2022
Sustainability Report

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LONGi Green Energy Technology Co., Ltd.

LONGi is committed to be **the advocator, practitioner and leader in the sustainable development of global clean energy**.

On the way to achieve carbon neutrality, reducing the energy cost for the human beings is LONGi's fundamental mission and responsibility !

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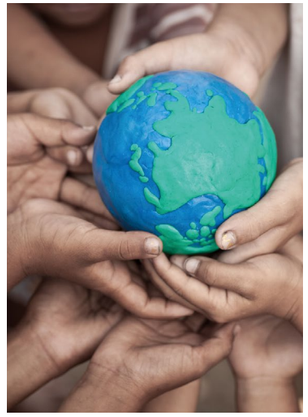

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About This Report

Introduction of the Report

This report is the sixth sustainability/social responsibility report issued by LONGi since 2018, with the first report issued in March 2018 and the last in April 2022. This report is published on an annual basis, in line with the financial year. This report is based on the principles of objectivity, compliance, transparency, and comprehensiveness, and discloses in detail LONGi's practices and performance in the economic, environmental, social, and governance areas for the period from January 1 to December 31, 2022. To enhance the comparability and completeness of the report, some parts of the report also covers prior years.

Criteria of the Report

This Report complies with the requirements of Chapter Eight in the *Shanghai Stock Exchange (SSE) Guidelines No. 1 on Self-Regulation Rules for Listed Companies — Standardised Operation*;

- This report has been prepared in accordance with the GRI Standards by the Global Sustainability Standards Board (GSSB);
- This report has been prepared with reference to the disclosure requirements of the *Environmental, Social and Governance Reporting Guide* of the Stock Exchange of Hong Kong Limited;
- This report has been prepared with reference to the Sustainability Accounting Standards Board (SASB) and the Task Force on Climate-Related Financial Disclosures (TCFD).

Reporting Scope

The reporting scope covers LONGi Group's subsidiaries and controlling companies operating in the People's Republic of China, as well as production bases in the Federation of Malaysia and the Socialist Republic of Vietnam. Any inconsistencies between the scope of specific data and this report will be noted in the text.

Source of Data

The source of data used in the report includes relevant statistical reports of LONGi Group, reports, press releases, third-party surveys or interviews, and public data of government departments, professional organisations, etc. The LONGi Group Board of Directors guarantees that there are no misrepresentations, misleading statements, or major omissions in this report.

Appella-tion of the Company

For ease of presentation and reading, "LONGi Green Energy Technology Co., Ltd." is referred to as "LONGi Group", "LONGi", "the company", "the Group" or "We" in this report. "Ningxia LONGi" refers to Ningxia LONGi Silicon Materials Co., Ltd., a wholly-owned subsidiary of the company; "LONGi Hydrogen Energy" refers to Xi'an LONGi Hydrogen Energy Technology Co., Ltd.", a holding subsidiary of LONGi Venture Capital; "Yinchuan LONGi PV" refers to "Yinchuan LONGi PV Technology Co., Ltd.", a wholly-owned subsidiary of the company; "Baoshan LONGi" refers to "Baoshan LONGi Silicon Materials Co., Ltd.", a wholly-owned subsidiary of the company; "Qujing LONGi" refers to "Qujing LONGi Silicon Materials Co., Ltd.", a wholly-owned subsidiary of the company; "Xi'an LONGi Solar" refers to "Xi'an LONGi Solar Technology Co., Ltd.", a wholly-owned subsidiary of LONGi Solar; "Chuzhou LONGi Solar" refers to "Chuzhou LONGi Solar Technology Co., Ltd.", a wholly-owned subsidiary of LONGi Solar; "Xianyang LONGi Solar" refers to "Xianyang LONGi Solar Technology Co., Ltd.", a wholly-owned subsidiary of LONGi Solar.

Access to the Report

You can download the Chinese and English versions of this report from the official website of LONGi Group. In case of any discrepancy or ambiguity between these two versions, the Chinese version shall prevail.

If you have any questions or suggestions about the report, please feel free to send an email to CSR@longi.com, or call +86 400-860-1012 to transfer to our Brand Management Department.

Chairman's Message

Zhong Baoshen

Chairman of LONGi Group

Looking back on 2022, despite global economic turbulence and geopolitical conflicts, achieving carbon neutrality is still a global consensus with collective efforts. Against this backdrop, LONGi remained focused on technological innovation in the field of renewable energy, leading high-quality development of the industry. Leveraging green energy technology, LONGi moved further towards a green and zero-carbon future.

LONGi has always adhered to compliant and prudent business operations and worked closely with all stakeholders to create a trustworthy social environment. We set up our first sustainability strategy, restructured the Strategy Committee into the Strategy and Sustainable Development Committee, strengthened the Board's involvement in ESG matters, and established the Sustainable Development and Climate Action Office to embed sustainable development into daily operations.

We upheld our core values of being "reliable, value-added, and delighted" and worked with our suppliers to provide quality services to global customers. We diversified our collaboration with partners across the industrial chain and shouldered the industrial responsibility to coordinate emission reduction. We carried out a green partner empowerment plan and strengthened corporate social responsibility in supply chain management to collectively build a green and sustainable value chain.

We continued to offer reliable and efficient products and services to customers around the globe. Focused on creating value for customers and driven by innovation, we kept breaking records of PV cell conversion efficiency 14 times consecutively from 2021 to 2022, hitting 26.81% conversion efficiency for crystalline silicon PV cells. For the first time, we launched Hi-MO 6 modules applicable to different scenarios. Meanwhile, we also made great progress in the R&D of green hydrogen equipment and application, and partnered with building service provider CENTRE INT to provide customers with more scenario-based green energy solutions.

We stressed the quality assurance of our products and improved the quality management system, enabling us to receive certifications from international standard organizations during the reporting period. We provided customers with quality services covering pre-sale, in-sale, and after-sale and our after-sale service system won a five-star rating in 2022. Our products were widely employed in diverse fields like construction, transportation, and agriculture, facilitating the progress of infrastructure construction and energy transition in Central Asia, Latin America, and other regions and empowering the green transition and emission reduction efforts of numerous industries and global clients.

Facing severe risks brought by climate change, we remained committed to delivering our promise with actions by developing a sound emission reduction policy according to global standards and pushing forward the RE100, EV100, and EP100 initiatives and the establishment of a zero-carbon plant. We integrated the concept of green development into the whole lifecycle management of our products and set an example of green development, striving to become a green technology enterprise trusted by all stakeholders.

The development of LONGi would not be possible without the concerted efforts of all our employees and the support and encouragement from society. When pursuing corporate development, we improved the quality of our employees' life with better welfare and guaranteed their health and happiness. Meanwhile, we continued to give back to the society based on our strengths and put efforts into poverty reduction in China and less-developed regions around the world, aiming to spread our "kindness" like sunshine so that all stakeholders can benefit from our corporate development and green transformation.

In the era of carbon neutrality, LONGi has seized the trend of the times and is striding forward by leveraging clean energy. Given the massive market scale, we are ready to collaborate with more partners and promote a just global energy transition and sustainable development based on common principles and values to ensure a livable and sustainable future for all.

About LONGi

About Us

LONGi Green Energy Technology Co., Ltd. is committed to delivering affordable and accessible energy for the world and strives to "be the most valuable solar technology company in the world". The Group was founded in 2000 and publicly listed on the Shanghai Stock Exchange in April 2012 (SH.601012).

Mission

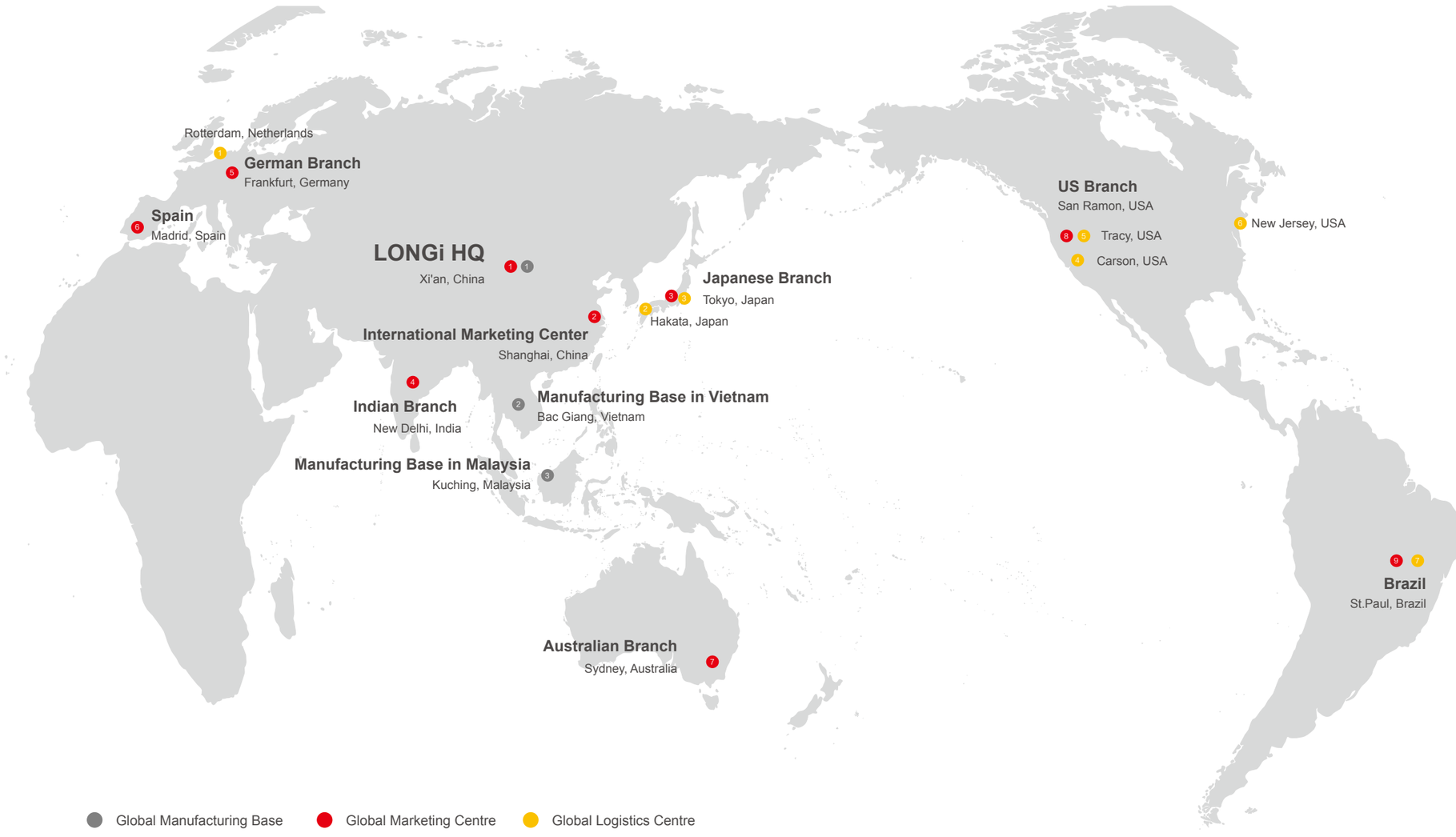
Utilizing solar energy, building a green world

Vision

Be the most valuable solar technology company in the world

Core values

Reliable
Value-added
Delighted



Our Business Footprint

With the mission of "utilizing solar energy, building a green world", LONGi positions itself as "stable and reliable, science and technology-led" and focuses on technological innovation. Our business covers five segments: monocrystalline silicon wafers, cells and modules, distributed photovoltaic solution, ground photovoltaic solution, and hydrogen energy equipment.

The company continues to provide innovative solutions, including PV products and solutions like utility applications on the ground power stations and distributed generation applications on the roof (including BIPV). In line with the global consensus on achieving carbon neutrality, the company is investing more in the green hydrogen business. We strive to become a provider of large green hydrogen equipment and solutions and develop hydrogen production equipment based on alkaline water electrolysis to create "green electricity" + "green hydrogen" products and solutions that drive global zero-carbon development.

As of 2022, the company has established manufacturing bases in China, Vietnam, Malaysia, and sales offices in the United States, Japan, India, Australia, the United Arab Emirates, and other countries, with a business presence in more than 150 countries and regions.

Global Manufacturing Base

1 Xi'an/Xianyang, Shaanxi
Taizhou/Wuxi, Jiangsu
Quzhou / Jiaxing, Zhejiang
Chuzhou, Anhui
Datong, Shanxi
Yinchuan/ Zhongning, Ningxia
Baoshan/ Lijiang/ Chuxiong/Tengchong/
Qujing, Yunnan
Erdos, Inner Mongolia
Hainan Prefecture, Qinghai

2 Bắc Giang, Vietnam
3 Kuching, Malaysia

Global Logistics Centre

1 Rotterdam, Netherlands
2 Hakata, Japan
3 Tokyo, Japan
4 Carson, USA
5 Tracy, USA
6 New Jersey, USA
7 St.Paul, Brazil

Global Marketing Centre

1 Xi'an, China
2 Shanghai, China
3 Tokyo, Japan
4 New Delhi, India
5 Frankfurt, Germany
6 Madrid, Spain
7 Sydney, Australia
8 San Ramon, USA
9 St.Paul, Brazil

Global Business Footprint of LONGi

LONGi Honours and Awards

2022 Top 500 Global New Energy Companies

No. 6

China Institute of Energy Economics

2022 Forbes China Most Innovative Companies

TOP50

Forbes

2021 Fortune Future 50

No. 42

Fortune

2022 China's Best Managed Companies award

Best Managed Companies

2022 China's Top 500 New Economy Companies

No. 10

China Enterprise Evaluation Association

2022 Hurun China 500

No. 15

Hurun Research Institute

2021 Forbes China Employer of the Year, Most Sustainable Employer of the Year and 2022 China Most Sustainable Employer of the Year

Forbes

Top 500 Chinese Enterprises in 2022

No. 288

China Enterprise Confederation/ China enterprise Directors Association

China's Top 500 Private Enterprises

No. 105

All-China Federation of Industry and Commerce

China's Top 500 Manufacturers

No. 132

China Enterprise Confederation/ China enterprise Directors Association

Key Performance

Economic Performance

Total income（RMB billion）

2022	2021	2020
128.998	80.608	54.583

Operating profit attributable to shareholders of the parent company（RMB billion）

2022	2021	2020
14.812	9.086	8.552

Earnings per share（RMB/share）

2022	2021	2020
1.95	1.21	1.16

Total assets（RMB billion）

2022	2021	2020
139.556	97.735	87.635

Weighted average rate of return on common（%）

2022	2021	2020
26.95	21.45	27.23

Environmental Performance

Environmental protection expenditure（RMB million）

2022
405.9006

Proportion of renewable energy used by the Group(%)

2022	2021	2020
47.18	40.19	41.83

Renewable energy used by the Group(Gigawatt)

2022	2021	2020
4,278.6754	3,095.8582	2,557.8335

Total emissions within the operational boundary (tCO_2e)

2022	2021	2020
3,088,703	3,151,974	2,573,014

Greenhouse gas emissions avoided through the use of green electricity(tCO_2e)

2022	2021	2020
2,429,288	1,687,933	1,356,216

Proportion of water reused(%)

2022	2021	2020
63.67	58.75	33.89

Major environmental violations(times)

2022	2021	2020
0	0	0

Governance Performance

Independent directors on the Board of Directors（person）

2022	2021	2020
3	3	3

Number of female directors on the Board（person）

2022	2021	2020
2	3	3

Integrity training（session）

2022	2021	2020
578	91	80

Social Performance

R&D expenses(RMB billion)

2022	2021	2020
7.141	4.394	2.592

Total number of employees(person)

2022	2021	2020
60,601	49,967	46,631

Share of R&D expenses in revenue(%)

2022	2021	2020
5.54	5.43	4.75

Employee training（person）

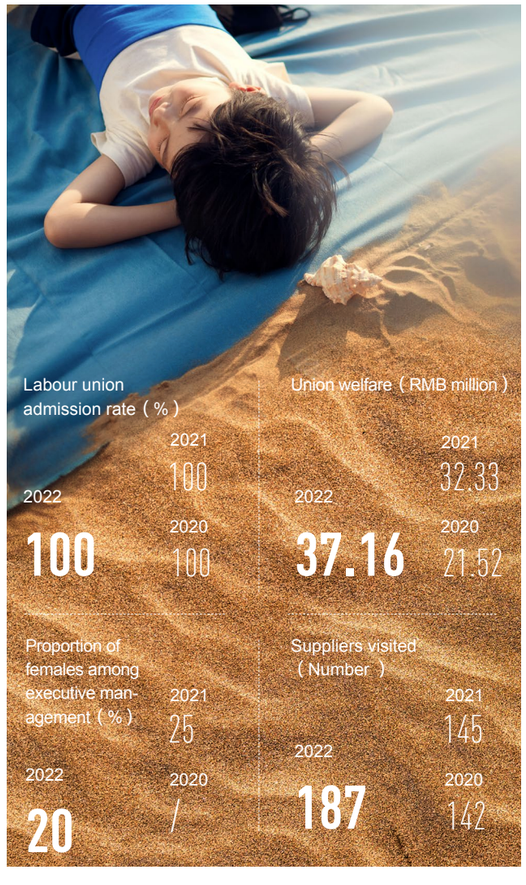
2022	2021	2020
479,046	243,504	736,656

Satisfaction of corporate atmosphere(%)

2022	2021	2020
91.12	90.56	89.10

Average EHS training per employee（hour）

2022	2021	2020
36.59	39.66	/



Labour union admission rate（%）

2022	2021	2020
100	100	100

Union welfare（RMB million）

2022	2021	2020
37.16	32.33	21.52

Proportion of females among executive management（%）

2022	2021	2020
20	25	/

Suppliers visited（Number）

2022	2021	2020
187	145	142

LONGi

LIGHT Sustainable Development Philosophy of LONGi

With the mission of "To make the best of solar energy to build a green world", LONGi promotes energy equity and strives to leverage solar technology to reshape the future of energy and ensure access to solar-powered energy for all.

In 2023, the company set up its sustainable development philosophy, known as LIGHT. Taking into account our development strategy, industry features, national development plan, and the United Nations Sustainable Development Goals, we have established five factors- "Lead", "Innovative", "Green", "Harmonious", and "Trustworthy".

ESG Sustainable Development Vision

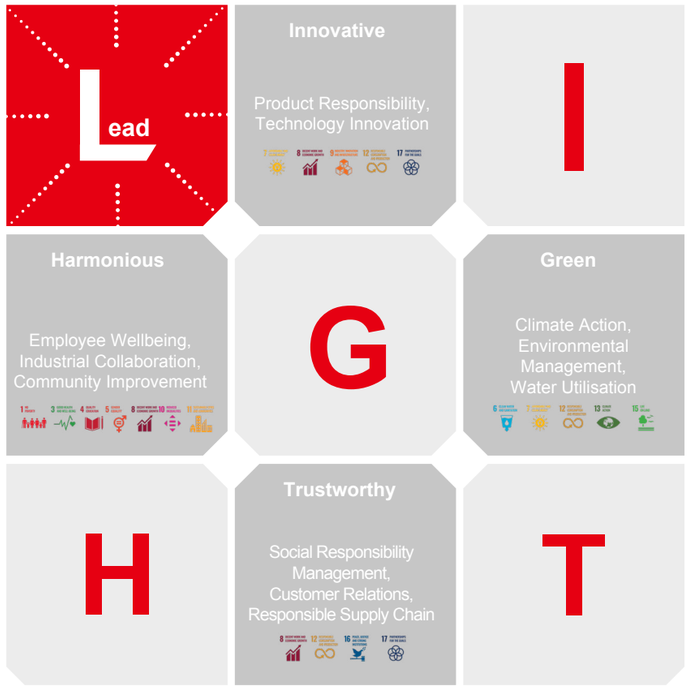
Lead for the clean energy world

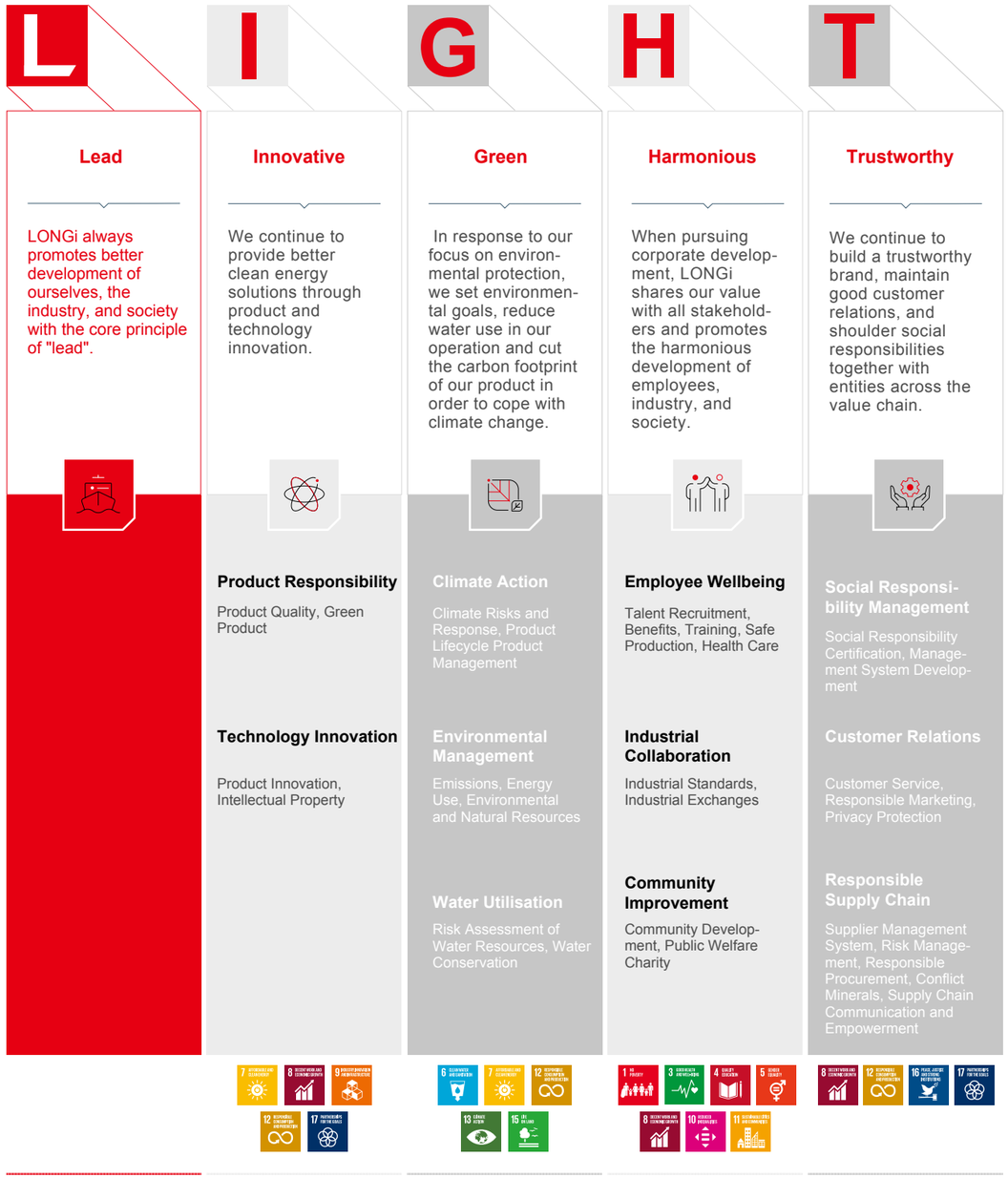
Promote better development of oneselves, industry, and society with the core of "lead"

ESG Sustainable Development Goal

Affordable for all

Affordable for All





Sustainable Development Management

LONGi consistently adheres to the philosophy of sustainable development and places high importance on ESG governance. We have strengthened the ESG engagement of our Board of Directors and are dedicated to improving our ESG governance capabilities and performance. Meanwhile, we engage in extensive discussions with various stakeholders to advance the integration of business decision-making processes, sustainable development principles, and stakeholder demands, thus promoting coordinated and synergized progress in our company, industry, and society.

ESG Governance

In order to better fulfil LONGi's sustainable development goals and strengthen the company's ESG governance capabilities, we have revamped our ESG governance structure. We have developed a three-tier ESG governance structure covering the governance, management, and execution, with the Board of Directors serving as the highest decision-making body. We have also expanded the Strategy Committee to the Strategy and Sustainable Development Committee, which oversees and reviews the company's ESG practices.

The Strategy and Sustainable Development Committee convene at least one time annually to bring ESG issues to discussions with the Board of Directors. The Board reviews the company's sustainable development strategy to secure consistency with our overall development strategy. The Sustainable Development Management Committee, the management body of the company's sustainable development, is led by the Brand Management department to develop ESG strategies and action plans. Departments of the headquarters and subsidiaries of the company will serve as the ESG Task Force to carry out various ESG actions.

LONGi's ESG Governance Structure

LONGi's ESG Governance Structure and Responsibilities of Each Tier

Governance	Strategy and Sustainable Development Committee	Members of the Board	The committee supervises and approves LONGi's ESG strategies, medium- to long-term ESG plans, annual ESG plans, and the formation and fulfilment of ESG policies. It also reviews material ESG issues and the progress of ESG goals, and reviews identified ESG risks and opportunities close to the company's development.
Management	Sustainable Development Management Committee	Heads of departments	The committee is led by the Chief Sustainability Officer (CSO) to oversee sustainable development management. The committee reviews LONGi's ESG development strategy, short- to medium-term work plans, and ESG management approaches. It also reviews the company's progress made towards ESG goals, results of risk and opportunity assessment, materiality analysis outcomes, and ESG reports.
	Sustainable Development and Climate Action Office	Brand Management Team	The committee establishes a governance system for sustainable development and ESG, periodically reviews the system, and proposes suggestions for optimisation; formulates sustainable development strategic goals, medium- to long-term plans, policies, and regulations; identifies material ESG issues and develops ESG goals; sets up an ESG information platform; and gains insights into the state-of-the-art philosophy, policies, rules and regulations, and actions of the sustainable development worldwide.
	Sustainable Development Expert Committee	Experts hired externally	The committee investigates and analyses external ESG trends, policies, and demands to provide recommendations, evaluates the company's ESG management, and puts forward suggestions accordingly.
Execution	ESG Task Force	Points of contact in the headquarters and subsidiaries	The committee identifies and evaluates the impact of climate change and ESG-wise risks on the company's business; strives to fulfil ESG goals with achievements; coordinates with the Sustainable Development and Climate Action Office to complete tasks such as information disclosure and project implementation; and understands the stakeholders' ESG demands, and promotes the company's branding of sustainable development.

Stakeholder Engagement

LONGi recognises the significance of stakeholders' opinions to our ESG practices. We remain attentive to and receptive to the demands of both internal and external stakeholders, establishing diverse engagement channels to collect and respond to their expectations and requirements.

Key Stakeholders	Major Expectations	Channels of engagement
Customers	Reliable and efficient products Quality services Contract compliance Business integrity	Customers' technical exchange conferences and new product launch Industrial fairs and technical workshops Official website, hotline services, and satisfaction surveys
Staff and Labour Union	Career growth Occupational health and safety Positive working environment Protection of rights and interests	Workers' Congress and Labour Union Committee Training and education, employer brand LONGi Happy+, and a complaint mini program Staff seminars, staff activities and the staff club
Shareholders and investors	Return on investment Financial robustness	Performance presentation, investor hotline, and roadshows Shareholders' meetings, regular reports and announcements, and field research
Suppliers and partners	Green supply chain Win-win cooperation Business integrity Contract compliance	Supplier training and supplier environment assessment Supplier website platform, synergetic innovation, and suppliers' meeting Code of conduct for suppliers and open procurement
Governments and regulators	Taxation Employment Industry development Compliance	Monitoring and inspection; policies and suggestions
Community and NGOs	Environmental protection Protection of rights and interests Safety Promotion of sustainable development	Active involvement with the community and engagement in project cooperation Charitable donations and public service activities Participation in industry associations, academic societies, and the Open Day of enterprises
Media	Transparency Seamless communication	Media report Exclusive interviews with the leadership

Materiality Assessment

LONGi conducts ESG materiality assessments periodically to address the expectations and demands of various stakeholders and gradually improve our ESG management. In 2022, we conducted a systematic investigation of material issues by going through the procedure of "stakeholder engagement, issue identification, issue assessment, materiality approval, and issue review".

Stakeholder engagement

- We maintained regular engagement with stakeholders including investors, customers, and government agencies to grasp their concerns and what they are specifically concerned of, and then addressed their demands accordingly.

Issue identification

- We identified 28 issues highly relevant to the company based on the *Environmental, Social, and Governance Reporting Guide* of the Hong Kong Stock Exchange, the Global Reporting Initiative (GRI) Standards, industry benchmarking, media monitoring, major ESG ratings, national policies, and stakeholder engagement results.

Issue assessment

- Surveys: We conducted a questionnaire survey among stakeholders and received their results on materiality sequencing and suggestions for improvement.
- Interviews: We also solicited feedback from internal stakeholders of 25 secondary departments on ESG issues and received hundreds of inquiries from investors and other external stakeholders.

Materiality approval

- We developed a materiality matrix based on the results of the survey.
- To approve the materiality of the identified issues, we factored into the company's development strategy, interview communication, external inquiries, and industry trends.

Issue review

- We submitted the materiality sequencing and matrix to the Strategy and Sustainable Development Committee for confirmation.

Matrix of LONGi's Material ESG Issues in 2022

Annual Feature

Equal Access to Clean Energy Led by Technology

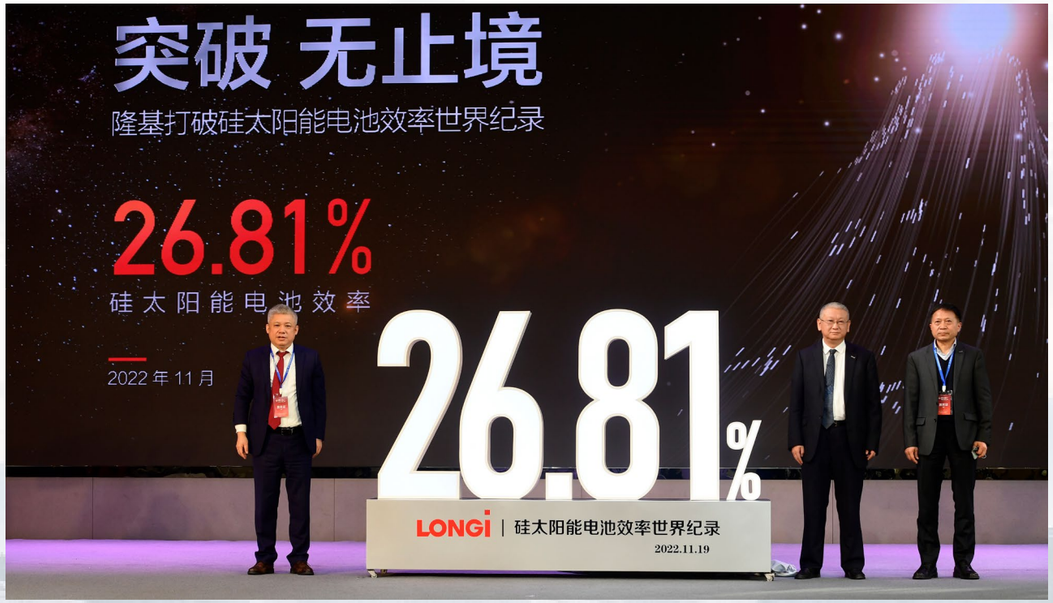
In the era of global carbon neutrality, the clean energy industry has emerged as a mainstay in achieving the "dual carbon" goals. As per calculations by the International Energy Agency (IEA), an estimated 35% to 40% of future electricity production will stem from photovoltaics (PV). Further advancements in PV cell conversion efficiency will then expedite the penetration of PV in households.

However, the global record for monocrystalline silicon cell efficiency has remained unchallenged since 2017, becoming a vexing technological bottleneck within the PV industry.

Inspired by the First Principles thinking, LONGi is committed to making contributions to the PV industry and the world. We believe that improving conversion efficiency and reducing the cost of electricity are eternal themes for the PV industry. As we position ourselves as "technology-led", we venture into uncharted territory, unravelling industry and global technical challenges through intensive research. We aspire to propel the transformation of the industry led by technology, and reshape a new global energy landscape.

In November 2022, LONGi set a new world record efficiency at 26.81% with our independently developed heterojunction (HJT) cells, as certified by the Institut für Solarenergieforschung in Hameln (ISFH), breaking the five-year record for silicon solar cell efficiency. It also marked a groundbreaking milestone that a Chinese solar technology company had first set the highest efficiency record for silicon solar cells. With this triumph, China's photovoltaic industry now proudly stands atop the global arena.

HJT Cells Set World Record with 26.81% Efficiency



How did we achieve this ?

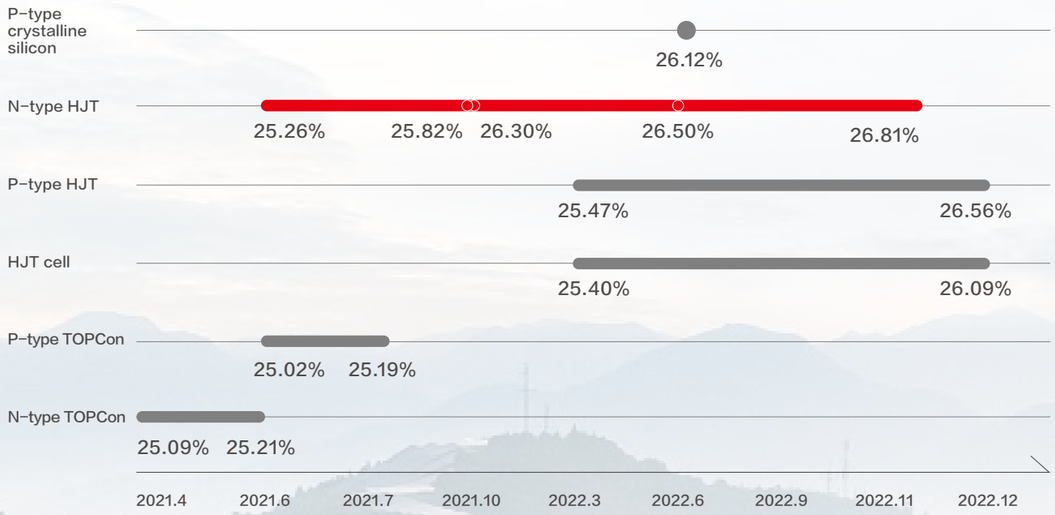
Behind this world record lies LONGi's unwavering commitment to technological innovation, comprehensive technical deployment, and the continuous efforts of its R&D team to overcome challenges.

In July 2022, LONGi's Central R&D Institute kickstarted operation to further strengthen R&D capabilities, attracting a multitude of top-tier scientific talent to explore breakthroughs in PV cell conversion efficiency.

From 2021 to 2022, LONGi broke the world record for PV cell conversion efficiency 14 times within a mere span of one year and four months, materializing an extraordinary absolute increase of 1.55%.

In the list of "2022 CPVS Best Research-Cell Efficiencies" released by the China Renewable Energy Society PV Committee (CPVS), LONGi secured seven slots of high efficiency, constituting nearly half of the total entries.

LONGi's cell efficiency
Breaking world record of milestones for 14 times



Saved for society

RMB300billion

Reduced land use by

10%

Equivalent to electricity cost reduction by

4-7%

What does 26.81% mean ?

It is estimated that for every additional 1 terawatt of PV installed globally, the silicon cell technology with a conversion efficiency of 26.81% can save approximately RMB300 billion for society while also reducing land use by 10%. 1 percentage increase in PV module efficiency is equivalent to a 4-7% decrease in electricity costs.

Every additional 1 terawatt saves approximately RMB300 billion for society

Significantly, the 26.81% conversion efficiency was achieved using scalable equipment, technology, and silicon wafers. This signifies that the new record carries immense industrial implications, representing a pivotal stride towards providing accessible clean energy solutions worldwide.

LONGi's PV silicon wafers have reduced over 536 million tonnes of CO_2 emissions.

Propelled by our relentless pursuit of rapid innovation and the inherent cost-effectiveness of high-performance PV products, LONGi has become the trailblazer of the PV industry. We create enduring value for global customers and facilitate the global emission reduction targets. Since 2012, LONGi has amassed a cumulative shipment of PV silicon wafers exceeding 290 GW, with estimations projecting a cumulative generation of over 1,148.2 billion kWh of green electricity by the close of 2022, a feat equivalent to averting the global emission of 536 million tonnes of CO_2.

"The figure 26.81% marks a starting point, not the endpoint." The pursuit of enhanced efficiency fundamentally stems from the pursuit of energy equality. The record of the 26.81% solar cell efficiency exemplifies LONGi's commitment to creating value and propelling industrial advancement, with an attempt of ensuring accessible and affordable clean energy for all.

Note: The aforementioned data has not yet been verified by a third party. The definitive source will be the company's *White Paper on Climate Actions* in 2023.

Milestones of LONGi's Cell Technology Innovation

2015

- Advancement in RCZ (Recharged Czocharlski) technology and diamond wire cutting techniques
- Enhancement of silicon wafer quality and cost-effectiveness in the PV industry

2016

- Technology innovation in PERC (Passivated Emitter and Rear Cell)
- Development of the Hi-MO 1 modules ushered in an era of highly efficient modules with low degradation

2017

- Breakthrough in bifacial PERC technology
- Introducing the Hi-MO 2 bifacial modules, significantly increasing power generation capacity

2018

- Integration of PERC and half-cut module technologies
- R&D of the Hi-MO 3 bifacial half-cut modules to enhance power output and reliability

2019

- Introducing the M6 standard monocrystalline silicon wafers
- Expanding the deployment of the Hi-MO 4 modules as a comprehensive replacement for the M2 modules

2020

- Release of the M10 (largest size) standard monocrystalline silicon wafers
- Development of the Hi-MO 5 modules achieved a dual breakthrough in power output and conversion efficiency for large-scale power

2021

- Upgrading HPC cell technology
- Developing the Hi-MO N modules with the N-type TOPCon, realizing dual improvements in conversion efficiency and light-induced degradation resistance

2022

- Innovation of HPBC technology
- Application in the Hi-MO 6 modules, enabling high-efficiency cell production and ushering a new era of distributed energy generation

01

Innovation for Future

Innovative 创新

Under its mission of "to make the best of solar energy to build a green world", LONGi has dedicated itself to innovation and value creation, doubled down on R&D, and accelerated product iteration and technological innovation. We strive to deliver quality and reliable products, bring better and sustainable value to our customers, and promote global energy transformation and green development.

Technology Innovation 24

Strong Responsibility for Products 30

Green Product 34

SDG goals addressed in this section

RMB **71.41** billion
invested in R&D

5.54 %
of the operating revenue went to R&D

4,036
scientific researchers

Awarded with "Top Performer" in the annual PVEL PV Module Reliability Scorecard for **6** consecutive years

7 times
LONGi has refreshed the world records of PV cell conversion efficiency

Obtained more than **40** product certificates from countries in 4 regions worldwide

All series of wafers have received the French carbon footprint ECS certification, and the high-efficiency modules have obtained the Environmental Product Declaration reports.

LONGi laboratory has 70+ testing capabilities and is accredited by China National Accreditation Service for Conformity Assessment (CNAS); it is also the strategic cooperation lab of TÜV Rheinland, SÜD, and NORD, CGC, CSA, and other renowned international certification bodies for new energy.

2.7 %
LONGi released LONGi ALK Hi1 series products that reduce the levelized cost of hydrogen (LCOH) of hydrogen production by

6.4 %
save of electricity cost per year

LONGi is a member of several research institutions, including the Hydrogen Energy Industry Promotion Association and the PGO Hydrogen and Fuel Cell Industry Research Institute.

1.1 Technology Innovation

Product and tech innovation are the key drivers of LONGi's development. We have set up a scientific and efficient R&D management system and an innovation mechanism for internal and external collaboration, partnered with famous universities at home and abroad, and taken multiple measures to improve the efficiency and quality of R&D. At the same time, we are closely following the update of PV technology and drawing up a forward-looking roadmap for the development of hydrogen energy as part of our unremitting efforts to build a world of green energy.

Innovation System Building

LONGi strengthens its science and technology innovation management rules and processes and improves the management policies, including the *Policies on Scientific Research for Product Management Centre* and the *Policies on Innovation Project Management for Product Management Centre*, to build a standardised research and innovation management system covering risk warning, process management, result sharing, task evaluation, and talent incentive.

We have actively built a first-class organisational platform for technological innovation, on the basis of the R&D centres of each business division, the LONGi Central R&D Institute was established in July 2022, to attract top-tier scientific research talent in the industry. In addition, we have established an "innovation vanguard" composed of cross-industry talents to focus on the exploration and development of "PV+" hybrid power solutions. By the end of 2022, the total number of our R&D employees reached 4,036.

Besides a strong emphasis on technological innovation, LONGi has also paid close attention to the quality of its R&D and has continuously optimised the management and testing capabilities of Xi'an and Taizhou test labs. We uphold the LONGi Lifecycle Quality through every step of innovative product testing, which includes material testing, new product testing, and application testing, to ensure reliable quality for innovation.

Honours for LONGi's Innovative Technology in 2022

September

LONGi won the first prize in the Science and Technology Award issued by the China Renewable Energy Society with its project "R&D and industrialisation of high-efficiency bifacial mono solar cell module".

October

LONGi was honoured with the 2022 Invention and Entrepreneurship Award by the China Invention Association with its "Design, Development and Application of High-Efficiency HJT solar cells" and became the only first-prize winner in the PV industry.

November

LONGi was also honoured with the 2022 "Zero Carbon China" Top 10 Innovative Technologies with "Heterojunction High-Efficiency Cell Innovation Technology" by the Energy Investment Committee of the Investment Association of China.

Technology Innovation Leader

The development of photovoltaic products is closely linked with the innovation of silicon wafer, cell, and module technologies. Following the trend of technology development, LONGi builds a rich product matrix based on the consideration of product reliability, cost, and technical compatibility, and leads in the efficiency, performance, quality, and cost of its cell and module technologies and products.

LONGi has been developing the frontier technologies of PV cells, including PERC[1], HJT[2], TOPCon[3], and HPBC[4], and designing the most cost-effective products for mass applications with high efficiency and reliability.

The mass production efficiency of the new generation HPBC cells exceeds

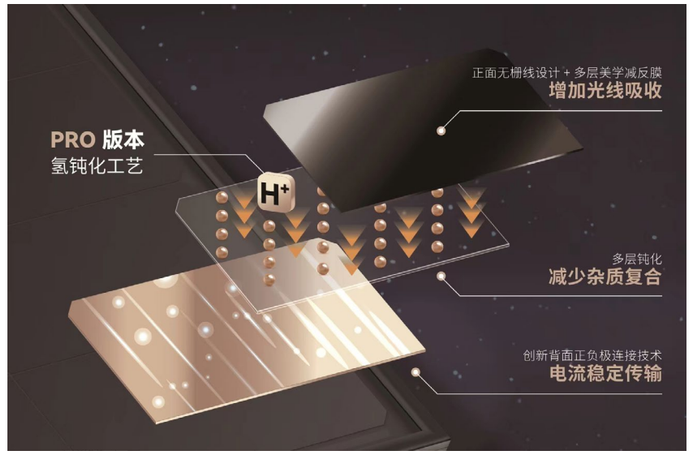
25%

The efficiency of the PRO version HPBC cells exceeds

25.3%

LONGi Launched New HPBC Solar Cell

In November 2022, LONGi released its new HPBC solar cell. The mass production efficiency of the standard HPBC cell is over 25%, while that of the PRO version, enhanced with hydrogen passivation technology, exceeds 25.3%. Unlike previous solar cells, HPBC cells have no grid lines on the front side, which reduces the power generation efficiency loss due to grid line shading and achieves an average of 10% efficiency on average compared to PERC cells with grid lines. In addition, the HPBC cell adopts full backside welding technology, which effectively improves the module's ability to resist hidden cracks.



HPBC Solar Cell

In module technology, we developed a new compatible and precise ultra-multi-grid interconnect technology to increase cell conversion efficiency. In terms of product upgrades, we further expand our centralised and distributed product matrix with the launch of the Hi-MO 5m 54-cell and Hi-MO 6 modules. By providing efficient, reliable, and high-yielding PV products for different scenarios, we offer more choices to global customers and thus create greater value.

[1] PERC: Passivated Emitter and Rear Cell.
[2] HJT: Heterojunction with Intrinsic Thin-film.
[3] TOPCon: Tunnel Oxide Passivated Contact.
[4] HPBC: Hybrid Passivated Back Contact.

Module upgrade in 2022

February

LONGi launched the new Hi-MO 5 single-sided module (i.e., Hi-MO 5m 54) that produces a maximum power output of 415W and achieves an efficiency of 21.25%. The new module is designed mainly designed for various distributed scenarios such as residential and C&I rooftop systems, module installation, manual handling, and module transportation.

Hi-MO 5m 54-cell module

November

LONGi released a new generation of Hi-MO 6 module based on high-efficiency HPBC cell technology, the first exclusive module "tailored" for global distributed consumers, pioneering four series of four series, Explorer, Scientist, Guardian, and Artist to meet different needs of users. The highest mass production efficiency of the new generation module can reach 22.8%, and the power generation performance is 6-10% higher than that of traditional modules, and the average gain is 10% compared with PERC products.

Hi-MO 6 Product

LONGi Helped to Build the First Solar Power Plant in Qatar

In 2022, an 800MW solar power plant in Qatar has been connected to the grid at full capacity, with all modules supplied by LONGi. Equipped with LONGi Hi-MO 4 bifacial modules, the project is by far the third largest single photovoltaic power plant in the world, and the world's largest photovoltaic project with a tracking system and bifacial modules. It is expected to provide an annual 1.8 billion kWh of clean energy annually, meeting the electricity needs of approximately 300,000 households and reducing carbon dioxide emissions by nearly 900,000 tonnes, and helping make the FIFA World Cup Qatar 2020 a "carbon neutral" event.

Expected to provide Qatar with clean electricity per year approximately

1.8 billion kWh

Reduce CO_2 emissions annually by approximately

900,000 tonnes

800MW Ground-Mounted Photovoltaic Power Plant in Qatar

Industry Cooperation

LONGi pays close attention to industry trends, keeps learning cutting-edge technologies, and actively cooperates with universities, national innovation laboratories, and other internal and external institutions to expand the boundaries of scientific and technological R&D and promote innovation momentum. In 2022, LONGi carried out more than 15 co-R&D projects with the government, universities, and enterprises, organised and participated in the formulation of 200 industry standards, and became a member of many research institutions such as the executive director company of the Hydrogen Energy Industry Promotion Association, and the Board of Directors of the PGO Hydrogen and Fuel Cell Industry Research Institute.

Industry Cooperation in 2022

Cooperation With Universities

The company collaborates with educational institutions in scientific research, talent nurturing, and other frontier areas, aiming to promote the PV industry by connecting the upstream and downstream. In 2022, LONGi signed an agreement with Northwest University's Carbon Neutral College to establish a joint master's program (LONGi Class), exploring the "industry-centric" mode of talent cultivation and reserving R&D talents for LONGi Central Research Institute. It also carried out 40 cooperation projects with 25 universities (including 7 listed in Project 985) in the "Second Job Fair" organised by the Department of College Students of the Ministry of Education.

Northwest University

Cooperation in the Energy Industry

July

LONGi signed a tripartite strategic cooperation agreement with Modern Energy Group and Hengyun Group to deepen their cooperation in new energy and co-build the most competitive green business in the Greater Bay Area. The cooperation focuses on the production, manufacturing, and procurement of PV modules, systematic solutions of "green electricity + green hydrogen", and others. Going forward, we expect to foster the all-round, wide-ranging, and multi-level cooperation.

The Signing of Tripartite Cooperation Agreement

Cooperation in the Construction Industry

November

The Northwest Survey and Design Institute of Power China and LONGi signed a strategic cooperation agreement, in which the two sides would fully combine their strengths and push forward the implementation of the project in a concerted approach. The two parties will carry out comprehensive and in-depth cooperation in project development, application, and technology R&D, strengthen resource sharing and PV industry chain integration, promote the development and application of large-scale new energy projects, and jointly leverage the advantages of technology-based innovation.

The Signing Ceremony of the Strategic Cooperation Agreement

Cooperation in the Transportation Industry

August

The Environmental Science and Technology Company of the Scientific Research Institute of the Ministry of Transportation, together with LONGi and other companies, officially established the New Energy Transportation R&D Centre to explore new energy transportation. The Centre aims to be a first-class cooperation platform for the development of various types of transportation, to support joint efforts in the development of new energy transports and technologies, and to promote the application of new energy in the transportation industry.

Inauguration Ceremony of the R&D Centre of New Energy Transportation

Cooperation in the Aerospace Industry

September

LONGi announced the launch of its Future Energy Spacelab. The project aimed at integrating aerospace technology and new energy and advocating the transformation and industrialisation of scientific and technological achievements. It will focus on research and external cooperation in new energy industry trends, solar energy, and space, space environment verification, energy monitoring satellites, and solar energy space transmission.

Future Energy Spacelab Inauguration Ceremony

Intellectual Property Rights

LONGi adheres to the principle of combining scientific and technological innovation with intellectual property rights (IPR) protection and comprehensively improves the capability of IPR creation, application, and management. We have built a perfect IP management structure and formulated IPR protection policies, including the *Intellectual Property Management Mechanism*, the *Management Measures for Implementation of Patent Protection*, the *Management Measures for Intellectual Property Incentive and Evaluation,* and the *Management Measures for Intellectual Property Rights in Technical Exchanges* to effectively regulate our patent management.

The company attaches great importance to IPR risk control and has established an IPR risk monitoring and management system covering all business units and all processes of the company's core business. The company has also established an IP risk identification, investigation, communication, and monitoring mechanism that regularly issues IP risk warnings. In addition, plans for IP protection and risk prevention and control are formulated for domestic and international scenarios are also devised, and the effective implementation of risk control measures is guaranteed through mobilizing institutions, personnel, and systems to protect LONGi's technological achievements to the greatest extent.

LONGi has also been cultivating high-value patents, formulating high-value strategies, and jointly exploring high-value technical solutions with suppliers and technical experts from universities, to improve the quality of the intellectual property and enhance the core competitiveness of the company. During the reporting period, the company was granted 760 patents, more than doubling from the previous year. As of December 31, 2022, the company has obtained a total of 2,132 patents[5].

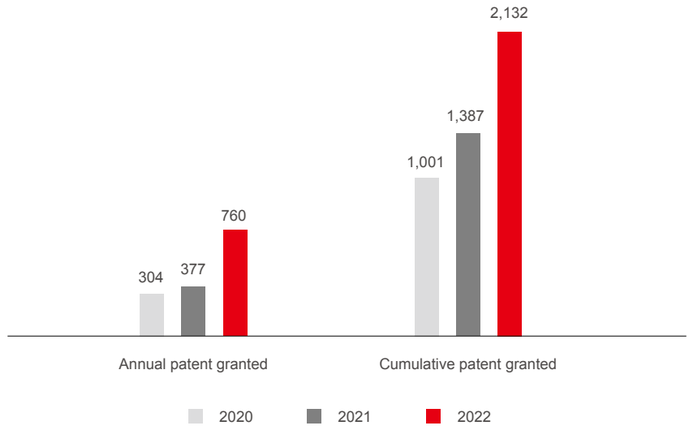
The Company has obtained patents in 2022

760 items

The Company has obtained a total of patents

2,132 items

Applied and Granted Patents in the Past Three Years



[5] The cumulative granted patents here refer to the total number of granted patents at home and abroad and within the validity period.

1.2 Strong Responsibility for Products

LONGi adheres to the principle of "Quality First". builds the quality strategic route, establishes the end-to-end quality management system of the whole value chain, relies on the large-scale industrial base and mature quality management procedures of the whole process, strictly controls the product quality, and insists on providing the maximum value to customers with the best quality products.

Symbiotic Quality → Quality Excellence

Extended LONGi value chain QM. World Class Quality, create quality value to customers

Build-in Quality → Quality Brand

Extreme customer experience, ZERO Defects culture, quality operational excellence

TOM → Quality Satisfaction

Whole value chain quality management, Integrated QMS, Fast response, Problem solving ability, Continuous improvement, to ensure quality competency

LONGi's Roadmap for High-Quality Development

Honours of LONGi's product quality in 2022:

LONGi won the "High Achiever Award" from the Renewable Energy Test Centre (RETC)[7] for its outstanding PV module performance for the fourth consecutive year, along with 10 individual awards, ranking No.1 among all manufacturers.

May

LONGi PV modules were named "Top Performer" for the sixth consecutive year in the product quality test conducted by PVEL[6]. Among them, the bi-facial PERC modules continued to achieve this ranking in all 6 tests.

June

LONGi won the China PV Modules Quality Award for the sixth consecutive year. This achievement can be represented by LONGi's integrated PV products, "LONG DING" and TOPCon modules, which won the award for "BIPV Module Overall Performance" and the award for "PV Module Energy Yield Simulation".

September

Product Quality System

We strictly comply with the *Product Quality Law of the People's Republic of China, the Standardisation Law of the People's Republic of China*, IEC 61215-2, and other domestic and international laws, regulations, and standards for product quality control and safety. Regulations have been enacted and implemented focusing on the quality planning system, quality objectives, products substitution management, etc.

We have established a systematic quality management system and strengthened quality control throughout the production process to ensure that customers are supplied with reliable, high-quality products. During the reporting period, there were no incidents of active or passive recall of products due to product quality issues.

PV products

- Obtained ISO 9001 quality management system re-certification by TUV[8] and CQC[9]
- Obtained TUV IEC 62941 PV module manufacturing quality system certification

Hydrogen Energy Products

- Obtained ISO 9001 quality management system certification
- Obtained CE-PED certification for pressure-bearing equipment from EU member states
- Obtained factory quality system "ASME" certification[10]
- Granted by ESA[11] the social responsibility system "WCA" [12] certification

Management of Raw Materials	Manufacturing Process Management	Reliability Monitoring	Quality Test of Finished Products before Delivery
▪ Quadruple control ▪ Unified sample and stardard for raw materials ▪ Technical stardards for testing raw materials	▪ Management and quality test of multiple items in the manufacturing process ▪ Unified quality control process (QCP)	▪ Every set of BOM is under the high-frequency monitoring program ▪ Pioneering in the reliability monitoring frequency industry	▪ 100% confirmation check from moving products off production lines to shipping. It aims to minimise delivery risks and enhance customer satisfaction

LONGi's Quality Management Process

[6] PVEL: The abbreviation of "PV Evolution Labs", independent third-party laboratories for test, which are globally authoritative.

[7] The Renewable Energy Test Centre (RETC) is an independent laboratory that leads the industry in technical and certification testing for photovoltaic and renewable energy products. The Centre publishes the annual PV Module Index (PVMI) report, which evaluates modules on three dimensions: reliability, performance and quality.

[8] TUV: TÜV Rheinland in Germany, a world-renowned third-party agency for certification and test.

[9] CQC: China Quality Certification Centre, a nationally authorised agency for certification in China.

[10] PED：Pressure Equipment Directive.

[11] ASME: The American Society of Mechanical Engineers.

[12] WCA：Workplace Conditions Assessment.

Product Quality Inspection

We take an initiative part in exposing our products to quality inspection and various kinds of specialised examination from our company and beyond to find out and address problems within a time limit. In 2022, two internal inspections were carried out, including the inspection of quality systems and the whole groups, together with the annual surveillance of the IEC 62941 PV component manufacturing quality management system conducted by TUV in February and the examination for re-certification of management system of QEHS, namely Quality, Environment, and Occupational Health and Safety. All the projects where some deficiencies were found in the inspection have been verified, closed, and improved.

Digitalised Quality Management

We remain committed to digitalised and refined manufacturing for upgrading quality. The Digital Quality Management Platform has been launched under the overall control of the MES management system for refined manufacturing. The platform is divided into three sections: quality information management system (QMS), online laboratory inspection management system (LIMS), and artificial intelligence inspection system (AI). We thus pioneered digital quality management in the industry.

Quality Information Management System (QMS)

Useful for collecting and sharing product quality information, as well as for presenting data more clearly throughout the process of raw materials selection, production, and after-sales, enabling timely detection and resolution of quality information problems.

Online Laboratory Inspection Management System (LIMS)

Helpful to control the quality of experiments by providing an overall view of laboratory resources and the experimental process of experiments, including schedules.

Artificial Intelligence Inspection System (AI)

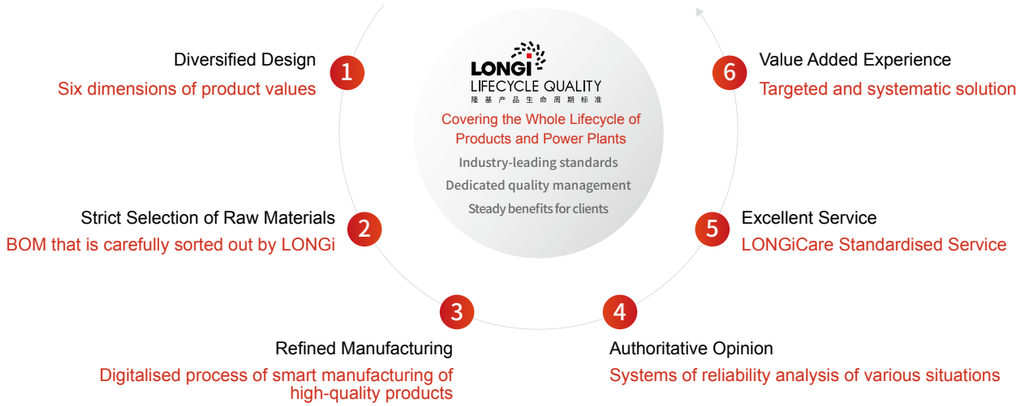
As the first integrated AI whole-process quality inspection system in the PV industry, it provides analysis and assessment of nearly 200 quality inspection data across the process providing an alternative to the traditional mode of manual processing based on personal experience to improve the efficiency and quality of inspection.

Digitalised Quality Management

Comprehensive Management of Lifecycle Quality

From module design to mass production, and then to post-sales service, LONGi always insists on achieving high quality aligned in line with high standards and integrates LONGi's "Product Lifecycle Quality Standard" into every link of product production and application.

According to LONGi's Product Lifecycle Quality Standard, we remain committed to four-tiered standardised management and six-pronged standards of the lifecycle of product and power plant lifecycle to ensure the efficient operation of the product in power plants for 25-30 years. In addition, we have launched a protection system that simulates various types of real-life outdoor conditions and verifies the reliability of our modules after thorough testing, ranging from rigorous tests that focus solely on a specific aspect exclusively to comprehensive tests of product aging, from the use of products in complex and diverse environments to extreme disaster climates. In doing so, we can ensure the safe and efficient operation of the modules for the long-term return with high profit from a PV power plant throughout its lifecycle.



LONGi Lifecycle Quality Standard

Technically Standardised Management

Effectively improve module performance power and power generation efficiency to reduce constantly the cost of photovoltaic products and photovoltaic power generation systems so as to ensure an affordable and sufficient supply of photovoltaic power, which is a prerequisite for new power systems.

Quality Management

Ensure the safety and reliability of photovoltaic systems through rigorous control with high standards of product quality, which can be exemplified by multi-dimensional module design, meticulous material selection, and refined manufacturing, with the optimal design of module size and the most stringent reliability testing systems we can offer.

User Experience Management

Use digital technology to add codes to each component and let customers participate in identifying the quality and information of products, taking into account the customer's suggestion on the whole lifecycle solution of the power plant, covering design, installation, operation, maintenance, etc.

Low Carbon Management

Reduce the carbon footprint of our products through environment-friendly manufacturing and a low-carbon supply chain for carbon neutralisation of PV projects and carbon-free PV products manufacturing.

LONGi's Quadruple Standardised Management

1.3 Green Product

Revolving around the brand philosophy of "stable and reliable development led by technology" and a customer-centred approach, LONGi provides practical routes and solutions for global decarbonisation actions from PV to hydrogen energy by fully guaranteeing the technical leadership and quality reliability of its products, accelerating the arrival of a "zero-carbon" era.

Green PV

Driven by the goals of carbon neutrality and carbon peaking, the demand for green electricity is soaring. As a global solar technology company, LONGi provides innovative green new energy solutions for customers in the industrial, commercial, and household markets to realise the benign interaction between ecology and energy.

Low-Carbon Product, Foundation of Green PV

In 2022, LONGi's full series of wafer products passed French carbon footprint ECS certification. This carbon footprint certification covers the carbon emissions of the entire lifecycle of wafer products, including raw materials mining, manufacturing, transportation, and storage stages. Among them, the carbon value performance of the crystal pulling and slicing processes is taking the way in the industry.

Moreover, LONGi's LR4-72, LR5-54, and LR5-72 series efficient module products have won the UL EPD (Environment Product Declaration) solar photovoltaic module environmental product declaration verification certificate awarded by the globally renowned application safety science expert UL Solutions and have obtained EPD Italy certification through the mutual recognition plan of UL and Italy's ICMQ (EPD Italy certification operator), which covers the entire lifecycle of LONGi's crystal pulling, wafers, cells, and modules.

French Carbon Footprint ECS Certification

UL EPD Environmental Product Declaration Verification

Electricity Solutions, Promoting Green and Low-Carbon Energy

LONGi keeps expanding the application scenarios of PV in industrial enterprises and drives the power industry to achieve carbon neutrality by building Eco-friendly PV Power Plants, Solar-plus-Energy Storage Plants and Hybrid Power Plants.

Eco-friendly PV Power Plants

Depending on different types of sites, we can provide solutions for large-scale PV power plants, general mountaion PV power plants, complex mountain PV power plants, and large-scale PV power plants floating on water (floatovoltaics), fully realizing the grid-friendly, environmentally-friendly, system-friendly and economic benefis-friendly scenarios.

Solar-plus-Energy Storage Plants

With the goal of safety, green and effectiveness, supported by flexible energy storage and other advanced technologies as well as innovative policy mechanisms, efforts can be made to create a new mode of power generation and consumption, and pave the way for building a new-generation power system that integrates power generation source, grid, load, and storage capabilities.

Hybrid Power Plants

With PV as the main generation source, a complementary power supply system consisting of wind, hydro, thermal and other power types can be integrated with battery energy storage and pumped storage, resulting in a hybrid power solution.

The First Million-Level-Kilowatt New Energy Base Project in Hubei Province — "One-Site, Triple-Use" in Promoting Agriculture

On June 30, 2022, the hybrid million-level-kilowatt new energy base project in Macheng City, Hubei Province, a hybrid power demonstration zone for LONGi's "animal husbandry agri-voltaic, complemented with solar" achieved grid-connected power generation for the first time. The project realises "one-site, triple-use", integrating planting, breeding and PV power generation, and maximizing the use of land resources. The photovoltaic panels are erected more than 3 meters above the ground, leaving space for planting and breeding, avoiding direct sunlight in summer, as well as preventing natural disasters such as heavy rain and freezing rain, which play a positive role in protecting plants.

The under-the-panel economy featuring planting and breeding can help enhance farmers' income. The power generation based on the PV panels can drive Macheng City to achieve energy green and low-carbon development, and provide new momentum for the development of the old city.

The First Million-Level-Kilowatt New Energy Base Project in Hubei Province

Household Solution, Reinvigorating and Greening Cities

Through breakthrough monocrystalline-silicon modules, LONGi continues to provide standard household solutions, custom household solutions and newly upgraded "LONGi Sunflower" and other solutions and services with high efficiency, high reliability and high yield, bringing customers a wonderful experience of close contact with green energy.

The Launch of Hi-MO 6 in Nordic Countries — "Light of Green Energy" Promoting Global Energy Transformation

LONGi applied the newly released Hi-MO 6 Scientist series 54-cell modules to household projects in Northern Europe including Sweden. The module adopts HPBC battery technology, which greatly improves light absorption and photoelectric conversion capabilities, has excellent wind and snow resistance, and can easily cope with Stockholm's climate and light problems.

With its excellent photoelectric conversion performance and the extremely elegant appearance of obsidian style, the product fully integrates and matches the building itself with the local natural environment and has won the favour and love of local users. From Stockholm, Sweden to Helsinki, Finland, from romantic seashores to bustling cities, Hi-MO 6 modules' higher-yield power generation performance perfectly meets the electricity demand of users in extremely cold places and warms the winter of the entire "Land of Ice and Snow".

Hi-MO 6 Scientist Series Application Site in Sweden

Industry Solutions to Benign Interaction between Ecology and Energy

LONGi actively explores the "PV +" comprehensive utilisation model, deeply integrates PV with traditional multi-business formats, and keeps creating new scenarios for green industries, improving land utilisation, and realizing a benign interaction between ecology and energy.

Industries

We provide a decarbonisation solution for high energy-consuming industries and a climate-conscious alternative for the petrochemical industry. We actively explore the path to accelerate industrialisation and commercialisation of green hydrogen to achieve a highly integrated green power and green hydrogen solution and to help create "a zero-carbon world driven by green energy".

Construction

Through building integrated PV-BIPV and households PV and based on intelligent digital project implementation ability, we could help enhance sustainability, promote technology and increase comfort level, facilitating green and low-carbon development of the construction sector.

Transportation

We actively participate in the exploration of the new ecology of the integration of transportation and energy, drive the efficient coordination of new energy vehicles and renewable energy, and launch comprehensive green solutions for transportation. We build green power scenarios based on transportation, make full use of various transportation sites, turn transportation lines into green energy production lines, and contribute to carbon peaking and carbon neutrality in the transportation sector.

Agri-Voltaics

We keep developing new PV businesses such as solar panel power generation, and planting, animal husbandry and fish farming underneath panels. We have launched agri-voltaics, forestry agri-voltaics, animal husbandry agri-voltaics and fishery agri-voltaics to connect the PV industry with others and optimise the energy mix and lead green development.

BIPV PV Power Generation Project in Boao Zero Carbon Demonstration Zone, Empowering Every Inch of Buildings

The BIPV[13] PV power generation project in Boao Zero Carbon Demonstration Zone was jointly built by LONGi and Centre INT team. BIPV PV power generation products such as PV rooftops, glass curtain walls, PV power generation glass, and PV power generation railings were designed without affecting the light transmission of the building. PV products are perfectly integrated with buildings.

The project truly empowers every inch of buildings, making BIPV a new highlight of the Dongyu Island Zero Carbon Demonstration Zone and one of the "green cards" at the Boao Forum for Asia.

PV Technological Achievements at the 2023 Annual Conference of the Boao Forum for Asia

LONGi Park, PV -Storage-Charging Integrated Green Team Station in Boao Zero Carbon Demonstration Zone

[13] BIPV: Building Integrated Photovoltaic.

Green Hydrogen

Hydrogen energy is becoming one of the important carriers of global energy transformation. Under the carbon-neutral scenario in 2060, the annual demand for hydrogen in China will increase to about 130 million tonnes. The hydrogen production from renewable energy is expected to reach 100 million tonnes, and there is huge room for growth in the hydrogen energy business sector[14].

In 2022, LONGi's hydrogen production capacity will reach

1.5GW

LONGi Hydrogen has been vigorously building a hydrogen R&D centre and increasing investment in S&T research and development. The main business scope covers the manufacture of water electrolysis hydrogen production equipment and the solution of hydrogen production systems by renewable energy. The company is committed to becoming the world's leading hydrogen equipment technology company. Statistics from Bloomberg New Energy Finance (BNEF) shows that LONGi's hydrogen production capacity will reach 1.5GW in 2022, ranking first in the world; according to TrendBank's report, LONGi's hydrogen shipments will rank among the top three in the country.

Green Hydrogen Products

We provide a complete set of hydrogen production equipment with alkaline water electrolysis and gas-liquid separation frame as the base and strive to create high-performance and high-quality products. Among them, the LONGi ALK Hi1 series products released in February 2022, with high efficiency and high yield, achieved the goal of efficient hydrogen production.

Through various safety compliance certifications and risk assessments, we have realised the safety and reliability of hydrogen products. Based on the application of automated production and control systems and the operation of intelligent operation and maintenance platforms, we have achieved intelligent and reliable production and operation, and guaranteed safety, reliability, efficiency and benefits of hydrogen products to the largest extent.

Releasing LONGi ALK Hi1 Series Products, a Breakthrough in the Energy Efficiency of Commercial Water Electrolysis Hydrogen Production

In February 2023, LONGi released the LONGi ALK Hi1 series products globally, which can reduce DC power consumption by more than 10% and greatly reduce LCOH[15]in different scenarios. Taking a green hydrogen project in China as an example, which purchases part of the green electricity while generating photovoltaic power, with the adopted ALK Hi1 series products running for about 4,300 hours per year, LCOH is reduced by 2.7%, saving annual electricity cost by 6.4% and reducing the initial investment by 25%.

The performance of LONGi ALK Hi1 series products has been certified by third-party authoritative organisations such as Det Norske Veritas and DEKRA (Shanghai) Co., Ltd., and has reached the first-class energy efficiency of the national standard GB-32311-2015 for hydrogen production systems. From empirical data, the product performance of LONGi Hydrogen is already far ahead of the existing commercialisation level of the industry.

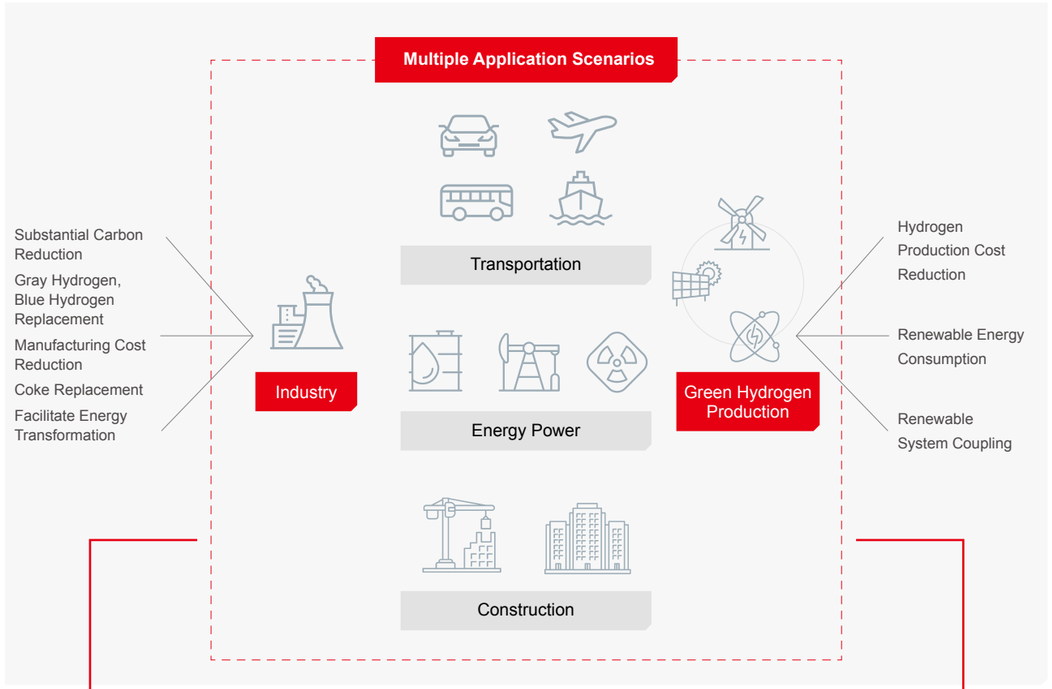
The Release of LONGi ALK Hi1

[14] From *White Paper on China's Hydrogen Energy and Fuel Cell Industry 2020*, Hydrogen Energy and Fuel Cell Industry Innovation Alliance.

[15] With different hours of system utilisation, every 0.1kwh/Nm3 reduction in DC power consumption for hydrogen production can reduce LCOH (the levelized cost of hydrogen, unit hydrogen production cost) by 1.8%-2.2%, which is equivalent to reducing 10% to 25% the initial investment in hydrogen production equipment.

Commercial and Industrial Solutions

We have been actively exploring the path of "multi-technology route + multi-scenario application" for green hydrogen, and have formulated modular and intelligent solutions, which are widely used in various scenarios such as petrochemical, chemical, electric power, iron and steel metallurgy, transportation, and other manufacturing industries. With advantages such as energy efficiency, automatic control, intelligent manufacturing, and real-time monitoring of operation, we help to drive the high-quality development of the green hydrogen industry with technological innovation.



Facilitating Unit Hydrogen Production Cost——LCOH Reduction

Safe and Reliable

- Robust and Reliable Support for Suppliers
- Multi-Scenario Device Integration Capabilities
- Standard Production Line
- Low-Carbon Operation of the Whole Industry Chain
- Equipment Long Lifecycle
- Intelligent Production Control System, Intelligent Equipment Operation and Maintenance

Efficient and Economical

- High Hydrogen Production
- Low Power Consumption
- Comprehensive Utilisation of Heat Energy and Improvement of Conversion Energy Efficiency
- Large-Scale Production, Driving Equipment Cost Reduction
- System Coupling Solutions for Renewable Energy Power Generation in Various Scenarios
- Strong Adaptability of Rolling Waves, Suitability for Renewable Energy Power Generation

Scene Graph of Green Hydrogen's "Multi-Technology Route + Multi-Scenario Application"

Excellent Energy Efficiency

Improve overpotential and ohmic loss through technical means such as electrolysis cell structure optimisation and material optimisation, and greatly reduce DC power consumption.

Automated Control

One-button start and stop without manual intervention.
Automatic replacement of nitrogen, multiple protection interlocks for safe shutdown, reducing operational risks.
PLC[16] redundant design, independent SIS[17] safety instrumented system.

Intelligent Manufacturing

Leaking in realizing the automated production of electrolysis chambers in China to ensure consistency and support excellent performance.
Traceability of Raw Materials.

Real-Time Monitoring of Operation

Monitor the status of raw materials and key components, ensure the operating environment at the source, and realise intelligent operation and maintenance.

[16] PLC: Programmable Logic Controller.
[17] SIS: Safety Instrument System.

Industrial Empowerment in 2022

In May

Inauguration of Sinopec's First >10,000-Ton Green Hydrogen Demonstration Project

LONGi Hydrogen won in the Sinopec's first >10,000-ton Green Hydrogen Demonstration Project. The project has been China's first >10,000-ton green hydrogen project so far. This project will build a new 300MW photovoltaic power station and an electrolytic water hydrogen production plant to generation 618 million kWh green electricity and 20,000 tonnes green hydrogen per year. It will also realise the partial replacement of natural gas for hydrogen production and can reduce carbon emissions by about 500,000 tonnes per year, which is of great demonstration significance for the comprehensive implementation of the carbon peaking and carbon neutrality strategy and the promotion of energy transformation.

In August

2022 TrendBank Green Hydrogen Industry Conference

LONGi Hydrogen Energy and TrendBank jointly released the "China Electrolysis Water Hydrogen Production Industry Blue Book (2022)" at the "2022 TrendBank Green Hydrogen Industry Conference", comprehensively and systematically expounding the current status and development of the supply chain of the electrolysis water hydrogen production system. The joint release of the blue book has important industry reference significance for the complementary resource needs of upstream and downstream enterprises of hydrogen energy, industry technology and product quality.

In November

- Based on China's first hydrogen key technology and equipment evaluation standard system, China Hydrogen Alliance Research Institute released the first phase of Hydrogen Top Runner Action "2022 Hydrogen Top Runner: Alkaline Water Electrolysis Hydrogen Production System Test and Evaluation Report", with LONGi Hydrogen as the participating unit. At the same time, LONGi Hydrogen stood out from more than 100 companies and was shortlisted for the approved list of the Hydrogen Top Runner (Electrolyser) and ranked among the top five, helping China's hydrogen equipment technology to leapfrog from the "following" to the "leading" position.
- LONGi Hydrogen signed the *Clean Energy Promotes Electricity Access in Africa ("Egypt Initiative")*, actively participated in multilateral meetings in various fields and provided suggestions for global green and low-carbon development and the realisation of a zero-carbon future.

02

Green and Low-Carbon Operations

While providing green energy for the world, LONGi highly values its own production and operation's green protection. We have established a comprehensive environmental management system and actively utilised green technologies to address climate change, striving to become a trailblazer in the global green transformation.

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SDG goals addressed in this section

All LONGi subsidiaries have obtained the **ISO 14001** environmental management system certification, and 17 bases received the ISO 50001 energy management system certification.

No significant violations of emissions or leaks

The overall production unit consumption achieved the expected target

Environmental protection investment amounted to RMB**405.9** million

Utilised **4,278,675,400** kWh of renewable energy

Implemented **415** energy efficiency improvement projects

reducing annual electricity consumption by **607** million kWh

and water consumption by **9.593** million tonnes

In June, LONGi launched the **Green Supply Chain Partner Empowerment Program**

In November, LONGi published its second ***White Paper on Climate Action***

2.1 Protecting Green Ecology

LONGi strictly abides by domestic and international laws and regulations, such as the *Law of the People's Republic of China on Evaluation of Environmental Effects* and the *Regulations on Environmental Management of Construction Project*, upholds the concept of ecological protection throughout the full lifecycle of projects, and adopts multiple measures to deepen ecological environment protection in its operation regions.

LONGi believes that unreasonable resource development is the root cause of biodiversity loss and environmental damage. Therefore, adhering to the concept of "PV promotes ecological protection and jointly builds a zero-carbon future", LONGi promotes PV applications in various scenarios, actively explores an ecologically-friendly "green mode", boosts ecological environment restoration and biodiversity protection.

Planning and design period

- Conduct field investigation before selecting the sites, assess the environmental impacts on biodiversity and natural resources, minimise the damage to mountains and vegetation, strictly observe the "Ecological Red Line", and develop reasonable and scientific measures to control environmental impacts based on the results of the assessment.

Construction period

- Strictly implement the "three-simultaneity" system of environmental protection, conduct environmental impact assessment during construction, and organise inspection and acceptance promptly;
- Minimise the time and materials needed for construction.

Operation and maintenance period

- Conduct environmental protection hazard identification in a timely manner;
- Widely conduct publicity and education activities about ecological environment protection to raise employees' awareness of environmental protection.

The later period of the project

- Implement ecological restoration based on the results of the environmental impact assessments.

PV Boosts Ecological Restoration

LONGi applies PV technology to various vulnerable ecological environments such as deserts and mudflats, explores "PV + ecological restoration" mode, contributes to the protection of the planet we live on by taking practical actions.

"PV Combated Desertification", Improving the Desert Environment

LONGi took the lead in implementing the "PV combating desertification" project in Kubuqi Desert, Inner Mongolia, which used to be one of the areas that suffered the most from desertification in China. We carried out PV power generation on the solar panels, plantation under the solar panels, and animal breeding between the solar panels, realizing the changes "from scarcity to prosperity" in desertification areas. The project not only generated considerable power, but also effectively blocked sunshine and decreased water evaporation, promoted vegetation growth and restoration, and boosted the farming industry and breeding industries.

"PV Reached Remote Mountain Area", Spreading Low-Carbon Hopes

PV Power Project in Yongjing County, Gansu

Located in the transition zone between the Qinghai-Tibet Plateau and the Loess Plateau, the rugged Yongjing county is troubled by inconvenient transportation, which hinders its economic development. LONGi established the first batch of photovoltaic power projects of the "Fourteenth Five-Year Plan" in Yonjing County. Adopting the mode of "PV + ecological governance + forest and grass planting", we planted suitable sand plants with high economic value in the PV areas, achieving the goals of improving ecology and protecting the environment while increasing economic returns.

This project provides around 212 million kWh of green electricity to Yongjing County annually, saving around 69,600 tonnes of standard coal. It effectively alleviates the electricity shortages in the Hedong region of Gansu, promotes local economic growth, and provides a constant source of green power to achieve the "dual carbon" goals as scheduled.

PV Supports Biodiversity Protection

In 2022, LONGi carried out "cross-industry" cooperation. Based on the cooperation with professional animal protection organisations, LONGi improved biodiversity protection capability with technology, expanded more application scenarios, and explored more possibilities for promoting biodiversity protection through PV.

LONGi donated PV modules to the Aquila Rescue Centre (ARC) and Conservation Centre

LONGi PV modules in Aquila conservation area

In 2022, LONGi's Africa Representative Office donated a batch of PV modules, which were mainly used for night lighting and clean water supply for wild animals in the habitat at the centre of the conservation area of the Aquila Rescue Centre (ARC) and Conservation Centre. In the past, the conservation centre mainly used diesel-fuelled generators which not only caused environmental pollution such as oxidation, acidification, and waste gas emissions, but also disrupted wildlife at night-time due to the loud noises. PV power generation provides daily electricity and night-time lighting for the conservation centre and clean water for wildlife, allowing more possibilities for the virtuous ecological operation in Aquila.

“Turning Black to Green”, Accelerating the Transformation of a “Coal City”

In Xinrong district, Datong in the northern part of Shanxi province, the over-development of the coal mining industry has worsened the local living environment. LONGi established “LONGi’s PV power station project in Xinrong, Datong, Shanxi” in coal mining subsidence areas in Datong. This project adopts the mode of “PV + comprehensive management of coal mining subsidence areas” based on local conditions, realises resource reuse, and promotes the virtuous circle development of the ecology in the coal mining areas.

The period between 2018 to 2022 witnessed two phases of successful grid-connected PV power generation of the Xinrong project. LONGi strictly abided by the requirements in the *Ecological Protection Management Measures of National Advanced Technology Photovoltaic Demonstration Base on Coal Mining Subsidence Areas of Datong* during construction and operation. After the construction, we planted local shrubs or shrub economic forests between the PV arrays to restore and protect the surface ecology of the coal mining subsidence areas, achieving the simultaneous development of economic and ecological benefits.

2.2 Climate Actions

As the world's leading PV manufacturer, LONGi is fully aware of its responsibilities to the global environment. We joined RE100, EP100, and EV100 Initiatives and announced our carbon reduction goals by 2023. We will uphold "green power + green hydrogen" as our important strategic goal to realise the green transformation of ourselves and even the world and firmly aim to become a global green development pioneer.

Climate Change Responses

Green development is a key strategic pillar of LONGi. Since 2016, LONGi has marched on the road of green power development and taken green and clean energy as the main source of income. Deeply aware of the risks and opportunities climate change will bring to our company, we actively deploy our business to prevent risks and embrace opportunities.

2016

- Deployed capacity in Yunnan China and Kuching, Malaysia for producing clean energy with clean energy

2018

- Proposed "Solar for Solar" concept at the 24th UN Climate Change Conference

2019

- Joined China Corporate Climate Action (CCCA);
- Joined United Nations Global Compact

2020

- Joined RE 100, EP 100, EV 100, and Science-Based Targets initiative (SBTi)

2021

- Set out building the first "zero-carbon plant";
- Established Xi'an LONGi Hydrogen Technology Co., Ltd., a wholly owned subsidiary;
- Participated in Phase 1 of the United Nations Summit on Biodiversity (COP 15);
- Released its first *White Paper on Climate Actions*

2022

- Participated in Phase 2 of the United Nations Biodiversity Conference (COP 15);
- Participated in the Ramsar Convention on Wetlands (COP 14);
- Participated in the United Nations Climate Change Conference (COP 27);
- Released its second *White Paper on Climate Actions;*
- Won in the Sinopec Green Hydrogen Demonstration Project, China's first > 10, 000 tonne green hydrogen project;
- Launched "Supply Chain Green Partner Empowerment Program";
- Built a "PV+ Desertification Governance" project in Kubuqi Desert, Inner Mongolia;
- Joined "Sustainable Market Initiative (SMI)" China Council

Governance

LONGi has improved the governance structure of sustainable development and climate action. The Board regularly reviews and assesses the risks and opportunities associated with climate change.

Strategy and Sustainable Development Committee: The company's highest decision-making and governance body for climate action, with the chairman of the company as the chair of the committee. The committee regularly reviews climate change strategies and goals.

Sustainable Development Management Committee: The company's decision-making body on climate action-related issues led by the Chief Sustainability Officer (CSO). The committee regularly assesses the risks and opportunities presented by climate change and develops climate action response strategies.

Sustainable Development and Climate Action Office: The company's climate action promotion coordination body, with the Brand Management Department as the main responsible department. The office is responsible for organizing and implementing company-level climate action commitments.

Energy Management Committee: The company's energy reduction promotion and implementation organisation, with the Plant Management Department as the main responsible department. The committee is responsible for organizing the carbon inventories and carbon reduction implementation at the group level.

Strategy

In response to the trend of global climate change, LONGi insists on the development model of "producing clean energy with clean energy" and promotes "green power + green hydrogen" products and solutions to help global energy transformation. While gradually realizing our own green production and operation, we also build a variety of clean energy acquisition and storage solutions through PV and hydrogen products to help global end consumers obtain low-cost and accessible green energy.

LONGi has incorporated climate risk identification and management into its risk management system and continued to conduct comprehensive identification and assessment of climate change risks and opportunities. In 2022, we deepened the identification of transformation risks and physical risks related to the company's operations and developed solutions in conjunction with the company's strategy and development.

LONGi Climate Risk Matrix

Risk type	Risk factor	Impact	Measure
Physical Risks	Natural Disasters	Disruption of operations and raw material supply due to extreme natural disasters	Optimise product packaging and select transportation services to minimise the impacts on global transportation; establish an emergency management team and formulate emergency plans for climate change.
	Climate Change	Possible negative impacts on production caused by continuous high temperature, water shortage, sea level rise, and frequent extreme weather	Consider long-term climate change trends in local areas in terms of business needs and production; strengthen water resource risk management, and lay out water withdrawal and use strategies in a forward-looking manner.
Transition Risks	Legal Compliance	Risk of litigation for non-compliance with the law, and losses and fines for failure to meet requirements	Strictly abide by the regulatory requirements of the countries where our operations are located and where we sell our products, and establish a sound system and guarantee mechanism to ensure that we meet the environmental compliance requirements of each country where we operate.
	Emerging Regulations	Compliance risk costs in the carbon market due to failure to adjust operational strategies promptly	Regularly monitor the relevant new regulatory requirements and continuously monitor the related risks to improve control over GHG emissions in daily management.
	Market Change	Increasing direct costs due to reduced market subsidies	Improve the conversion efficiency of modules, enhance power generation capacity, cut the cost and increase profit by innovation.
	Technology change	There is high uncertainty in PV technology mass production breakthroughs. If mass production of PV technology cannot be achieved, the company will suffer huge cost losses.	Rely on independent innovation, attract technical talents, and adopt the principle of "no leading technology, no mass production" to keep ahead in the world record.
	Corporate Reputation	Reduced access to financing due to increasing negative stakeholder feedback	Actively respond to the market and customers' expectations for low-carbon development, reform the development model and improve corporate low-carbon performance.

Short-term Mid-term Long-term

Risk Management

We have integrated climate risks into company-wide risk management processes and established a complete climate risk identification mechanism, climate risk assessment and ranking mechanism and risk response mechanism.

Climate risk identification mechanism: Combining domestic and international trends and the feedback of external stakeholders, the Sustainable Development and Climate Action Office facilitates the ESG Compliance Team, which is led by the Risk Management Team of the ESG Execution Team, to conduct climate risk identification and submit a risk checklist to the Board for annual review.

Climate risk assessment and ranking mechanism: Risk Management Team leads Climate Risk Perception Team to assess and rank the climate risk checklist and submit the priority checklist to the Board for annual review as well.

Risk response mechanism: After the Board approves the climate change checklist, the Sustainable Development and Climate Action Office will organise relevant functional departments and operating departments to address the climate risks, including developing complete prevention and control measures for environmental and climate risks and emergency management systems.

Science-Based Targets Initiative (SBTi)

Following SBTi standards, LONGi simulated the emission reduction pathway under different scenarios, and set science-based targets which complied with its production and operation realities and were in line with the GHG emission target of the *Paris Agreement*.

By 2030, the GHG emissions within the operational boundary will be reduced from the 2020 level by

60%

Carbon emission intensity per tonne of silicon material, per watt of cell, and per tonne of glass will be reduced from the 2020 level by

20%

LONGi's science-based targets are as follows

LONGi's total carbon emissions

Indicator	Unit	2022	2021	2020
Scope 1	tCO_2e	158, 202	94, 750	92, 665
Scope 2	tCO_2e	2, 930, 501	3, 057, 224	2, 480, 349
Scope 3 (partial[18])	tCO_2e	29, 747, 826	22, 683, 132	20, 920, 503
GHG emissions within the operational boundary	tCO_2e	3, 088, 703	3, 151, 974	2, 573, 014
Total emissions	tCO_2e	32, 836, 529	25, 835, 106	23, 493, 517

To achieve its science-based targets, LONGi consistently optimises the Group's GHG emissions verification system and implements dynamic adjustments to carbon reduction targets based on carbon reduction results. In 2022, GHG emissions within the operational boundary of the Group dropped by 2.01% compared to that in 2021.

Supply Chain Carbon Reduction

Number of online trainings completed on climate change

1

Amounts of suppliers participated in this training session

481

While continuously improving its own carbon emission reduction capability, LONGi is also committed to promoting carbon reduction in the whole industry chain. In 2022, LONGi launched the "Supply Chain Green Partner Empowerment Program" to help supply chain partners establish corporate carbon management systems. We empower suppliers to conduct carbon inventories, set carbon reduction targets and pathways, conduct energy-saving and emission-reduction actions, and increase the proportion of renewable energy. We will focus on supporting five of our supplier partners to implement energy-saving and emission-reduction actions. By 2023, we plan to have more than 200 supplier partners responding to the program, more than 500 participants in the empowerment training courses, more than 50 supplier partners conducting carbon inventories, and at least 10 supplier partners setting science-based emission reduction targets.

By the end of the reporting period, we have completed one online training session on climate change, and invited external professionals to give an in-depth explanation of the latest Chinese policy situation of carbon peak and carbon neutral, carbon trading mechanism and the dual carbon path for enterprises. A total of 481 suppliers participated in this training session.

[18] Scope 3 GHG emissions counted include purchased goods and services, fuel- and energy-related activities, upstream transportation and distribution, waste generated in operations, business travel, employee commuting, downstream transportation and distribution, and end-of-life treatment of sold products.

The Three International Initiatives

As the first Chinese company that simultaneously joined RE100, EV100, and EP 100, LONGi continued to fulfil its commitments in 2022. Driven by the Sustainable Development and Climate Action Office, LONGi continuously breaks down the promised targets and promotes the implementation of the initiatives.

Initiative

RE100 CLIMATE GROUP | CDP

Commitment to Target

Achieve 70% renewable electricity consumption by 2027, and 100% by 2028.

Progress in 2022

In 2022, green power usage accounted for 47.18% of LONGi's total power usage, achieving a 38. 21% increase compared to that in 2021.

Initiative

CLIMATE GROUP EP100

Commitment to Target

Install Energy Management System for all operational sites by 2025 and improve power utilisation efficiency by 35% compared to that in 2015.

Progress in 2022

By 2022, a total of eight manufacturing bases had completed the construction of the energy management information system, and another manufacturing base completed the construction of the system in 2022; the overall energy use efficiency of the whole group in 2022 was 66. 64% higher than that in 2015.

Initiative

CLIMATE GROUP EV100

Commitment to Target

Install vehicle charging facilities in 100% operational sites by 2030.

Progress in 2022

The Group organised a group-wide centralised procurement of charging piles, involving 7 provinces, 13 cities, and 23 business sites. The first batch of charging piles for "EV 100" is expected to be put into use in 2023.

Baoshan manufacturing base in Yunnan

During Phase 1 of the United Nations Biodiversity Conference (COP15) held in Kunming, Yunnan, LONGi announced that it would build its manufacturing base in Baoshan, Yunnan into the first "zero-carbon plant" by 2023, achieving net-zero emissions within the operational boundary. To fulfil its commitment, LONGi set "four-step" goals:

Ensure 100% utilisation of renewable electricity (RE 100) throughout the year → Complete energy-saving technological transformation projects to reduce natural gas leakage (EP 100) → Promote green transportation and green office (EV 100) → Purchase CCER or other carbon credit to offset remaining emissions that the manufacturing base cannot reduce

99.09%

of the total power used in LONGi's Baoshan manufacturing base was green power

In 2022, 99.09% of the total power used in LONGi's Baoshan manufacturing base was green power. Baoshan manufacturing base built a "zero-carbon theme park", making the plant greener and more beautiful and promoting all employees' green and low-carbon awareness and participation.

2.3 Environmental Management

As a trailblazer in green development, LONGi values the impact our production and operations have on the environment. We strictly comply with the *Environmental Protection Law of the People's Republic of China* and relevant laws and regulations of overseas manufacturing bases, and have developed multiple internal policies to regulate environmental management and implement full lifecycle management. In 2022, to standardise the environmental management of LONGi and our subsidiaries, we introduced best practices, established a unified environmental management system, set up environmental target responsibility statements, tracked and implemented relevant evaluation systems, and conducted over a dozen special trainings for employees covering management of three wastes (i.e., gas, water and solid waste treatment), soil, and groundwater. During the reporting period, the company and its subsidiaries have all obtained the ISO 14001 environmental management system certification.

Overview of LONGi's 2022 Key Performance Results in Environmental Management

Management Item	Assessment Item	Key Assessment Indicator	Performance Results in 2022
Resource circulation	Low-carbon products	Carbon footprint certification	The entire range of LONGi silicon products obtained French carbon footprint ECS certification
			LR 4- 72, LR 5- 54, and LR 5- 72 series modules received Environmental Product Declaration (EPD) certifications from UL Solutions and EPD Italy
Energy use	Energy conservation	Electricity conservation	Reduced electricity consumption by 607 million kWh throughout the year
	System certification	Number of bases certified by Energy Management System	10 new manufacturing bases obtained the Energy Management System certification
	Policies	New energy management policies	4 policies published
	Key projects	Energy efficiency improvement projects	415 projects, including 288 electricity-saving projects
	Specific electricity consumption	The group-wide trend of specific electricity consumption	Decreased by 9. 75% compared to the base year (2020)
Water resources	Alternative water sources	Volume of reclaimed wastewater	23, 199, 045 tonnes
		Volume of reclaimed rainwater	More than 17, 000 tonnes
	Specific water consumption	Group-wide trend of specific water consumption	Decreased by 26. 93% compared to the base year (2020)
	Water conservation projects	Customised water conservation projects	95 water conservation projects
	Total water use intensity	Water use intensity	LONGi's total water use intensity registered 282. 50 tonnes/RMB million in 2022, which decreased by 34. 84% compared to 2021
Emissions management	Waste gas emissions	Excessive emissions	The Group reported no incidents of excessive emissions of waste gases
	Wastewater discharge	Drainage at places of high baseline water stress	The drainage at places of high or extremely high baseline water stress was 0
	Noise management	Noise complaints	No noise complaints were filed against LONGi
Green logistics	Supply chain emissions reduction	Packaging	The 2022 Circular Packaging promotion reduced carbon dioxide emissions by 1, 114 tonnes in total

Energy Management

Reduced electricity consumption by

607 million kWh

Reduced water consumption by

9.59 million tonnes

In strict compliance with the *Law on Energy Conservation of the People's Republic of China* and other relevant laws and regulations, LONGi continues to optimise the Group's energy management system and has established policies such as the *Energy Management Manual*, the *Energy Management System*, and the *Energy Data Management Measures*. We established the Group's Energy Management Leading Group with the chairman as the group leader, together with the Energy Management Leading Group Office and the Energy Management Expert Team as affiliated units. We also set up a special budget for energy management and encouraged Group-wise involvement in energy management. In 2022, we carried out multiple measures to strengthen energy management, improved the overall energy use efficiency, and reduced electricity consumption by 607 million kWh and water consumption by 9.59 million tonnes.

System and policy development

- 17 manufacturing bases obtained the energy management system certification, with 10 new bases wrapping up energy management system development in the same year.
- Introduced new policy documents including the *Energy Efficiency Improvement Project Evaluation and Reward Guidelines*, the *Energy Management System Usage Evaluation Guidelines*, and the *Renewable Energy Electricity Source Traceability Accreditation Guidelines*.

Key projects

- 415 energy efficiency improvement projects were implemented, reducing annual electricity consumption by 607 million kWh.

Training and publicity

- During China's National Energy Efficiency Promotion Week and National Low-Carbon Day, 23 bases carried out energy conservation promotion activities.
- More than 130 people participated in ISO 14064 greenhouse gas internal auditor training.

Information system development

- 8 manufacturing bases have accomplished developing the energy management information system, with 1 new base fulfiled the system development in 2022.
- The online reporting system for the energy and carbon data of the Group was established.

