



# 2023 Sustainability Report

Tel: +86 4008601012

Web: <https://www.longi.com>

Address: No. 8369 Shangyuan Road, Xi'an Economic And Technological  
Development Zone, Xi'an, Shaanxi, China.

LONGi Green Energy Technology Co., Ltd.

# CONTENTS

About this Report	1
Message from the Chairman	3
Message from the Chief Sustainability Officer	4
About LONGi	5
Sustainability Highlights	9

## Sustainability Management

Sustainability Principles	11
ESG Governance	12
Stakeholder Engagement	13

## Corporate Governance

Governance and Operations	19
Risk Management and Control	21
Business Ethics	22
Information Security	24

# 01



## Products and Services

Technology and Innovation	27
Products and Solutions	33
Responsibility for Products	39
Customer Services	44

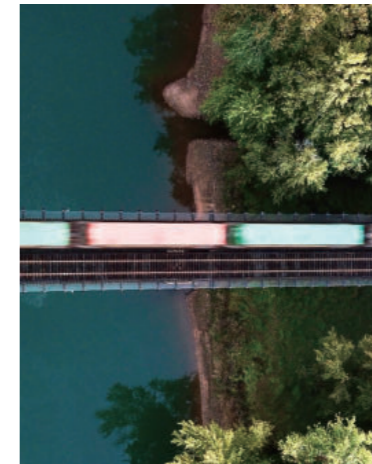
# 02



## Environment

Responses to Climate Change	49
Water Resources Management	55
Clean Production	59
Circular Economy	63
Biodiversity Conservation	67

# 03



## Supply Chain

Supply Chain Management System	71
Sustainable Procurement	74
Supplier Collaboration and Empowerment	79

# 04



## People and Community

Labor Rights and Interests	87
Employee Development	89
Health and Safety	98
Community Engagement	102

## Appendix

Sustainability Performance Indicators	107	Third Party Assurance Statement	122
GRI Content Index	114	Your Feedback	125
References in the Report	121		

# About this Report

## Report overview

Welcome to LONGi's seventh Sustainability & Social Responsibility Report. Our first report was released in March 2018, and the most recent one in April 2023. Aligning with our yearly financial reporting cycle, this annual report articulates LONGi's commitments and contributions to the economic, environmental, social, and governance areas in an objective, standardized, transparent, and comprehensive way. The report covers the period from January 1, 2023 to December 31, 2023, with some content extending beyond the indicated period to ensure comparability and a holistic narrative.

## Reporting scope

This report covers LONGi's subsidiaries and holding companies operating within the People's Republic of China, holding companies, 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 of this report are noted in the text.

## Basis for preparation

- Global Reporting Initiative (GRI) Sustainability Reporting Standards (GRI Standards)
- *Guidelines No. 14 of the Shanghai Stock Exchange for Self-regulation of Listed Companies — Sustainability Report (Trial)*
- Sustainability Accounting Standards Board (SASB) Standards
- IFRS S1 *General Requirements for Disclosure of Sustainability-related Financial Information* and IFRS S2 *Climate-related Disclosures* released by the International Sustainability Standards Board (ISSB).

## Data sources

The data used in this report are derived from internal statistics, published reports or coverage, and public data available from third-party surveys or interviews, government departments, and professional institutions, devoid of any false records, misleading statements, or significant omissions.

## References

For clarity and readability, "LONGi Green Energy Technology Co., Ltd." is referred to as "LONGi Green Energy" in this report. LONGi Green Energy Technology Co., Ltd. and its subsidiaries are referred to as "LONGi", "the Company", "the Group", or "we". For references to specific subsidiaries and holding companies of LONGi, please refer to the annexes of this report.

## Access to the report

This report is available in both simplified Chinese and English for public download on LONGi Green Energy's official website. In case of any discrepancies, the simplified Chinese version shall prevail. LONGi's previous sustainability information and data are accessible and can be downloaded through the following channels:



LONGi's official website



Climate Action White Paper 2023



Shanghai Stock Exchange

## Disclaimer

This report complies with the regulatory frameworks of LONGi's various operational regions and the Company's strategic planning. The report is aimed at disclosing our performances in environmental, social, and governance areas during the reporting period, with all included information meant strictly for reference. Audiences are suggested to examine and assess the content and seek expert advice before making any decisions. LONGi assumes no liability for any direct or indirect losses resulting from the use of this report beyond its intended purpose.

## Message from the Chairman

Chairman of LONGi Green Energy Technology Co., Ltd. **Zhong Baoshen**



2023 was indeed a landmark year for the photovoltaic (PV) industry, featuring a dynamic blend of opportunities and challenges. The global solar industry installed 400 gigawatts (GW) of new capacity, which saw a leap of over 70% from the previous year, bringing the total installed capacity beyond 1.5 terawatts (TW). Intensified market competition drove prices down, but it also fueled a rapid increase in solar product adoption and application worldwide.

Confronted with the roller coaster of industry dynamics and complex market changes, LONGi took a proactive, active, and rational approach. We upheld our commitment to innovation in technology and products, redefined our competitive edge, spearheaded the digital transformation, and embraced sustainability.

We stayed true to our mission, adhering to a philosophy of “innovation-oriented development” to achieve differentiated development in technology and products. Over the years, LONGi has delved deep into research for various solar cell technologies. In 2023, our proprietary crystalline silicon single-junction solar cells and silicon-perovskite tandem solar cells set new world records for cell efficiency, making LONGi a “dual champion” in the cell technology development. In September, our statement that “back-contact (BC) cell technology will become the market mainstream in the next five years” drew significant attention in the PV industry. We believe that deeds speak louder than words, and therefore strived to consolidate our BC technology platform and achieved stable mass production of hybrid passivated back contact (HPBC) cells, bringing what was once a “luxury” to the mass market. With HPBC cells being recognized around the world, our confidence in BC technology has been amplified.

We focused on the needs and pain points of customers, tailoring our Hi-MO 7 and Hi-MO X6 products for concentrated and distributed market demands, offering customers more

efficient, reliable, and scenario-specific solutions. In response to the burgeoