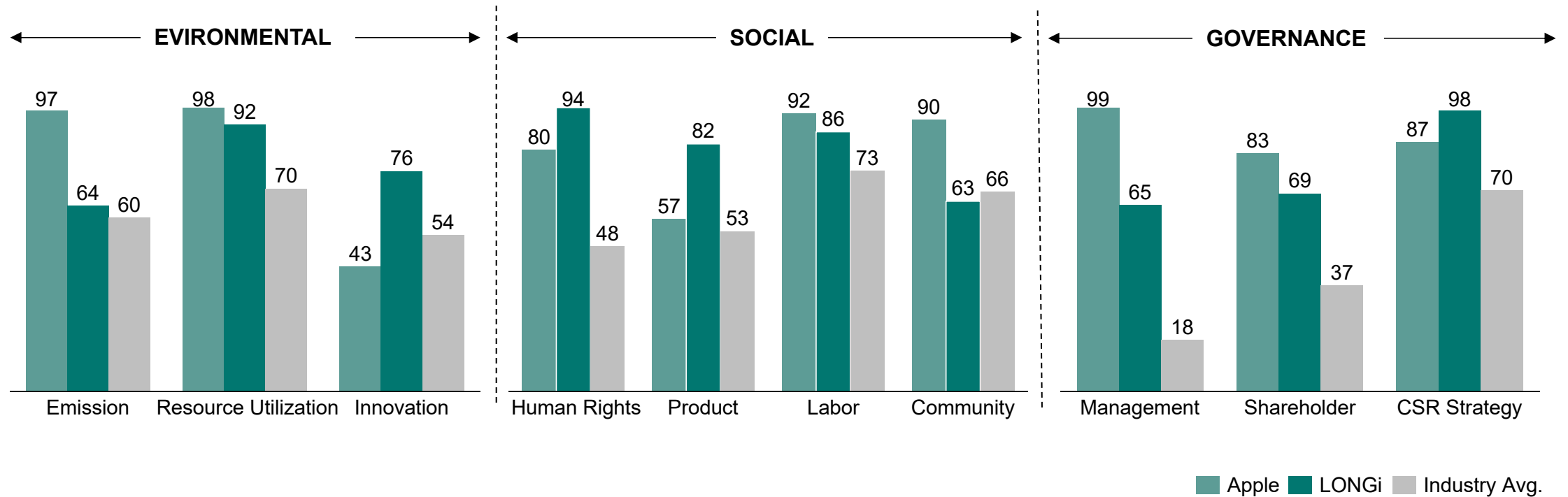
ESG Enterprise Pioneer of the Year

2022 Bloomberg Green Finance ESG Pioneer List

Fortune 2022 China ESG Impact List

The companies on the list are ranked in no particular order

Appendix - LONGi leads the industry in all key aspects (7/10) of ESG performance by Refinitiv



Note: 1 – Child Labor, and other primary human rights issues, 2 – diversity and job opportunity, occupational health and safety, wages and working conditions

Appendix - LONGi leads in ESG disclosure standard coverage, and also organization & initiative participation



LONGi



Industry Avg.



LONGi



Industry Avg.



Note: 1 - based public info, including main corporates in solar industry