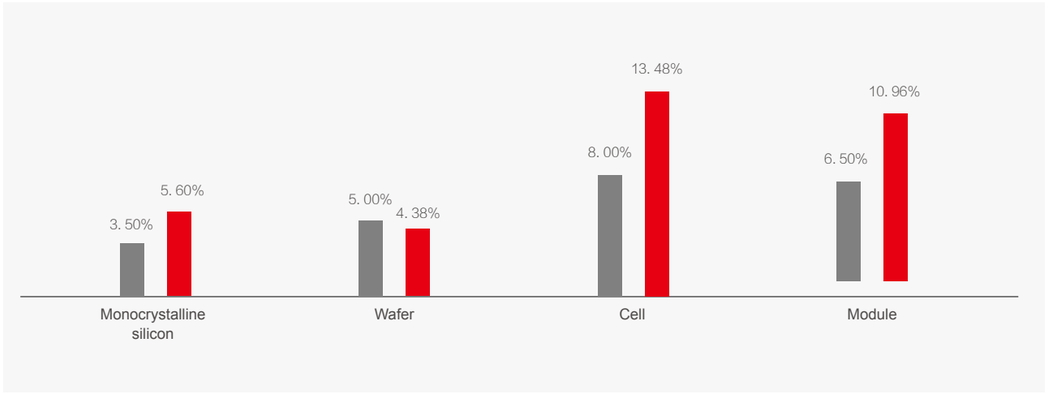
Highlights of LONGi's Energy Management in 2022

LONGi's Energy Use (2020-2022)

Indicator	Unit	In 2022	In 2021	In 2020
Total energy consumption	10, 000 tonnes of standard coal	113. 14	95. 31	66. 48
Total Energy Consumption Intensity	10, 000 tonnes of standard coal/RMB 100 million	0. 0877	0. 1182	0. 1218

In 2022, the actual specific electricity consumption of the Group decreased by 9.75% compared to 2020 (the base year), reaching the target of reducing the production-wise specific electricity consumption by 8.84% against 2020. The target completion of the specific electricity consumption reduction for each product is as follows.

Specific Electricity Consumption Reduction Target Completion of LONGi's Products



To improve energy efficiency in 2022, we implemented targeted technical upgrades featuring the characteristics of each production unit (i.e., monocrystalline silicon, wafers, cells, and modules), and achieved energy consumption control across the entire manufacturing process.

Monocrystalline silicon	Optimizing the air conditioning and process chillers: We connected the pipes of air conditioning and manufacturing refrigeration water supply systems and improved the efficiency of the machine load of the air conditioning system.	It aims to conserve **4.32** million kWh of electricity annually
Wafer	Reclaiming waste heat from air compressors: We utilised the waste heat as a high-temperature heat source to curb the energy consumption caused by the cleaning machine's pure water electric heating process.	It aims to conserve **12.636** million kWh of electricity annually
Cell	Reducing the electricity consumption of the power system: We optimised the ice machine and air compressor of the power system to reduce electricity consumption.	It aims to conserve **2.863** million kWh of electricity annually
Module	Enhancing the air conditioning system: We decided to adopt a Room Control Unit (RCU) system in the manufacturing workshops during summertime; while in wintertime, we adopted an outdoor fresh air fan system replacing the Air Handling Unit (AHU) air conditioning system.	It aims to conserve **4.553** million kWh of electricity annually

[19] The target of specific energy consumption reduction is set in comparison with the base year of 2021.

Water Management

LONGi gives weight to the conservation and management of water resources and strictly abides by relevant laws and regulations such as the *Water Law of the People's Republic of China* and the *Water Pollution Prevention and Control Law of the People's Republic of China*. To strengthen water conservation management throughout processes of water consumption and utilisation, we, therefore, conducted special water conservation promotion activities during *China's Water Week* each year to raise all employees' awareness of water conservation and incorporate this philosophy into every single link.

Before using water resources

LONGi fully evaluates the natural status and development feasibility of water sources, especially takes into consideration the impact on groundwater, determines the appropriate volume and methods of extracting water, and constantly monitors the water use risks of production and operation areas, immediately adjusting water use methods, if necessary, to ensure water sustainability.

During production and operation

LONGi adopts refined water resource management and optimises existing manufacturing processes to improve the efficiency of water resource use. At the same time, LONGi continuously explores alternative water sources and continuously improves the utilisation rate of reclaimed water (such as rainwater, sewage, and gray water). Among them, the cell manufacturing base reclaimed more than 17,000 tonnes of rainwater in 2022.

LONGi's total water consumption in 2022 reached 36,435,426 tonnes. Specifically, 23,199,045 tonnes of water was reused, with a water reuse rate[20] of 63.67% — an increase of 12.54% compared to the same period in 2021 when the amount of reused water was 20,614,699 tonnes. In 2022, LONGi's total water intensity reached 282.50 tonnes/RMB million in revenue, a decrease of 34.84% compared to 433.54 tonnes/RMB million in 2021. To sum up, LONGi saved 9,593,000 tonnes of water in 2022, with a contribution rate of 20.84%, and reached a water conservation intensity of 73.85 tonnes/RMB million.

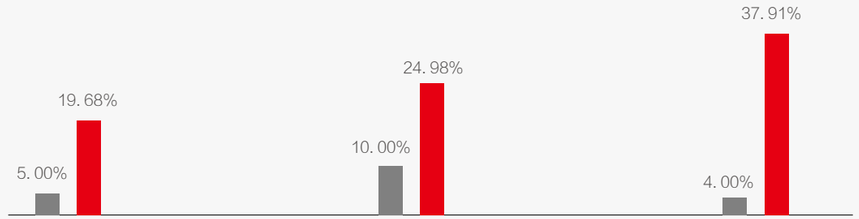
LONGi's Water Use (2020-2022)

Indicator	Unit	In 2022	In 2021	In 2020
Total water consumption	Tonnes	36, 435, 426	35, 087, 619	32, 750, 659
Water reuse rate	%	63. 67	58. 75	33. 89
Water conserved	10, 000 tonnes	959. 3	589. 7	72. 9

[20] Water reuse rate = volume of water reused/total water consumption.

LONGi regards the management of products' specific water consumption as crucial. By measuring the water footprint of products, LONGi proactively reduces specific water consumption. We aim to reduce the specific water consumption of all business units by 18.6%-46.4% compared to 2020 (the base year) by 2025. Compared to 2020, the Group-wise specific water consumption this year decreased by 26.93%. The target completion of the specific water consumption reduction for each product is as follows.

Specific Water Consumption Reduction Target Completion of LONGi's Products



Target[21] Achievement in 2022

Yinchuan LONGi PV's Initiative of Water Conservation Won the Honour of Ningxia's "Water-Friendly Enterprise"

75% of Ningxia's land area sits in arid and semi-arid zones. As a result, water conservation is crucial to secure the safety of local drinking water and agricultural, industrial water supply, and ecological water use. In 2022, Yinchuan LONGi PV, a subsidiary of LONGi, reduced its manufacturing water consumption by 35.16% and conserved more than 1.5 million tonnes of tap water by implementing water-saving projects such as cleaning machine transformation, reclaimed water reuse, concentrated water recycling, and treatment of concentrated water from photoresist removal machines. As a result, the subsidiary was recognised with the title of "Ningxia's Water-Friendly Enterprise".

[21] The target of specific water consumption reduction is set in comparison with the base year of 2021.

To improve water use efficiency, we have launched actions to reduce water consumption in the core production processes, and customised water conservation projects featuring the characteristics of each production unit (i.e., monocrystalline silicon, wafers, cells, and modules).

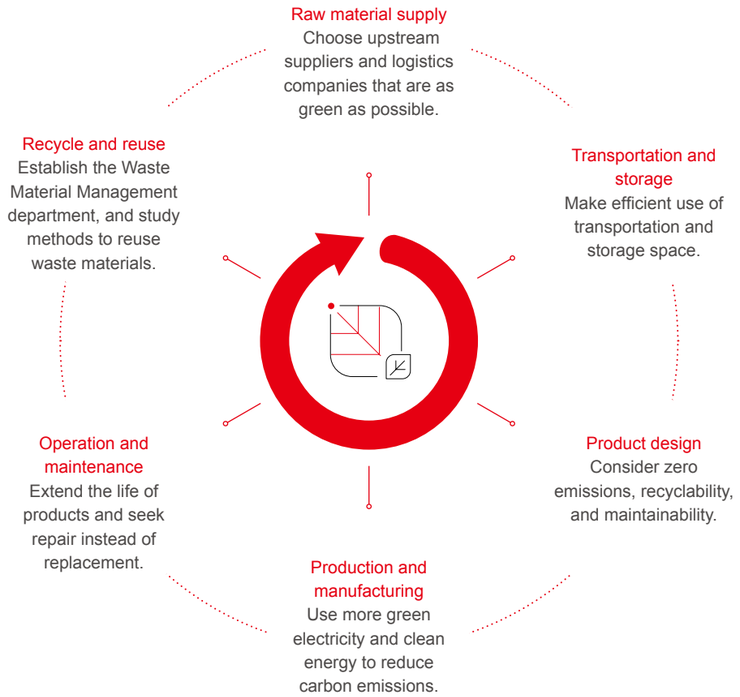
Monocrystalline silicon	BOT pure water energy-saving project: The EFDT desalination water system replaces the existing pure water device, resulting in an increase in the pure water reuse rate.	It aims to conserve **816,000** tonnes of water annually.
Wafer	Water recycling project: Water treated by membrane bioreactors (MBR) is mixed with tap water to remove photoresist residue on wafers with insertion.	It aims to conserve **694,000** tonnes of water annually.
Cell	Specific pure water consumption reduction project: We optimised the water consumption of wet process equipment of the manufacturing department.	It aims to conserve **260,000** tonnes of water annually.
Module	Condensate water recycling project: The condensate water generated by the RCU air conditioning system in manufacturing workshops is reclaimed by the pipeline network and water tank to supplement the total water consumption of the cooling tower.	It aims to conserve **23,000** tonnes of water annually.

Aerial view of Yinchuan LONGi PV

As the midstream business in the PV industry chain, while we are dedicated to carrying out water-saving activities, we also proactively mobilise upstream businesses to engage with water conservation activities and drive to promote conservation activities to reduce water consumption for the supply chain.

Resource Circulation

Adhering to the 3R (Reduce, Reuse, Recycle) philosophy, LONGi incorporates the concept of the circular economy into the products' full lifecycle management, covering raw material supply, product design, manufacturing, operation and maintenance, and recycling and utilisation, so as to enhance the environmental friendliness of our manufacturing processes step by step.



Reduce:

We advocate the principle of zero waste for PV product design, and adopt the practice of recyclable and repairable design. We strive to make production materials thinner and lighter within the standard range. In 2022, we proposed the "Three New" initiative, which achieved material improvement, manufacturing upgrade, and automation technology advancement by new materials, new processes, and new technologies.

Reuse:

We seek to use recyclable and renewable materials as much as possible when manufacturing PV products. In terms of the packaging and transportation of PV products, we have taken the lead to recycle packaging in the industry chain. The water generated during the use of hydrogen energy products can be reused to produce hydrogen.

Recycle:

We strictly comply with the European Union's Waste Electrical and Electronic Equipment (WEEE) directive, properly handle scrapped PV module equipment, and premeditate the product recycling to integrate it into the PV module design. In addition, we get involved in domestic and international module recycling research projects to pave the path to module recycling. The components of LONGi's products, such as cells, glass, backplanes, and aluminium frames, possess inherent value for recycling and reuse.

Emission Management

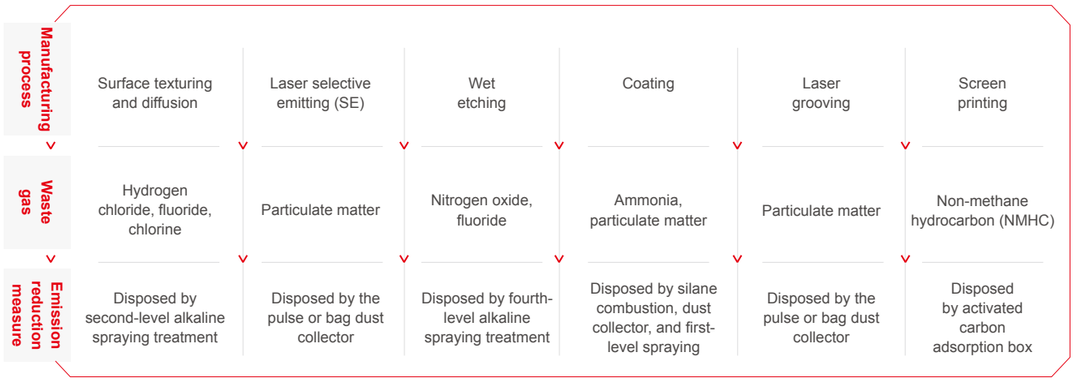
Abiding by the *Law of the People's Republic of China on the Prevention and Control of Atmospheric Pollution*, the *Law of the People's Republic of China on the Prevention and Control of Water Pollution*, and other local laws and regulations, LONGi prudently controls our environmental pollution and waste discharge and strictly implements various environmental protection approvals. In 2022, we regularly monitored the emissions of major pollutants such as waste gas and wastewater, conducted risk analysis and evaluation of emergent environmental incidents during waste production, and formulated the *Emergency Plan for Environmental Incidents* to become more resilient in dealing with environmental incidents. These measures will minimise the environmental impact caused by abnormal emissions of pollutants.

In 2022, LONGi reported none of significant violations of emissions or leaks.

Waste Gas Emissions

To reduce waste gas emissions, LONGi formulated the *Waste Gas Management Policies* with measures such as the substitution of raw materials and the enhancement of manufacturing processes and equipment. The gas collection device is designed to collect the waste gas and facilitate it into the waste gas treatment facilities through the waste gas pipeline, ensuring that the waste gas emission concentration meets the national and local emission requirements such as the *Emission Standard of Pollutants for Battery Industry* (GB 30484-2013) and the *Integrated Emission Standard of Air Pollutants* (GB 16297-1996). In 2022, the Group reported none of incidents of excessive waste gas emissions.

LONGi's Waste Gas Emission Reduction Measures



LONGi's Waste Gas Emissions (2020-2022)

Indicator	Unit	In 2022	In 2021	In 2020
Total waste gas emissions	m^3	29, 855, 296, 941	34, 990, 589, 648	7, 617, 819, 718
Nitrogen oxide emissions	Tonnes	557. 04	/	299. 86
Sulfur Oxide Emissions	Tonnes	360. 67	/	/
Particulate matter (PM) emissions	Tonnes	175. 19	251. 90	77. 66
Fluoride emissions	Tonnes	21. 42	54. 88	5. 28
Chlorine emissions	Tonnes	2. 03	19. 58	3. 90
Ammonia emissions	Tonnes	77. 75	66. 70	13. 48
Other[22]	Tonnes	52. 23	/	/

[22] Other waste gas emissions mostly include non-methane hydrocarbon (NMHC), sulfuric acid mist, and hydrochloric acid mist, etc.

Wastewater Discharge

LONGi stipulated the *Rainwater and Wastewater Management Policies* and other related policies to instruct manufacturing units to strengthen the treatment and recycling of wastewater, ensuring that the discharge of wastewater fully complies with the requirements. Our industrial wastewater is mostly generated during the silicon rod slicing, cell production, circulation cooling, preparation of concentrated water, and ground cleaning. The wastewater is then discharged into the municipal pipe network once it meets the treatment standard. In 2022, we curtailed the use of fresh water through process optimisation and further minimised the discharge of pollutants by reducing the moisture content of silicon sludge, reducing the chemical oxygen demand (COD) in wastewater, recycling lactic acid, and reusing recycled water. In addition, we have concentrated on the impact of drainage on natural environments, especially groundwater. In this reporting year, the drainage at places of high or extremely high baseline water stress concluded with 0.

LONGi's Wastewater Discharge (2020-2022)

Indicator	Unit	In 2022	In 2021	In 2020
Wastewater	Tonnes	25, 843, 398	21, 430, 620	20, 205, 828
Chemical oxygen demand (COD)	Tonnes	1, 691	965	1, 405
Ammonia nitrogen	Kg	43, 089	53, 072	57, 208
Total phosphorus	Kg	6, 750	/	/
Suspended solids	Kg	601, 040	408, 986	330, 036

Solid Waste Discharge

LONGi strictly regulates the classification, collection, and disposal of hazardous and non-hazardous wastes, and has stipulated policies such as the *Solid Waste Management Policies*, the *Waste Material Management Policies*, and the *Silicon Material Recycle Management Policies*. Amid the production, we resorted to multiple measures to reduce waste, promote resource utilisation, and ensure harmlessness. For hazardous wastes, we applied for a transfer manifest according to policies for hazardous wastes and continuously followed up on transportation and disposal to ensure closed-loop waste management. For non-hazardous wastes, we classified and collected them with the set classification standards, and put the valuable ones into recycling through technical approaches.

LONGi's Solid Waste Discharge (2020-2022)

Indicator	Unit	In 2022	In 2021	In 2020
Total hazardous wastes	Tonnes	17, 385. 35	32, 586. 00	29, 001. 76
Total non-hazardous wastes	Tonnes	277, 133. 75	196, 255. 00	/
Recyclable non-hazardous wastes	Tonnes	21, 890	/	/
Non-recyclable non-hazardous wastes	Tonnes	255, 243. 75	/	/
Non-hazardous waste recycling rate	%	7. 90	/	/

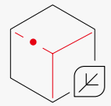
Noise Management

LONGi's existing noise sources are primarily derived from production equipment, including pumps, cooling towers, and compressed air stations. The noise emanating from the factory is in compliance with the *Emission Standard for Industrial Enterprises Noise at Boundary*. We proactively prevent and meticulously manage noise and vibration pollution resulting from production and operation, selecting machinery with reduced noise levels whenever feasible. For equipment with higher noise levels, we deploy soundproof facilities and doors to efficiently refrain or diminish noise levels, ensuring that the resulting noise is consistent with the standards prescribed for boundary environmental noise emissions. Throughout the reporting period, no noise complaints were raised against LONGi.

Green Logistics

To keep pace with the surge of global orders and the expansion of manufacturing bases, LONGi has been augmenting the efficiency of resource utilisation in multiple links, such as containerisation, storage, and transportation. Additionally, LONGi strives to develop a green, intelligent, and information-based logistics industry chain, thereby facilitating quality improvement, energy efficiency, and carbon reduction throughout the production and operation.

Green Measures in Each Link of LONGi's Logistics

Link	Measures	Results in 2022
Containerisation 	Circular packaging application: We use circular packaging in the internal transportation of silicon wafers, cells, and modules to reduce the purchase of disposable packaging materials.	Circular packaging has been used for transportation between LONGi's silicon wafer and cell bases. The circular packaging promotion project has reduced carbon emissions by 1,114 tonnes in 2022.
Storage	Warehouse and distribution optimisation: We optimise the warehouses' locations and routes to realise LONGi's overall optimal logistics portfolio (e.g., shipping, warehouses, and backend trailers), and improve delivery efficiency.	Optimised the European warehouse network, allocated resources reasonably within reach, shortened delivery distances, saved warehousing costs, and effectively reduced logistics carbon emissions.
	Increase space utilisation: We increase the stacking layers of silicon wafers by changing the transportation packaging to increase the loading capacity of each unit.	Applied in domestic and international transportation for important customers.
Transportation	Multi-modal transportation: We replace the inland road trailer transportation with river or rail transportation, and facilitate the Yangtze River and sea transportation with a rail-sea transportation mode to reduce logistics carbon emissions.	Applied in the outbound logistics transportation of multiple module bases in China, including Taizhou, Chuzhou, Jiaxing, Xi'an, Xianyang, and Datong, and the multi-modal transportation will continue to cover more cities. In terms of international transportation, LONGi cooperated with COSCO to launch Iberian Sea-Rail Express in 2022, providing an efficient and green cross-border logistics solution.
	Consolidated shipping: For individual auxiliary materials with low and/or urgent demand, we set up consolidated shipping warehouses at the port of origin to collect and ship the materials after consolidation.	Two consolidated shipping warehouses have been set up in two Chinese ports and applied in the logistics transportation of raw materials to Vietnam and Malaysia.

03

Growing Together with Inclusiveness and Care

Harmonious 和谐 H

Holding the philosophy of showing respect, creating opportunities, and providing incentives for talents, LONGi regards our employees as valuable and reliable growth partners. We constantly devote ourselves to social welfare by using our photovoltaic technologies to reduce poverty and promote quality education, creating a better world with goodwill.

Employee Well-Being 64
Occupational Health and Safety 70
Community Improvement 72

SDG goals addressed in this section

4 %
of employees covered in the employee share ownership plan

28.83 hours
of average training hours per employee

Women hold
20 %
of executive management positions

Planned and launched over
30
charitable programs

91.12 points
of the employee satisfaction score on the corporate atmosphere

Provided occupational health and safety training of
2,217,208 hours

Offered labour union welfare of
RMB**37.16** million

that benefited
200,000 people

3.1 Employee Well-Being

LONGi always attaches importance to protecting the rights and interests of employees and continuously improves the employee welfare system. We keep widening our growth channels for employees and increasing our investment in employee health and safety to create a fair, open, harmonious, and inclusive working environment.

Compliant Recruitment

As the company has been growing rapidly these years, creating a talent recruitment system in line with international labour standards is necessary to support our growth. We released internal guidelines including the *Recruitment Management Measures* and the *Employee Handbook*, in strict compliance with the *International Labour Law* and local labour standards in countries and regions where the company is based, striving to build a diverse and inclusive working environment and protect the rights and interests of all employees.

In 2022,we conducted the social responsibility review at

3

manufacturing bases, all of which have passed the examination

Protection of Employee Rights and Interests

LONGi prohibits the employment of child and forced labour and avoids such behaviours by establishing a reporting system. Following the international call to protect labour rights and interests, we commit to fair employment and equal pay for equal work. We eliminate discrimination based on ethnicity, race, nationality, religious belief, gender, age, disability, or marital status and respect the employees' rights to freedom of assembly and association by the law.

To ensure our principle of human rights protection is practiced, we entrusted third-party agencies to examine the management of social responsibility subjects at our manufacturing bases, with particular attention to potential human rights risks. In 2022, we conducted the review at 3 manufacturing bases, all of which have passed the examination.

In 2022,

No employment discrimination, harassment, child labour, forced labour, or other forms of human rights violation occurred at LONGi.

We cover

98%

of our employees in the Chinese mainland with social insurance.

In 2022, LONGi attracted

83

top talents

1,706

overseas employees (non-Chinese nationals)

Talent Attraction

We created talent introduction strategies to attract highly skilled talents worldwide and provide job opportunities for people from different countries, ethnicities, cultures, and physically challenged people. In 2022, we refined our talent introduction strategies to build a talent repository with stratified management to unleash the value of the repository. To attract top scientific researchers and talents in the industry globally, we created a special team force and formulated employment plans for top talents:

- Implemented a two-way selection for high-level and critical positions
- Help overseas candidates who passed the interview to apply for visas and bear corresponding fees
- Bear transportation and accommodation fees for candidates who travel from other places and provide one-stop services for top talents by solving their problems with housing and children's schooling.

1,623

local employees in overseas bases

including

471

local employees in Kuching, Malaysia

and

1,152

in Vietnam

Diversity and inclusiveness

Adhering to the employment philosophies of openness, inclusiveness, and equality, LONGi strives to create a diverse working environment. We give much respect and attention to our female employees, helping them fulfil their potential and pursue their goals to realise their self-worth at LONGi. In 2022, we established the female employee committee, which organises activities regularly to care for our female employees. We also provide other policies and facilities of care, including paternal leave, baby care rooms, special seats for pregnant employees at the canteen, and support for women on a period.

In 2022,

20%

of executive managers at LONGi are women

635 female employees took paternal leave

79.53%

of them returned to work after the leave

Gender diversity

Value equality at work and advocate gender diversity, providing equal growth resources and opportunities for male and female employees.

Age diversity

Welcome young people and value key employees with experience to achieve diversity in age distribution.

Region diversity

Encourage the introduction of talents from all over the world. Our employees come from over 150 countries and regions globally.

LONGi's Subsidiaries Organised Variety of Activities to Care For Female Employees

On International Women's Day in 2022, LONGi's subsidiaries organised various activities for female employees.

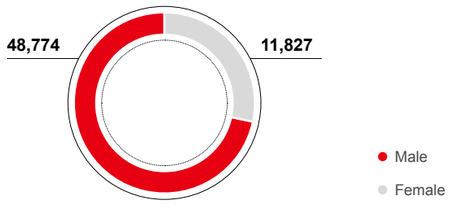
- The labour union at Leye Photovoltaic Technology in Xi'an City sent holiday greetings to female employees and prepared gifts such as wash care sets and intelligent home appliances. The union organised activities on DIY crafts such as scented candles, pressed flower lamps, and bouquets to thank female employees for their efforts at work and in daily life.
- The labour union in Qujing City organised a series of activities with the theme "Celebrating March 8th International Women's Day". The union thanked female employees for their work at LONGi by sending wellness gifts, greeting cards, and roses and organizing the second "Shiniest Goddess" activity and other games where female employees showed their youthful vitality.

The Labour Union at Leye Prepared Flowers for Each Female Employee

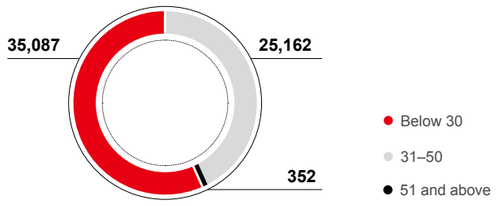
"Celebrating March 8th International Women's Day" Activities at the Labour Union in Qujing

Key performance:

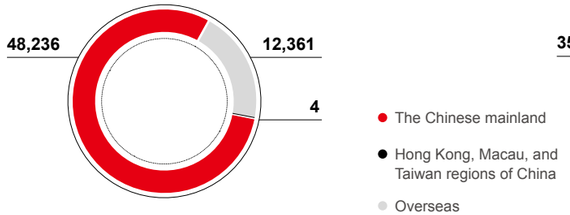
Number of employees by gender



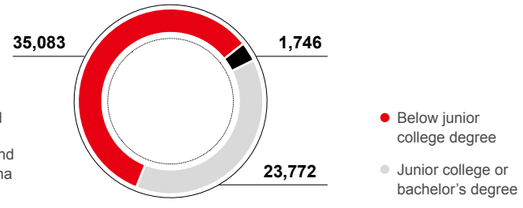
Number of employees by age



Number of employees by region



Number of employees by educational level



Benefits and Care

We established a comprehensive employee benefit and care system to provide competitive compensation. We opened effective mutual communication channels and organised various care activities to increase the sense of gain and happiness among employees.

Compensation Benefits

LONGi established a comprehensive compensation and benefits management system as well as a scientific and efficient performance review mechanism. We implemented internal measures such as the *Compensation Management Measures* and *Performance Management Measures*. Following compliance, fairness, justification, and competitiveness principles, we stick with equal pay for equal work. We also value mutual communication in performance management. The reviewers and reviewees would communicate and reach a consensus in each step of the process from performance planning, tutoring, evaluation, to feedback. Based on the principle of meeting the needs of employees, we formulated the *Employee Benefits Handbook*, which lists benefits covering the employees' work, daily life, communication, and care.

To fully tap the potential and creativity of employees and support their growth and self-actualisation, LONGi introduced the flexible performance-based compensation. We created the *Employee Revenue Sharing (Phantom Stocks) Management Plan* and provided incentives such as restricted stocks and stock options to continuously increase the employees' compensation.

Communication With Employees

We established multiple channels for open and smooth communication. Employees can fully express their opinions or raise their needs through symposiums, the employees' representatives meetings, and satisfaction surveys. Employees can consult the internal human resources department, audit and supervision department, compliance management department, or the labour union's communication channel about violations or behaviours that harm employees' rights and interests and report such cases to these internal organs. We have stipulated the violation handling policies, appeal procedures, and the management mechanism for communication and mediation in the *Complaints and Reporting Management Measures*, the *Accountability Management Measures*, the *Labour Dispute Settlement Management Measures*, and other internal measures. We firmly practice the principles of protecting employees and ensuring fairness, following up with employees promptly.

We carry out satisfaction surveys on corporate atmosphere every year. After collecting, analysing, discussing, and concluding the survey results, we create and implement targeted plans for improvement to continuously increase the employees' satisfaction rate. In 2022, we scored 91.12 points in the survey.

We respect the employees' rights to freedom of association and collective bargaining. We formulated the *Labour Union Management Measures of LONGi* that allows employees to join labour unions of their choice. In 2022, all employees signed a collective bargaining agreement.

Employee Care

LONGi values humanistic care and created a series of policies for employee care. In China, we established labour unions and set the *Management Measures for Employee Care*, *Management Plan for Employee Cultural and Sports Activities*, the *Guide to Building the Standards of Employee Activity Facility*, and other policies. In 2022, we raised the proportion of employees receiving benefits from centralised purchasing[23] and created a customised benefits model. We also built a digital platform to manage the data of benefits and organised activities for employee care. These changes help balance the employees' work and life and relieve their pressure, enhancing their sense of belonging and happiness within the company. In 2022, LONGi paid RMB37.16 million on labour union benefits.

In 2022,

our employee stock ownership plan covered

2,395 people

including incumbent high-level managers as well as key managers and employees

In 2022,

LONGi scored

91.12

in the employee satisfaction survey on corporate atmosphere

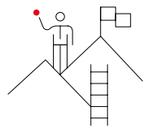
In 2022,

LONGi paid

RMB **37.16** million

on labour union benefits

[23] The proportion of our factory employees who received benefits purchased with centralised management by the company.



During the reporting period,

LONGi paid critical illness insurance claims for

2 employees

with a total of

RMB **400,000**

and provided inpatient allowance for

5 employees

with a total of

RMB **5,200**

The proportion of employees receiving benefits from centralised purchasing

We take advantage of our centralised purchasing resources to cover more employees with benefits. 100% of employees were covered in 2022.

Customised employee benefits model

To fit the employees' needs, we created a high-end, stylish, and affordable benefits model and provide customised benefits for employees with different needs.

Digital platform for benefits data management

We offer online benefits options for employees with the newly-launched data management platform.

Employee Benefits Highlights in 2022

We held various cultural and sports activities to enrich our employee's life. Based on hot topics and trends in 2022, we organised activities such as Word-Cup-themed online activities, LONGi Cup football matches, Spring Festival garden parties, parent and child activities on Children's Day, cross-country sports, and health education workshops. 526 activities were held in total, with each employee participating 3.81 times on average.

LONGi launched the critical illness insurance project for employees in need

LONGi set up the critical illness insurance project to relieve the burden of employees in difficulties. In 2022, LONGi further lowered the insurance premium rate and added more insurance items. The project was rated as a core innovative management project within the company. During the reporting period, LONGi paid a claim reimbursement of RMB400,000 for 2 employees and an inpatient allowance of RMB5,200 in total for 5 employees.

Talent Growth

Adhering to the merit-based talent philosophy, LONGi strives to bring employees the most valuable growth opportunities to help them grow.

Employee Promotion Routes

We provide employees with a comprehensive growth system that fits their job types and career planning. We established professional and management career tracks while specifying the job levels and individual promotion routes for each track. We also built systematic standards for promotion evaluation. To get the chance of promotion, employees must pass professional job qualification exams and meet corresponding requirements on values and performance.

With full respect to employees' growth patterns and needs, we customise our growth plans for employees at different growth stages with different performances. We identify outstanding employees through regular talent reviews and support their growth with faster promotion and job rotation.

Talent Capacity Building

We constantly improve our employee training system. By regularly researching business demands and organizing meetings on training budget planning each year, we update the training programs based on our strategic vision, business demands, and employees' needs. In 2022, we refined the talent cultivation system to provide targeted programs for employees with different growth needs. As a result, 100% of our managers at all levels received leadership-related training.

Empower leadership

Based on Ram Charan's leadership pipeline model, we provide customised training for managers at different levels, including training programs for senior managers, mid to high level managers, junior to mid level managers, and team leaders.

Empower capacity building

We organised AR and PAP programs to facilitate the transformation of our marketing branch.

Train newly-hired graduates

We prepared systematic programs to help newly-hired graduates quickly adapt to the workplace and find a sense of belonging.

Empower globalisation

Based on our global vision, we launched special programs to support our overseas business.

Empower cultural integration

We organised training programs on cultural integration to help employees know more about LONGi and feel a sense of belonging at the company.

Talent Cultivation System and Empowerment Programs in 2022

We encourage employees to join external training courses and provide employees with a broader range of growth resources by cooperating with other outstanding companies. For example, we work with third-party training agencies to hold professional career growth sessions for employees in finance and management positions. In 2022, we work with Golden Education, EasyFinance, and other agencies to provide finance employees with professional capacity training. We also opened management training courses for managers by collaborating with Huawei, Dedao, and Chaos Investment.

In 2022

3,005 training sessions were held

60,601 employees joined the training

The total training hours reached **1,747,386**

100% of our managers at all levels covered in leadership-related training

3.2 Occupational Health and Safety

One of the significant embodiments of LONGi's people-oriented principle is that we pay attention to and safeguard employees' occupational health and safety. We attach great importance to employees' health and safety and continuously enhance related management and control.

In 2022

we had

2,217,208 hours

of occupational health and safety training

3,145

occupational health and safety training sessions, and

1,175 times

of emergency drills

LONGi strictly abides by related laws and regulations which concern occupational health and safety, such as the *Law of the People's Republic of China on Work Safety* and the *Law of the People's Republic of China on Prevention and Control of Occupational Diseases*. We have formulated internal administrative guidelines, including the *Management System for Quality, Environmental, Occupational Health and Safety Accidents*, the *Work Safety System*, the *Environmental Safety and Occupational Health Management Manual*, the *Occupational Health Management System*, the *Labourer Personal Protective Equipment Management System*, and the *Labourer Occupational Health Monitoring, Protection and Files Management System*. Besides, we have established the EHS Committee to coordinate the occupational health and safety management in the company. As of the end of the reporting period, a total of 28 production bases have passed the ISO 45001 occupational health and safety management system certification, 7 production bases have obtained the grade 2 work safety standardisation certification, and 2 production bases have gained the grade 3 work safety standardisation certification.

LONGi sets annual occupational health and safety management goals and makes implementation projects. Besides regularly carrying out hazard inspections, when the environment changes, we will immediately start a new round of hazard identification according to the *Hazards Identification, Assessment, and Control Procedures*. Moreover. we develop emergency responses, hand out occupational hazard notification cards, and also conduct occupational disease hazard factor testing in our production plants. We continuously improve occupational health conditions in the workplace, provide employees with qualified and portable personal protective equipment, and regularly maintain and repair occupational disease protection facilities to protect employees' physical and mental health from occupational injuries and workplace harassment.

We have established a three-level safety training mechanism to increase employees' safety awareness with diversified training courses. Meanwhile, to facilitate safety education and to strengthen the significance of production and operation safety, we have carried out activities like the "Production Safety Month", safety knowledge competition, and emergency response drills.

Work Safety Performance of LONGi (2020-2022)

Indicator	Unit	2022	2021	2020
Total number of safety hazards identified	occurrence	29,002	24,165	/
Rectification rate of safety hazards within the year	%	99.09%	100	/
Number of individuals to be recorded with work-related injuries	person	52	88	/
Days of absence due to work-related injuries	day	420	2,110	/

Ningxia LONGi Organised Training to Increase Employees' Emergency Response Capacity

In 2022, many subsidiaries of LONGi organised a variety of activities to improve employees' safety awareness and rescue capabilities in response to emergencies.

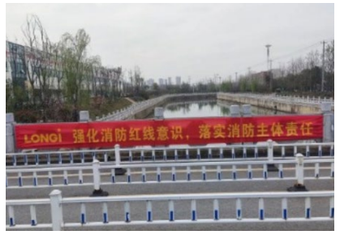
In February

Ningxia LONGi invited professional institutions to conduct emergency rescue skills training for all employees. First aid techniques such as CPR, airway obstruction first aid method, triangular bandage, and firefighting equipment use and maintenance were demonstrated to improve employees' response capacity, so that they could adopt the most effective rescue methods in emergencies.

The Emergency Response Capacity Improvement Training Site of Ningxia LONGi

In March

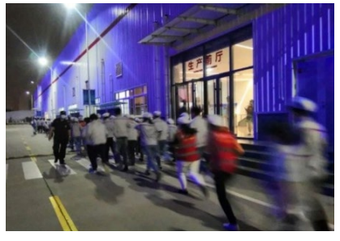
Chuzhou LONGi Solar organised the "Firefighting Month" kick-off meeting. This month-long activity was used to promote the knowledge of firefighting through various scenes and multiple channels, creating a good learning atmosphere.



The Publicity of the "Firefighting Month" Activity at Chuzhou LONGi Solar

In April

Xianyang LONGi Solar organised night fire drills. Employees had opportunities to gain escape experience in the simulated fire case. It also enhanced their self-help capability in fires, including personnel evacuation, firefighting, rescuing, communication, order maintenance and others.



The Fire Drill Site in Xianyang LONGi Solar

In addition to ensuring the occupational health and safety of our own employees, we also pay close attention to the occupational health and safety of workers in the supply chain. Therefore, we provide occupational health and safety training to our suppliers and require them to comply with local labour protection laws and regulations in the management of their employees and establish prevention and control or make emergency plans to prevent and control the occurrence of production accidents and occupational diseases.

3.3 Community Improvement

With a sense of mission and responsibility, LONGi always regards social responsibility as an essential development strategy of the company. We effectively fulfil our responsibility as corporate citizens and dedicate ourselves to improving communities, contributing our strength to the healthy development of society. In 2022, we planned and implemented more than 30 public welfare donation and education support projects in China and abroad, with a cumulative external donation of RMB10,760,100, benefiting about 200,000 people.

Community Development

We continue to spread the idea of low-carbon in communities and help build better communities through public welfare donations and educational support.

Spread the idea of low-carbon

While we attach importance to LONGi's own low-carbon development, we continue to expand the channels to practice low-carbon public welfare in the communities, hoping to spread the green low-carbon concept to all operational regions through our own strength and help build a green-oriented, multi-functional, complementary, intelligent and cooperative clean ecological environment.

LONGi established the Green Energy Exhibition Hall as a public platform to promote the philosophy and knowledge of green and low-carbon development. In November 2022, the LONGi Green Energy Exhibition Hall was bestowed with the title of "the Youth Education Base of Shaanxi Province" by the Communist Youth League Shaanxi Provincial Committee.

Focus on vulnerable groups

LONGi continues to pay attention to the development of the communities where we operate, and we are committed to helping vulnerable groups through PV technology and contributing to social development.

Pay attention to the needs of disadvantaged people: the donation of a 21kW solar power station

In June 2022, the Embassy of the People's Republic of China in the Islamic Republic of Pakistan called on Chinese-invested enterprises established in Pakistan to lend a hand that the Centre for Speech and Hearing, Mardan, was lacking in reliable power supply. The LONGi Pakistan team reacted soon and found that because of the power shortage in the region, the hearing testing equipment of some students was broken, and over 200 teachers and students had to study in very tough conditions with a scorching temperature of 40°C. To meet the school's needs as quickly as possible, LONGi paid several visits to the school and eventually decided to donate a 21kW rooftop solar power system. This donation was appreciated by the Embassy of the People's Republic of China in the Islamic Republic of Pakistan and was liked online by the Embassy's official account. It was also included in the All-Pakistan Chinese Enterprises' Association's 2022 sustainable report.

The donation of a 21KW solar power station

Lighting Africa — LONGi photovoltaic donation project in Malawi

At the beginning of 2022, LONGi established an African Representative Office to supply 16 countries in Africa, with goods shipped to 15 seaports in Africa. During our operations, we noticed the unbalanced economic development of various African regions. A large portion of the population was still living in areas without electricity. Although gas and coal power generation still dominate the African electricity market, the development of the PV industry will bring significant social and economic value to African countries as the cost of PV technology lowers down.

On September 2, 2022, LONGi and A.P. Moller-Maersk (Maersk), the leading global integrated container logistics company, jointly held the launching ceremony of a donation project for the African country of Malawi in Shanghai. In virtue of this donation project, we would continue to make donations, helping residents in areas without electricity in Africa obtain clean energy, and improve the medical care, education, and living standards of local residents.

The 301kW high-efficiency photovoltaic modules donated by LONGi and shipped by Maersk were successively sent to 12 destinations in Africa, including hospitals, clinics, schools and villages to generate electricity and irrigate farmland. With concrete actions, we facilitate infrastructure construction in Africa and help promote low-carbon development in the region.

The container loaded with the 301kW high-efficiency modules for the donation

LONGi and Maersk jointly held the launching ceremony of the donation project for Malawi

LONGi assists Solar Butterfly to travel around the world, exemplifying the sustainable living

Solar Butterfly is an environment-protection-oriented solar trailer project initiated by the Swiss climate activist Louis Palmer and his team. The specially designed trailer has two “wings” on each side of the car body. When the “wings” are fully unfolded, the “car” becomes a “butterfly”. The trailer’s roof and the “wings” are covered by high-efficiency solar panels sponsored by LONGi, which can collect solar energy with the highest efficiency rates, delivering the trailer power generation system and satisfying the daily needs of living in the trailer.

In 2022, from Europe, the team embarked on a four-year global trip that would cross over 90 countries and regions. They planned to visit globally leading PV projects and conduct activities sharing scientific knowledge along the route and would finally make their way to Paris, celebrating the 10th anniversary of the UN Paris Climate Change Agreement (December 12, 2025). This special world tour is committed to arousing people’s awareness of climate change and the urgency of protecting Earth, encouraging everyone to “think globally and act locally”.

As the platinum sponsor of Solar Butterfly, we provide financial support and high-efficiency solar panels for the team. At the same time, with partners, we have actively participated in offline events carried out at the stops of Solar Butterfly’s world tour, publicizing PV power generation applications and promoting green energy and low-carbon lifestyles.

Solar Butterfly in Paris

Solar Butterfly in Berlin

Solar Butterfly in Switzerland

"LONGi Sunflower": a new driver for community development

The PV power station achieved a net income of about

RMB 350 per month

Annual income reached

RMB 4,200

In July 2022, LONGi officially launched the one-stop household PV solution, "LONGi Sunflower".

We provide a one-stop service system for households that covers the whole lifecycle of a PV power station, from the application of the power station to later maintenance. Through this solution, we can provide endless green electricity for households, and people can also secure steady dividends from power generation. Those PV panels have not only become "green street lamps" lighting up the path of rural revitalisation but also have promoted the development of the rural green economy.

Take the example of a family in Danjiadian Village, Nanshuangmiao Town, Chaoyang County, Chaoyang City, Liaoning Province:

Ms. Deng purchased a 32.1kW "LONGi Sunflower" PV power station in 2022 with a loan. During the year, excluding the loan repayment, the PV power station achieved a net income of about RMB350 per month, with an annual income reaching RMB4,200. After the loan is fully repaid, Ms. Deng's annual income will reach about RMB21,000, and the PV power station is expected to bring her a total income of over RMB462,000 in its 30-year lifecycle.

The "LONGi Sunflower" PV power station in Danjiadian Village, Nanshuangmiao Town, Chaoyang County, Chaoyang City, Liaoning Province

Public Welfare Donations

LONGi has always been concerned about the improvement of education in less developed areas. We established the LONGi One Percent Foundation of RCSC in 2010 while continuously initiating public welfare projects to help children in impoverished areas get a better education.

The LONGi One Percent Foundation

The LONGi One Percent Foundation of RCSC is a non-public foundation initiated by LONGi leaders and other warm-hearted people. It adheres to the principle of "one percent of the donation, one hundred percent of change."

Since its establishment, the LONGi One Percent Foundation has made many donations to support the reconstruction of the Yushu City of Qinghai stricken by the earthquake, help cure children with congenital diseases in Tibet, and provide financial aid for students to finish education. By the end of 2022, the Foundation has supported and awarded over 1,000 students. In the future, the LONGi One Percent Foundation will continue to play its role, helping to build a beautiful society.

The bursary program for M.N. Education Campus Lahore, Pakistan

M.N. Education Campus Lahore was a private school in Pakistan. 300 students (from kindergarten-level children to grade 10 teenagers) and teachers were crammed in a three-story building under tough teaching conditions. In order to improve the educational environment and bring more children into the classroom, LONGi launched the M.N. Education Campus Lahore bursary project, providing 20 impoverished students with a full year of tuition. In the future, students will grow more happily and hopefully with LONGi's support.

The donation site of the M.N. Education Campus project

Focus on special education and pass on love through public welfare

On June 28, 2022, the Labour Union of LONGi visited the teachers and children of Xi'an Zhouzhi County Special Education School. The volunteers led the children to do DIY doodling works with the theme of "Green Environment: Draw Your Little World" and donated more than 800 copies of stationery, small fans, night lights, snacks, and other gifts to the school.

The activity site in Zhouzhi County: "Focus on special education and pass on love through public welfare"

04

Compliance to Build Trust and Safety

Trustworthy 信賴 T

LONGi believes that sound compliance operations remain the cornerstone of the growth. While deepening our business growth and creating more social value, we also integrate the philosophy of sustainable development into our corporate management and governance. With joint efforts from partners to standardise internal management, LONGi adheres to business ethics and therefore establishes a trustworthy corporate image.

Operations and Governance 80
Customer Relations 84
Responsible Supply Chain 88

SDG goals addressed in this section

Operating revenue reached RMB **128.998** billion

Total assets reached RMB **139.556** billion

Net profit attributable to the parent company reached RMB **14.812** billion

Cash dividends reached RMB **3.033** billion

Conducted **578** anti-corruption training sessions and publicity events

Top Brand PV

Awarded by EUPD Research with the "Top Brand PV" badges for the Mexican, Chilean, and Latin American markets

83 % of new suppliers were screened using environmental criteria

and **100** % were screened using social criteria

Obtained **ISO 37301 Compliance Management Systems certification**

Obtained **5-star certification of the GB/T 27922-2011 After-sales Service System of Commodity**

4.1 Operations and Governance

Observing the business philosophy of compliance and transparency, LONGi takes the initiate to control risks during day to day operations and strictly conforms with business ethics.

Corporate Governance

LONGi has established a scientific and efficient corporate governance structure with clear division of work. Every three years, the board of directors undergoes a change of members to ensure that the number and composition of the Board comply with laws, regulations, and supervision as in the *Company Law of the People's Republic of China*, the *Securities Law of the People's Republic of China*, the *Code of Corporate Governance for Listed Companies*, and the *Rules Governing the Listing of Stocks on Shanghai Stock Exchange*. We also factor into the industry experience, educational background, ability, and gender of board members to ensure an independent and inclusive Board.

Board of Directors

External Directors

4/9

(Including 3 independent board members)

Independent Directors

3/9

Female Directors

2/9

Board members over 50 years old

5/9

Board members under 50 years old

4/9

LONGi's Governance Structure

Controlling shareholder and listed companies

The controlling shareholder of the company strictly regulates shareholders' behaviours and exercises shareholder rights in good faith. The company possesses independent and complete business and autonomous operating capabilities and remains independence from the controlling shareholder in areas such as business, personnel, assets, institutions, and finance.

Shareholders and Annual General Meetings

The company stays attentive to investors' opinions. During the reporting period, we convened four sessions of Annual General Meeting to communicate with investors on important issues ranging from company governance, ESG issues, to financial performance.

Directors and Board of Directors

The company established a governance structure with the board of directors as the core, which serves as the coordinator of the company's operations and the decision-maker of strategies. Under the board of directors, four specialised committees perform their duties to oversee and manage the corporate governance.

Supervisors and Board of Supervisors

The board of supervisors oversees the company's business development, related transactions, fundraising management, and use of funds to ensure that the company's development complies with compliance requirements.

Upholding the principles of truthful, accurate, complete, timely, and effective information disclosure, LONGi proactively conveys the company's business philosophy and achievements to investors, and invite them to dive into the company's culture and business operations. We engage with investors through multiple channels, including traditional ones such as investor mailboxes, hotlines, and interactive platforms, along with the state-of-the-art media outlets to facilitate open and transparent communication with investors. In 2022, we participated in 337 investor conference calls, held 58 roadshows, received over 40 on-site research visits, held 3 performance briefing sessions, and achieved long-term, stable, and high-frequency communication with investors worldwide.

Participated in investor conference calls

337

Held roadshows

58

Received on-site research visits over

40+

Held performance briefing sessions

3

Compliance and Risks

Abiding by the *Company Law of the People's Republic of China* and other laws and regulations, LONGi also revised and updated relevant policies including the *LONGi Code of Business Conduct*, the *Compliance Risk Control Management Regulation*, the *Internal Control Management Regulation* in the 2022 reporting period.

Risk management

- We constantly enhance our structure of compliance management and established the Compliance and Risk Management team to oversee the comprehensive management and leadership of internal governance based on the "three lines of defence" for the Group's compliance risk management.

1st Line of Defense

Members: Functions, centers, business groups, and subsidiaries of the group

Identifying compliance risks in each respective business field, and formulating risk prevention and control measures accordingly

2nd Line of Defense

Member: Compliance Management Department

Establishing and improving the Group's compliance management system, formulating compliance management regulations and standards, and providing answers to compliance-related questions

3rd Line of Defense

Member: Audit and Supervision Center

Investigating and handling violations and holding individuals accountable

Compliance Management

- LONGi has built the compliance management system and carried forward the certification projects in line with the *ISO 37301 Compliance Management Systems - Requirements with Guidance for Use* and the *GB/T 35770-2022 Compliance Management Systems - Requirements With Guidance for Use*. We managed to identify and assess business risks involving around 14 compliance issues including international trade compliance, anti-monopoly, and anti-bribery, among others, and developed targeted measures to address the risks identified. In April 2023, LONGi obtained the ISO 37301 Compliance Management Systems certification.

Audit and Supervision

- During the reporting period, LONGi conducted the internal audit and internal control evaluation. Special investigations and audits were carried out in high-risk areas such as marketing and supply chain, with an in-depth analysis of key business process control elements. We tried to scale up governance efficiency by combining internal audit with digital transformation. In summary, 42 audit projects were conducted during the reporting period, identifying 104 risk points. During the internal control evaluation, no significant company-wise internal control deficiencies were identified, and no other major issues were found during third-party audit supervision.

Audit projects conducted

42

Risk points identified

104

Business Ethics

LONGi adheres to fair and just operations and has a zero-tolerance policy towards acts that violate business ethics such as corruption, favouritism, fraud, and improper competition. LONGi strictly complies with laws and regulations such as the *Criminal Law of the People's Republic of China* and the *Anti-Unfair Competition Law of the People's Republic of China*, requiring all employees and business partners to perform their duties with integrity. We strive to raise employees' awareness of business ethics through various activities, and instruct them to establish appropriate values of business ethics. In 2022, LONGi did not report any legal lawsuits related to anti-unfair competition or anti-monopoly, or any illegal cases resulting from fraud or corruption.

Anti-monopoly

LONGi has been advocating for fair competition and attached great importance to anti-monopoly and anti-unfair competition. We formulated policies such as the *Measures for Anti-monopoly Compliance Management* and the *Anti-Monopoly Compliance Manual* to instruct employees to comply with anti-unfair competition rules.

Anti-corruption

Conducted integrity training for all employees

578 sessions

Organised integrity special training for management and above cadres

29 sessions

Hold integrity training for new hires

12 sessions

Signature rate of integrity commitment letter for new employees

100%

Abiding by principle of anti-corruption and integrity, LONGi formulated policies such as the *Anti-Commercial Bribery Management Measures* and the *Position-Specific Fraud Risk Management Rules* under the guidance of the board of directors, requiring its employees to conform to moral principles and create a just, transparent, and secure business environment. In accordance with the *Anti-Commercial Bribery Management Measures*, we assigned employees with anti-bribery management experience to the Audit and Supervision Centre, collaborating with experienced risk managers from the front line to develop a comprehensive anti-bribery compliance system. The synergy among various mechanisms (e.g., risk assessment, due diligence investigation, business review, training and communication, continuous supervision and improvement, internal audit, and inspection) will ultimately pave the way for business operations.

LONGi conducts regular inspections on the effectiveness of the anti-bribery management system, monitors and controls the anti-bribery compliance risks in the company's business operations. To further improve our ability of anti-corruption management and our development of management system and emulate the global anti-bribery systems, LONGi has obtained the certification of ISO 37001 Anti-Bribery Management Systems. This system will annually audit the ethical standards and policies including the *Anti-Commercial Bribery Management Measures* and the *Position-Specific Fraud Risk Management Rules*.

To ensure the practice of the anti-corruption management system, we strengthen the integrity management of all employees, require new employees to sign the *Integrity and Self-discipline Commitment*, organise integrity training for employees, and deepen the business ethics awareness of employees at all levels. In 2022, we conducted 578 integrity training sessions for all employees, covering 100% of employees; organised 29 integrity special training sessions for management and above cadres, and held 12 sessions of integrity training for new hires. 100% of new hires signed the integrity commitment and 100% of employees attended the anti-corruption training.

Complaint reporting

We have formulated the *Complaint Reporting Management Measures* to standardise the company's complaint reporting management procedures, facilitate channels for complaint reporting, and encourage company employees and stakeholders to report any behaviours that are detrimental to the interests of the company and its employees, establish diversified channels such as phone, WeChat mini program, and email. We strictly keep confidential the personal information of whistle-blowers and protect them from any discrimination or retaliation. In addition, we follow the *Complaint Reporting Management Measures* to clearly define and implement rewards and punishments for whistle-blowers.

4.2 Customer Relations

Guided by the service principles of being “reliable, value-added, and delighted”, LONGi takes a responsible attitude as its guiding principle and high-quality products as its tie, providing customers with high-quality, efficient, and high-level services to safeguard the achievement of their values.

Customer Service

In pursuit of the customer service principle of “delivering professional services to create customer value”, LONGi has innovated the global customer service system and established a three-tier service framework. This provides customers with a comprehensive range of services and support, ranging from product solutions, product selection, and technical consultation, to in-person installation guidance, operation and maintenance training, and on-site problem diagnosis and resolution.

LONGi’s Global Customer Service System

First-level local technical service

Localised customer service interfaces are established in major regions worldwide to provide professional services such as rapid response to customer-end problems, detailed on-site research and analysis, and the development of product solutions.

Second-level centre for empowerment support

Provides problem-solving capabilities for customer service and guarantees the resources required to address customer issues.

Third-level headquarters expert support

Involves senior technical experts providing customers with professional support at the technical level.

In 2022, we revised the *Customer Service Manual of LONGi* to standardise the behaviour of all technical service personnel, establish service management targets, and ensure customer service quality. Additionally, we optimised customer demand response and service processes, prioritising the response, processing, and rapid closed-loop management of technical and non-technical customer issues.

With the responsive service as the foundation and active value-added service as the core, LONGi has designed the tripartite “business-technology-service” service model. It aims to fulfil the customers’ service requirements for the full lifecycle of commercial plans, product technology solutions, and delivery services.

LONGi’s Customer Service Performance in 2022

	2022	2021
Marketing Service Centers (Covering Asia-Pacific, Europe, Americas, Middle East, and Africa)	16	10+
Technical services provided for customers with large projects	173 times	Close to 300 times
In-person installation and maintenance training sessions	120 training sessions on installation guidance	Over 60 times
Power plant visit	29 times (across 15 provinces)	Over 20 times

In 2022, EUPD Research[24] awarded LONGi the “Top Brand PV” badges for the Mexican, Chilean, and Latin American markets. The badges demonstrate the high level of satisfaction of Latin American customers with LONGi’s products.

In January 2023, the after-sales service of LONGi’s monocrystalline silicon PV modules met the five-star standards of the *Evaluation System for After-sales Service of Commodity* and obtained the certification of the GB/T 27922-2011 After-sales Service System of Commodity.

Five-star Certification of the *Evaluation System for After-sales Service of Commodity*

[24] EUPD Research is a renowned global independent research institute with over 20 years of experience in monitoring and researching global PV installers and distributors in the global new energy industry. Every year, EUPD conducts a multi-level public opinion survey and data analysis of installers and distributors in the global new energy industry, and identifies manufacturing companies with outstanding performance worldwide on a number of indicators, including customer perception of product quality, product sales strength and brand satisfaction.

Optimisation of Solar Power Module Packaging

To improve the user experience of products, LONGi began with an initiative to optimise product packaging at a detailed level. Through extensive research and design optimisation, LONGi has adopted approaches such as placing wooden corner protectors to prevent product packaging from tilting. This not only makes the packaging more protective of the products during transportation and secures reliable protection over long distances, but also reduces the occurrence of damage to the goods during module transfer, effectively reducing customer asset losses. As of the end of the reporting period, the new packaging has been recognised by customers as stable and reliable, with no complaints about the packaging.

Response rate for client requests for technical issues up to

100%

Acceptance rate achieved

100%

Timely processing rate achieved

100%

LONGi values customer feedback facilitates communication mechanisms with customers and creates diversified channels for customer feedback. For technical requests from the customer side, to achieve the "121" service goal in a timely manner and to quickly respond to and handle customer issues, we regularly conduct customer satisfaction surveys and promptly resolve any issues identified. In 2022, the response, acceptance, and timely handling rates of LONGi customers' technical issues reached 100%.

Customer Communication and Feedback Channels

CC3 team	Managers of Sales, Delivery, and Product Solution of LONGi directly provide service support
Service hotline	4008 601012
Official website	https://www.longi.com/cn/
Email	market@longi.com

"121" Service Goals

1	Respond to customer issues within 1 day
2	Provide customised solutions within 2 days
1	Complete returns and exchanges within 1 calendar week

Responsible Marketing

Upholding a scientific and rigorous attitude towards responsible marketing, LONGi strictly adheres to the *Advertisement Law of the People's Republic of China* and other laws and regulations of the operating jurisdictions. We have also established a mechanism for responsible marketing materials review and supervision. Due diligence investigations are conducted at all levels of the marketing teams, and all marketing materials to be released must be approved by authorised management personnel to ensure that they comply with legal requirements. In 2022, LONGi reported none of market marketing violations.

To put responsible marketing into practice, the company promotes the concept through various approaches, including optimising compliance standards and conducting regular marketing training. In 2022, the company launched the "Iron Triangle" promotion programme for front-line sales teams and provided targeted marketing training for new hires. These measures will deepen the salespeople's understanding of the corporate culture and products, raise awareness of responsible marketing risk prevention, and ensure that products are promoted and sold in compliance.

Marketing violations

0 cases

Privacy Protection

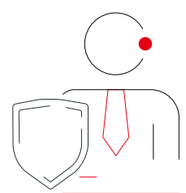
LONGi believes that safeguarding information security and data privacy is the cornerstone of creating a high-quality user experience. With a commitment to protecting personal information protection in mind, LONGi has strengthened the company's information security technology and developed a secure operating system. We also provided training to raise information security awareness for all employees and training for the IT team on information security professional skills. LONGi obtained the certification of ISO 27001 Information Security Management System during the reporting period and the certification of ISO 27701 Privacy Information Management System in March 2023.

Adhering to the legal and moral bottom lines of privacy protection, LONGi strictly complies with relevant laws and regulations in the operating jurisdictions, including the *Data Security Law of the People's Republic of China*, the *Personal Information Protection Law of the People's Republic of China*, and the European Union's *General Data Protection Regulation* (GDPR). LONGi has formulated a series of standardised management documents, such as the *Information Security Management Policies* and the *Personal Information Protection Management Measures*, which clarify the principles, procedures, privacy design, data transfer, and the rights of data subjects for handling the information of customers, suppliers, partners, and employees. Information security and privacy protection requirements and measures are effectively embedded into the entire business circle. We have established the Information Security and Privacy Protection Management System and set up a working group responsible for the deciding and approving of the company's information security and privacy protection strategies, thereby fully promoting the development and implementation of the company's Information Security and Privacy Protection Management System. In addition, to consolidate the information security management of suppliers, we established the *Supplier Information Security Management Specification*, conducted necessary inspections and evaluations of suppliers' information security performance as required, and safeguarded the security interests of both parties through confidentiality agreements, service monitoring, and reviews.

In terms of the applications of technology tools, LONGi adopts the most advanced and applicable technologies for information security and data protection, improves data protection measures, and reduces the company's information security risks by deploying encryption software, anti-virus systems, and security situational awareness systems. LONGi is committed to building a trustworthy security infrastructure and providing all-round protection for information security and privacy protection. In 2022, LONGi reported none of privacy breaches.

Privacy breach

0 cases



4.3 Responsible Supply Chain

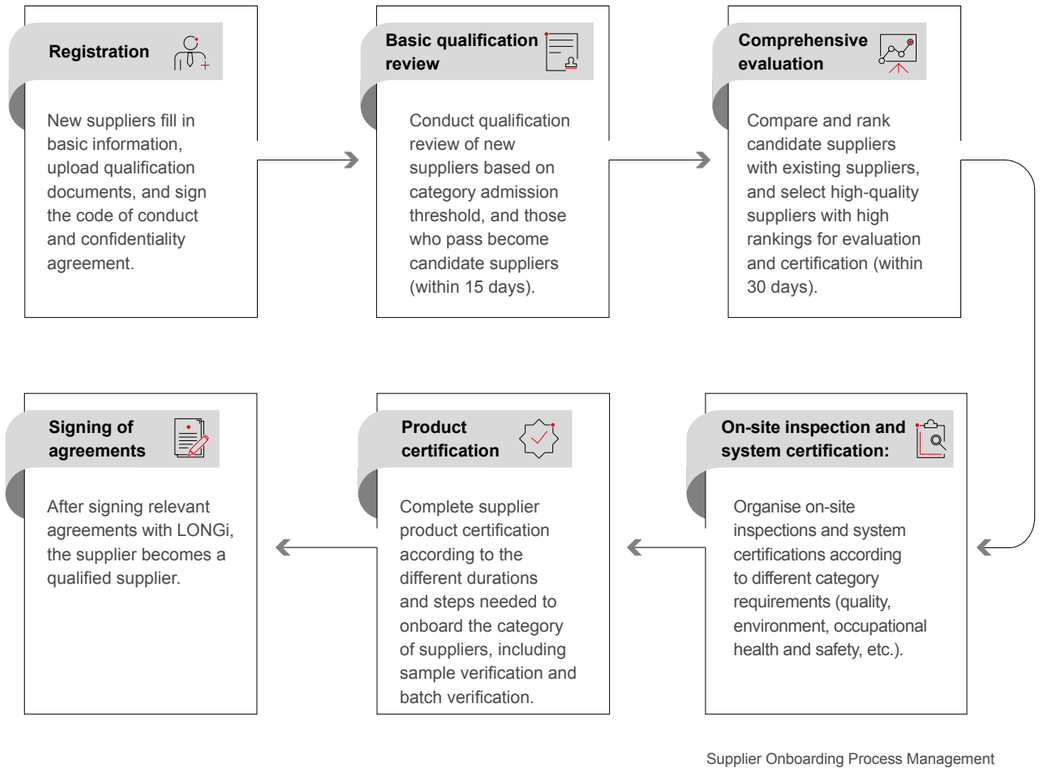
Establishing a stable and healthy supply chain plays a crucial part in LONGi's pursuit of sustainable development. We remain steadfast in conveying the concept of sustainable development to all links of businesses in the supply chain. With the joint efforts of suppliers, we aim to enable a transparent and responsible supply chain for win-win results.

Supply Chain Management

Suppliers received the ISO 9001 certification

3,711

LONGi remains faithful to our vision of "establishing the most competitive PV supply chain to create customer value with the most affordable cost and best service". To further improve our supply chain management system, we formulated management measures such as the *Supplier Management Process* and the *Supplier Recruitment Management Measures*, clarified supplier management requirements, standards, and processes, as well as managed suppliers in line with their grades, categories and full lifecycle development. In 2022, 3,711 suppliers received the ISO 9001 certification.



Supplier Onboarding Process Management

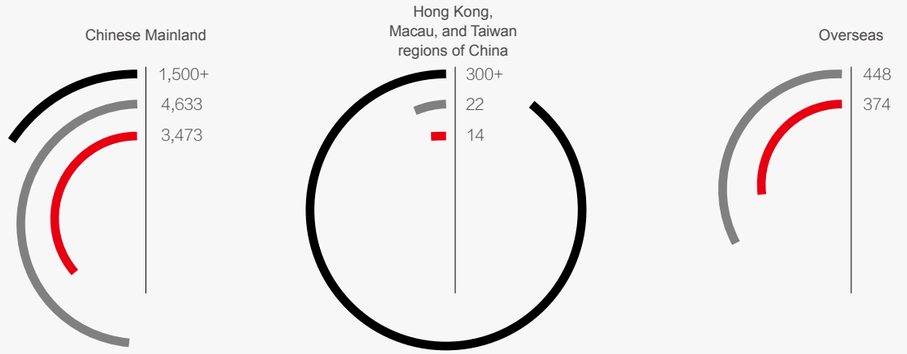
Note: There are slight differences in the admission process for different supplier categories. Please refer to the guidelines of LONGi SRM system for specifics.

Suppliers who monitor compliance risks in real-time

1,000

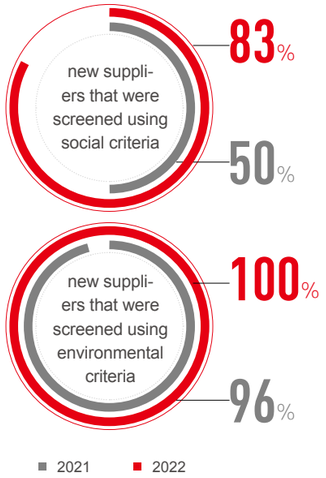
In terms of supply chain risk prevention and control, LONGi established policies such as the *Supplier Due Diligence Management Standards* and the *Global Customs Compliance Management Measures*. We also integrated suppliers' full lifecycle into risk management, periodically screened suppliers for compliance and operational risks, and introduced tools from the third-party platform to identify, monitor, and assess negative public opinion on suppliers' business information, operational risks, legal disputes, etc. We then develop targeted measures to prevent, mitigate, terminate, and minimise the negative impact of supplier risks. In 2022, we resorted to third-party risk management tools to oversee and investigate the new supplier admission and daily cooperation of 1,000 suppliers on their operational situation, negative public opinion, legal disputes, etc., to ensure compliance with requirements and reduce cooperation risks.

Number of Suppliers Divided by Region



Note: In 2020, the number of suppliers in Hong Kong, Macau, and Taiwan regions of China and that of overseas was not separately recorded.

Responsible Procurement



LONGi underlines the sustainable development of its suppliers and incorporates environmental impact, social welfare, health and safety, and business ethics into the supplier management. We also take corresponding measures to address environmental and social risks that have arisen in supplier operations. LONGi referred to international standards and guidelines and developed the *CSR Code of Conduct of LONGi Suppliers*. For suppliers with best CSR practices, we consider it a plus in the management of suppliers and/or partners for cooperation, and will prioritise cooperation with them over their peers at the same level.

In 2022, we initiated a supplier due diligence investigation for the first time, assessing suppliers' environmental and social performance from nine aspects: employment, labour protection, union freedom and collective bargaining, fair treatment, working hours and wages, occupational health and safety, supply chain management and traceability, environmental protection, legal compliance, and fair competition. To assist suppliers in completing the questionnaire, LONGi provided training and guidance to answer the questions. By the end of the reporting period, LONGi had conducted enterprise-wise sustainable development due diligence investigations on all suppliers and rectified all identified issues.

Prevention of Controversial Procurement Risks

To effectively level up measures for controversial procurement, the *CSR Code of Conduct of LONGi Suppliers* stipulates that we do not purchase, use, or sell conflict minerals and clearly defines what "conflict minerals[25]" stand for. Meanwhile, LONGi conducts due diligence audits on the origin of all raw materials throughout its supply chain, covering production and sales links such as self-owned factories, contract manufacturers, and distributors, to ensure that there exist no conflict minerals in the supply chain.

To ensure that the review mechanisms of relevant parties should be qualified, LONGi regulates that the "Measures and Results of Supplier Investigation" should include manufacturing raw materials such as materials, parts, components, sub-assemblies, and finished products (contract manufacturing or transportation).

Going forward, we will strength our efforts to enhance the management system of controversial raw materials procurement, further improve the supplier traceability and audit mechanisms for raw material origins, and conduct supplier audit training to rigorously avert issues with controversial raw material procurement.

Suppliers' Environmental Protection

As an advocator for sustainable procurement, LONGi prioritises suppliers with sound environmental management systems and policies. In this regard, suppliers with ISO 14001 environmental management system certification are given higher composite scores. Regarding product packaging and design, LONGi examines aspects from material thinning and reduction, circular packaging, avoidance of excessive packaging, the introduction of energy-saving designs, to the use of recycled materials. We have been investing efforts in optimizing these processes. In addition, LONGi encourages top-notch suppliers to construct factories in place for investment or procure resources from local or neighbourhood areas to curb energy loss and promote the local sustainability.

Launch value engineering projects

169

Self-recommended innovation projects

52

Projects that generate revenue

72

LONGi Issued the "Three New Innovations Initiative[26]" to Suppliers

In order to build a PV innovation ecosystem and promote high-quality development in the PV industry, LONGi issued the "Three New Innovations Initiative" to our suppliers in 2022. We collaborated with suppliers to launch 169 value engineering projects, including 52 self-recommended innovation projects by suppliers and 72 projects jointly verified and implemented by LONGi and suppliers to generate revenue. These projects encircle various themes of sustainable development, such as recycling materials for reuse, energy consumption reduction by production process optimisation, improvement of production efficiency by automation, energy consumption reduction by transportation optimisation, and promotion of the facility construction near industrial clusters. We also incorporated sustainable procurement management into the entire supply chain lifecycle, contributing to environmental protection and community development.

新材料、新技术、新工艺创新倡议书 ——致隆基合作伙伴公开信

尊敬的隆基供应商合作伙伴：

大家好！

首先由衷的感谢大家长久以来对隆基发展的关注和信任，以及在供应链物资服务保障方面的积极配合与鼎立支持，这为双方未来建立长久稳定的伙伴关系奠定了基础。

＂十四五＂是我国实现＂碳达峰＂的关键窗口期，我国光伏行业也将迎来最好的发展时代。随着光伏市场竞争愈加激烈，专业分工、技术创新、协同发展将成为企业良性竞争、行业健康发展的前提条件。为响应国家政策号召，隆基作为行业一份子，向所有合作供方发出《倡议书》，号召大家积极参与碳达峰、碳中和行动，积极作为。

[25] In the "Responsible Mineral Procurement" clause, LONGi defines conflict minerals as coltan, cassiterite, gold, wolframite, cobalt, or their derivatives originating from the Democratic Republic of the Congo or any country internationally recognised to share a border with the Congo where these minerals are mined.

[26] The initiative advocates for joint innovation in new materials, new processes, and new technologies.

Rights and Interests of Suppliers' Labour

Regarding the employment, LONGi requires suppliers to respect the basic human rights of their employees, strictly prohibit the employment of child labour and forced labour, and not engage in or tolerate any form of violation of labour laws and regulations. LONGi also instructs its suppliers to regulate their own suppliers and/or partners not to violate labour protection and not to purchase products or raw materials produced in violation of labour protection principles. LONGi spares no effort in safeguarding labour rights and oversees suppliers' compliance with human rights protection. For those who seriously or repeatedly breach the *CSR Code of Conduct of LONGi Suppliers*, we will provide them with one reasonable remedial opportunity or initiate an appeal process depending on the specific scenario.

Labour Rights and Human Rights	▪ Prohibition of child labour and forced labour ▪ Equal employment and anti-discrimination ▪ Freedom of association

Requirements for Labour Rights Protection of the Supply Chain

Supplier Compliance and Integrity

We have scaled up our efforts in ethical practices, advocated the integrity of the procurement, eliminated corrupt practices in the procurement, and signed the *CSR Code of Conduct of LONGi Suppliers* with suppliers to clarify mutual responsibilities and obligations. We required suppliers to abide by business ethics and LONGi's principle of open procurement, and pledged to manage their procurement in an appropriate and sustainable manner. During the reporting period, 94% of suppliers signed of the Code of Conduct for business.

On the one hand, we conducted ethical reviews of suppliers and eliminated business partners who did not comply with LONGi's CSR Code of Conduct for suppliers and supplier declarations. Secondly, we provided diversified reporting channels such as the Supplier Relationship Management System and the official website for suppliers to report complaints. During the cooperation, suppliers can make anonymous complaints if they spot any violation of compliance operations from LONGi's procurement personnel, and the report will be seriously taken and rigorously handled. In 2022, none of complaints or reports were issued to LONGi, and we terminated cooperation with 29 suppliers who did not comply with LONGi's Supplier Code of Conduct for CSR and supplier declarations, and informed all suppliers of this move to raise their cautiousness.

In day-to-day operations, LONGi adopts "transparent" and "non-artificial" management methods to reduce the risks caused by human fraud. At the same time, we promote our ethical principles to suppliers, demonstrating our determination to bolster open procurement, integrity, and honesty through supplier conferences, ethical letters on festivals, and anti-corruption special training. In 2022, we conducted 18 regular visits to 187 suppliers and publicised the cooperation and management methods of our open procurement.

Suppliers visited

187

Conducted regular supplier visits

18

Communication and Empowerment of Suppliers

Conducted supplier training

108 sessions

Suppliers covered

264

Suppliers attended the conference

397

Attendees invited

987

Suppliers awarded the LONGi 2022 strategic partners and outstanding suppliers award

68

With a special focus on supplier empowerment, LONGi provides all-round training sessions to help suppliers understand and stay abreast of industry changes, and therefore facilitate their sustainable development. In 2022, we provided green carbon empowerment training for suppliers, enabling them to conduct internal carbon audits, formulate carbon reduction targets, and improve their awareness of energy conservation and emission reduction. 481 suppliers have participated in the training. We also conducted more than 9,000 training sessions on supplier management systems and the SRM system. During the training, we instructed the suppliers on how to manage their bidding, contracts, and orders, and view their performance, thus taking the sustainable procurement and transparent management to the next level.

LONGi's Cooperation with Suppliers

- Provided suppliers with all-round training sessions, including the ESG requirements;
- Conducted regular high-level exchanges with suppliers to understand their concerns;
- Shared strategic support plans with suppliers;
- Periodically held supplier conferences.

LONGi Supplier Conference

In April 2022, LONGi convened the supplier conference featuring "Openness, Cooperation, Innovation, and Win-Win", with 397 suppliers and 987 attendees invited. We shared with suppliers the outlook for the PV industry and our future management policies, demonstrating LONGi's pursuit of an open, transparent, and win-win procurement, along with our advocacy of joint efforts for a sustainable supply chain. At the same time, we stayed attentive to the opinions, expectations, and needs of suppliers to better respond to their concerns. During the conference, we conferred awards upon 68 of our strategic partners and outstanding suppliers for the year 2022, as an expression of our gratitude for their unwavering support. By doing so, we aim to foster a strong sense of trust and confidence in our partners, thereby securing our long-term collaboration and mutual growth.

LONGi Conducts High-level Communication Activities with Suppliers

To deepen the rapport with suppliers and foster a robust collaborative partnership, LONGi conducts regular communication activities with suppliers to convey our management philosophy, our vision and goals of supply chain, as well as strategic support plans. This aims to bolster cooperative efforts with suppliers, enhance the company's allure, and encourage suppliers to keep abreast of LONGi's developmental and managerial objectives to shape competitive products and services. The regular exchange between LONGi and the supplier executives has fostered a greater degree of trust and established more stable communication channels, thereby inspiring top-notch suppliers to relentlessly pursue sustainable long-term aspirations.

Communication With Suppliers

High-level communication

96

Suppliers involved

252

Logistics supplier communication

12

Suppliers involved

12

GRI Content Index

Statement of use	LONGi has reported the information cited in this GRI content index for the period from January 1, 2022 to December 31, 2022 with reference to the GRI Standards.
GRI 1 used	GRI 1: Foundation 2021

Disclosure issue/ number	Description	Section in this report	Page
GRI 2: General Disclosures 2021		About This Report	
Organisation and its reporting			
2-1	Organisational details	About LONGi	
2-2	Entities included in the organisation's sustainability reporting	About This Report	
2-3	Reporting period, frequency and contact point	About This Report	
2-4	Restatements of information	About This Report	
2-5	External assurance	Third-party Assurance Statement	
Activities and workers			
2-6	Activities, value chain and other business relationships	Sustainable Development Management	
2-7	Employees	Growing Together with Inclusiveness and Care > Employee Well-Being	
2-8	Workers who are not employees	Growing Together with Inclusiveness and Care > Employee Well-Being	
Governance			
2-9	Governance structure and composition	Compliance to Build Trust and Safety > Operations and Governance	
2-10	Nomination and selection of the highest governance body	Compliance to Build Trust and Safety > Operations and Governance	
2-11	Chair of the highest governance body	Compliance to Build Trust and Safety > Operations and Governance	
2-12	Role of the highest governance body in overseeing the management of impacts	Compliance to Build Trust and Safety > Operations and Governance	
2-13	Delegation of responsibility for managing impacts	Compliance to Build Trust and Safety > Operations and Governance	
2-14	Role of the highest governance body in sustainability reporting	Sustainable Development Management > ESG Governance	
2-15	Conflicts of interest	Compliance to Build Trust and Safety > Operations and Governance > Corporate Governance	
2-16	Communication of critical concerns	Sustainable Development Management > Stakeholder Engagement	
2-17	Collective knowledge of the highest governance body	Sustainable Development Management > Stakeholder Engagement	
2-18	Evaluation of the performance of the highest governance body	Sustainable Development Management > Stakeholder Engagement	
2-19	Remuneration policies	Growing Together with Inclusiveness and Care > Employee Well-Being	
2-20	Process to determine remuneration	Growing Together with Inclusiveness and Care > Employee Well-Being	
Strategy, policies, and practices			
2-22	Statement on sustainable development strategy	About LONGi > Sustainable Development Philosophy of LONGi	
2-23	Policy commitments	About LONGi > Sustainable Development Philosophy of LONGi	
2-24	Embedding policy commitments	About LONGi > Sustainable Development Philosophy of LONGi	
2-26	Mechanisms for seeking advice and raising concerns	About LONGi > Sustainable Development Philosophy of LONGi	
2-27	Compliance with laws and regulations	About LONGi > Sustainable Development Philosophy of LONGi	
2-28	Membership associations	Green and Low-Carbon Operations > Climate Actions > Climate Change Responses	
Stakeholder engagement			
2-29	Approach to stakeholder engagement	Sustainable Development Management > Stakeholder Engagement	
GRI 3: Material Topics 2021			
3-1	Process to determine material topics	Sustainable Development Management > Materiality Assessment	
3-2	List of material topics	Sustainable Development Management > Materiality Assessment	
3-3	Management of material topics	Sustainable Development Management > Materiality Assessment	
Economy			
GRI 201: Economic Performance			
201-2	Financial implications and other risks and opportunities due to climate change	Green and Low-Carbon Operations > Climate Actions > Climate Change Responses	
201-3	Defined benefit plan obligations and other retirement plans	Growing Together with Inclusiveness and Care > Employee Well-Being > Benefits and Care	
GRI 203: Indirect Economic Impacts			
203-1	Infrastructure investments and services supported	Growing Together with Inclusiveness and Care > Community Improvement > Community Development	
203-2	Significant indirect economic impacts	Innovation for Future > Green Products > Green Hydrogen & Green Hydrogen	
GRI 205: Anti-corruption			
3-3	Management of material topics	Compliance to Build Trust and Safety > Operations and Governance > Business Ethics	
205-1	Operations assessed for risks related to corruption	Compliance to Build Trust and Safety > Operations and Governance > Business Ethics	
205-2	Communication and training about anti-corruption policies and procedures	Compliance to Build Trust and Safety > Operations and Governance > Business Ethics	
205-3	Confirmed incidents of corruption and actions taken	Compliance to Build Trust and Safety > Operations and Governance > Business Ethics	
GRI 206: Anti-competitive Behaviour			
3-3	Management of material topics	Compliance to Build Trust and Safety-Operations and Governance > Business Ethics	
206-1	Legal actions for anti-competitive behaviour, anti-trust, and monopoly practices	Compliance to Build Trust and Safety-Operations and Governance > Business Ethics	
Environment			
GRI 301: Materials			
3-3	Management of material topics	Green and Low-Carbon Operations > Environmental Management > Resource Circulation	
301-1	Materials used by weight or volume	Green and Low-Carbon Operations > Environmental Management > Resource Circulation	
301-2	Recycled input materials used	Green and Low-Carbon Operations > Environmental Management > Resource Circulation	

301-3	Reclaimed products and their packaging materials	Green and Low-Carbon Operations > Environmental Management > Resource Circulation
GRI 302: Energy		
3-3	Management of material topics	Green and Low-Carbon Operations > Environmental Management > Energy Management
302-1	Energy consumption within the organisation	Green and Low-Carbon Operations > Environmental Management > Energy Management
302-3	Energy intensity	Green and Low-Carbon Operations > Environmental Management > Energy Management
302-4	Reduction of energy consumption	Green and Low-Carbon Operations > Environmental Management > Energy Management
302-5	Reductions in energy requirements of products and services	Green and Low-Carbon Operations > Environmental Management > Energy Management
GRI 303: Water		
3-3	Management of material topics	Green and Low-Carbon Operations > Environmental Management > Water Management
303-1	Interactions with water as a shared resource	Green and Low-Carbon Operations > Environmental Management > Water Management
303-2	Management of water discharge-related impacts	Green and Low-Carbon Operations > Environmental Management > Emission Management
303-3	Water withdrawal	Green and Low-Carbon Operations > Environmental Management > Water Management
303-4	Water discharge	Green and Low-Carbon Operations > Environmental Management > Emission Management
303-5	Water consumption	Green and Low-Carbon Operations > Environmental Management > Water Management
GRI 304: Biodiversity		
3-3	Management of material topics	Green and Low-Carbon Operations > Protecting Green Ecology
304-1	Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	Green and Low-Carbon Operations > Protecting Green Ecology
304-2	Significant impacts of activities, products and services on biodiversity	Green and Low-Carbon Operations > Protecting Green Ecology
304-3	Habitats protected or restored	Green and Low-Carbon Operations > Protecting Green Ecology
304-4	IUCN Red List species and national conservation list species with habitats in areas affected by operations	Green and Low-Carbon Operations > Protecting Green Ecology
GRI 305: Emissions		
3-3	Management of material topics	Green and Low-Carbon Operations > Environmental Management > Emission Management
305-1	Direct (Scope 1) GHG emissions	Green and Low-Carbon Operations > Environmental Management > Emission Management
305-2	Energy indirect (Scope 2) GHG emissions	Green and Low-Carbon Operations > Environmental Management > Emission Management
305-5	Reduction of GHG emissions	Green and Low-Carbon Operations > Environmental Management > Emission Management
305-7	Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions	Green and Low-Carbon Operations > Environmental Management > Emission Management
GRI 306: Effluents and Waste		
3-3	Management of material topics	Green and Low-Carbon Operations > Environmental Management > Emission Management
306-1	Water discharge by quality and destination	Green and Low-Carbon Operations > Environmental Management > Emission Management
306-2	Waste by type and disposal method	Green and Low-Carbon Operations > Environmental Management > Emission Management
GRI 308: Supplier Environmental Assessment		
3-3	Management of material topics	Compliance to Build Trust and Safety > Responsible Supply Chain > Responsible Procurement
308-1	New suppliers that were screened using environmental criteria	Compliance to Build Trust and Safety > Responsible Supply Chain > Responsible Procurement
308-2	Negative environmental impacts in the supply chain and actions taken	Compliance to Build Trust and Safety > Responsible Supply Chain > Responsible Procurement
Society		
GRI 401: Employment		
3-3	Management of material topics	Growing Together with Inclusiveness and Care > Employee Well-Being > Compliant Recruitment
401-1	New employee hires and employee turnover	Growing Together with Inclusiveness and Care > Employee Well-Being > Compliant Recruitment
401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees	Growing Together with Inclusiveness and Care > Employee Well-Being > Benefits and Care
401-3	Parental leave	Growing Together with Inclusiveness and Care > Employee Well-Being > Benefits and Care
GRI 403: Occupational Health and Safety		
3-3	Management of material topics	Growing Together with Inclusiveness and Care > Occupational Health and Safety
403-1	Occupational health and safety management system	Growing Together with Inclusiveness and Care > Occupational Health and Safety
403-2	Hazard identification, risk assessment, and incident investigation	Growing Together with Inclusiveness and Care > Occupational Health and Safety
403-3	Occupational health services	Growing Together with Inclusiveness and Care > Occupational Health and Safety
403-4	Worker participation, consultation, and communication on occupational health and safety	Growing Together with Inclusiveness and Care > Occupational Health and Safety
403-5	Worker training on occupational health and safety	Growing Together with Inclusiveness and Care > Occupational Health and Safety
403-6	Promotion of worker health	Growing Together with Inclusiveness and Care > Occupational Health and Safety
403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	Growing Together with Inclusiveness and Care > Occupational Health and Safety
403-8	Workers covered by an occupational health and safety management system	Growing Together with Inclusiveness and Care > Occupational Health and Safety
403-9	Work-related injuries	Growing Together with Inclusiveness and Care > Occupational Health and Safety
403-10	Work-related ill health	Growing Together with Inclusiveness and Care > Occupational Health and Safety
GRI 404: Training and Education		
3-3	Management of material topics	Growing Together with Inclusiveness and Care > Employee Well-Being > Talent Growth
404-1	Average hours of training per year per employee	Growing Together with Inclusiveness and Care > Employee Well-Being > Talent Growth

404-2	Programs for upgrading employee skills and transition assistance programs	Growing Together with Inclusiveness and Care > Employee Well-Being > Talent Growth
404-3	Percentage of employees receiving regular performance	Growing Together with Inclusiveness and Care > Employee Well-Being > Talent Growth
GRI 405: Diversity and Equal Opportunity		
3-3	Management of material topics	Growing Together with Inclusiveness and Care > Employee Well-Being > Compliant Recruitment
405-1	Diversity of governance bodies and employees	Growing Together with Inclusiveness and Care > Employee Well-Being > Compliant Recruitment
405-2	Ratio of basic salary and remuneration of women to men	Growing Together with Inclusiveness and Care > Employee Well-Being > Benefits and Care
GRI 406: Non-discrimination		
3-3	Management of material topics	Growing Together with Inclusiveness and Care > Employee Well-Being > Compliant Recruitment
406-1	Incidents of discrimination and corrective actions taken	Growing Together with Inclusiveness and Care > Employee Well-Being > Compliant Recruitment
GRI 407: Freedom of Association and Collective Bargaining		
3-3	Management of material topics	Growing Together with Inclusiveness and Care > Employee Well-Being > Compliant Recruitment
407-1	Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk	Growing Together with Inclusiveness and Care > Employee Well-Being > Compliant Recruitment
GRI 408: Child Labour		
3-3	Management of material topics	Growing Together with Inclusiveness and Care > Employee Well-Being > Compliant Recruitment
408-1	Operations and suppliers at significant risk for incidents of child labour	Growing Together with Inclusiveness and Care > Employee Well-Being > Compliant Recruitment
GRI 409: Forced or Compulsory Labour		
3-3	Management of material topics	Growing Together with Inclusiveness and Care > Employee Well-Being > Compliant Recruitment
409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labour	Growing Together with Inclusiveness and Care > Employee Well-Being > Compliant Recruitment
GRI 413: Local Communities		
3-3	Management of material topics	Growing Together with Inclusiveness and Care > Community Improvement > Community Development
413-1	Operations with local community engagement, impact assessments, and development programs	Growing Together with Inclusiveness and Care > Community Improvement > Community Development
GRI 414: Supplier Social Assessment		
3-3	Management of material topics	Compliance to Build Trust and Safety > Responsible Supply Chain > Responsible Procurement
414-1	New suppliers that were screened using social criteria	Compliance to Build Trust and Safety > Responsible Supply Chain > Responsible Procurement
414-2	Negative social impacts in the supply chain and actions taken	Compliance to Build Trust and Safety > Responsible Supply Chain > Responsible Procurement
GRI 416: Customer Health and Safety		
3-3	Management of material topics	Innovation for Future > Strong Responsibility for Products
416-1	Assessment of the health and safety impacts of product and service categories	Innovation for Future > Strong Responsibility for Products
416-2	Incidents of non-compliance concerning the health and safety impacts of products and services	Innovation for Future > Strong Responsibility for Products
GRI 418: Customer Privacy		
418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	Compliance to Build Trust and Safety > Customer Relations > Privacy Protection

SSE Guidelines on the Self-Regulation Rules for Listed Companies

Disclosure number	Section in this report
8.1	Sustainable Development Management > Sustainable Development Philosophy of LONGi
8.2	Compliance to Build Trust and Safety > Business Ethics Compliance to Build Trust and Safety > Operations and Governance
8.3	Sustainable Development Management > Sustainable Development Philosophy of LONGi
8.4	Growing Together with Inclusiveness and Care > Community Improvement
8.5	About This Report
8.6	Green and Low-Carbon Operations > Environmental Management Growing Together with Inclusiveness and Care > Occupational Health and Safety Growing Together with Inclusiveness and Care > Community Improvement
8.7	Growing Together with Inclusiveness and Care > Employee Well-Being
8.8	Green and Low-Carbon Operations > Environmental Management Compliance to Build Trust and Safety > Responsible Procurement
8.9	Green and Low-Carbon Operations > Environmental Management
8.10	Green and Low-Carbon Operations > Protecting Green Ecology Green and Low-Carbon Operations > Environmental Management
8.11	Green and Low-Carbon Operations > Environmental Management
8.12	Green and Low-Carbon Operations > Environmental Management
8.13	Driving Innovation to Fit for Future
8.14	Growing Together with Inclusiveness and Care
8.15	Driving Innovation to Fit for Future

ASSURANCE STATEMENT

SGS-CSTC'S REPORT ON SUSTAINABILITY ACTIVITIES IN THE LONGI GREEN ENERGY TECHNOLOGY CO., LTD.'S 2022 SUSTAINABILITY REPORT

NATURE AND SCOPE OF THE ASSURANCE/VERIFICATION

SGS-CSTC was commissioned by LONGi Green Energy Technology Co. Ltd. (hereinafter referred to as "LONGi") to conduct an independent assurance of the LONGi's 2022 sustainability report (hereinafter referred to as "The Report").

INTENDED USERS OF THIS ASSURANCE STATEMENT

This Assurance Statement is provided with the intention of informing all LONGi`s Stakeholders.

RESPONSIBILITIES

The information in The Report and its presentation are the responsibility of the directors and the management of LONGi.

Our responsibility is to express an opinion on the text, data, graphs and statements within the scope of verification with the intention to inform all LONGi's stakeholders.

ASSURANCE STANDARDS, TYPE AND LEVEL OF ASSURANCE

The SGS ESG & Sustainability Report Assurance protocols used to conduct assurance are based upon internationally recognized assurance guidance and standards, which including:

- The principles of reporting process contained within the Global Reporting Initiative Sustainability Reporting Standards (GRI Standards) as:
  - GRI 1: Foundation 2021, for report quality
  - GRI 2: General Disclosure 2021, for organization's reporting practices and other organizational detail
  - GRI 3: Material Topics 2021, for organization's process of determining material topics, its list of material topics and how to manage each topic
- and the guidance on levels of assurance contained within the AA1000 series of standards.

The assurance of this report has been conducted according to the following Assurance Standards:

- SGS ESG & SRA verification regulations (Refer to GRI Principles and AA1000 Guides)

The Assurance has been conducted at a moderate level of scrutiny.

SCOPE OF ASSURANCE AND REPORTING CRITERIA

The scope of the assurance included evaluation of quality, accuracy and reliability of specified performance information as detailed below, and evaluation of adherence to the following reporting criteria:

Reporting Criteria	
1	GRI Standards 2021(Reference)
2	SSE <Shanghai Stock Exchange Self-Regulatory Guidelines for Listed Companies on the Shanghai Stock Exchange No. 1 - Standardized Operation>

ASSURANCE METHODOLOGY

The assurance comprised a combination of pre-assurance research, on-site interviewed with relevant employees including the LONGi group which is located at No. 388, HangtianZhonglu, Chang`an District, Xi`an City, Shanxi Province, P.R. China; Documentations and records were reviewed and validated with relevant employees of the other subsidiaries as necessary.

LIMITATIONS AND MITIGATION

Financial and GHG data drawn directly from independently third audited has not been checked back to source as part of this assurance process.

The on-site verification was only at the LONGi group, the assurance process only involved interviews with the heads of relevant departments and certain employees of group as well as consultation with relevant documents, no external stakeholders involved.

STATEMENT OF INDEPENDENCE AND COMPETENCE

SGS is the world's leading inspection, verification, testing and certification company, SGS is recognized as the global benchmark for quality and integrity. SGS is a global leader in inspection, testing and verification, operating in more than 140 countries/ areas, providing services including management systems and service certification; quality, environmental, social and ethical audits and training; environmental, social and sustainability report assurance. SGS affirms that it is a completely independent organization from LONGi, and that there is no bias or conflict of interest against LONGi, its affiliates and stakeholders.

The assurance team was assembled based on their knowledge, experience and qualifications for this assignment, and comprised of CCAA registered ISO 9001, ISO 14001 and ISO 45001 auditor, SGS recognized ISO 37001, ISO 37301, SA8000 and CSR/ESG lead auditor.

VERIFICATION/ASSURANCE OPINION

On the basis of the methodology described and the verification work performed, the information and data contained within The Report verified is accurate and reliable, which have provided a fair and balanced representation of corporate responsibility management activities by LONGi in 2022. There was no non-compliance with reporting standards in any material topics.

THE CONCLUSIONS, FINDINGS AND RECOMMENDATIONS

In our opinion, The Report of LONGi for 2022 is presented in accordance with the requirement of the <Shanghai Stock Exchange Self-Regulatory Guidelines for Listed Companies on the Shanghai Stock Exchange No. 1 - Standardized Operation>, and The Report is reference with GRI Standards 2021.

Good practices and recommendations for sustainability report and management process were described in the internal management report which has been submitted to the management department of LONGi for continuous improvement.

REPORT PRICIPLES

MATERIALITY

The substantive research and the analysis of stakeholders' concerns had been disclosed in The Report, and through materiality analysis, the impact of the environment, society and governance concerned by relevant parties is reported on a key basis, which matched with the principle of materiality.

QUANTITATIVE

LONGi had provided statistics and analysis on key quantitative performance indicators and outlined their impact and purpose in The Report. The Report compared data from some key performance projects over the past three years to assist stakeholders in evaluating their management performance better.

BALANCE

The Report basically matched with the principle of balance, the environment, social and governance subjects had been disclosed truthfully and impartially.

CONSISTENCY

A consistent methodology for disclosing relevant subject had been used by LONGi, including statistical methodology and caliber for key quantitative performance indicators, some appropriate notes and explanations had been provided in The Report, so that the stakeholders can make clear comparisons.

Signed:

For and on behalf of SGS-CSTC

David Xin
Sr. Director – Knowledge
16/F Century Yuhui Mansion, No. 73, Fucheng Road, Beijing, P.R. China

Apr. 26th 2023

WWW.SGS.COM

Your Feedback

Dear readers,

Thank you for reading LONGi Group 2022 Sustainability Report. Please kindly fill the feedback form and submit it. It will help improve LONGi's sustainable development and the report quality. We hereby commit to keeping your personal information in strict confidentiality.

Contact information

* Name: _____ * Email: _____

* Which stakeholder do you belong to?

☐ Employee ☐ Customer ☐ Government ☐ General public ☐ Supplier ☐ NGO ☐ Other ____

Your feedback:

* Overall impression of the report:

☐ Excellent ☐ Good ☐ Normal ☐ Bad

* What do you think of the disclosure of LONGi's environmental responsibility in the report:

☐ Excellent ☐ Good ☐ Normal ☐ Bad

* What do you think of the disclosure of LONGi's social responsibility in the report:

☐ Excellent ☐ Good ☐ Normal ☐ Bad

* What do you think of the disclosure of LONGi's governance responsibility in the report:

☐ Excellent ☐ Good ☐ Normal ☐ Bad

* Has the report provided the information you want?

☐ Yes ☐ No

* Is the content and design layout of the report easy to read?

☐ Yes ☐ No

* What information do you want to know but is not reflected in

the report:

_____

* What opinions and suggestions do you have on our sustainable development?

_____

* What additional information do you want to know from the sustainability report of LONGi Group?

_____

LONGi Internal Complaints Reporting Channel

WeChat Public Platform

LONGi Breeze

Reporting email

audit@longi.com

Reporting hotline

+86 029-84193391

+86 18089282003

For sales, product quality and service quality, please contact the 400 customer service by emailing to: Market@longi.com

For news media interview, please contact: PR@longi.com

For information of the company, please log on: http://www.longi.com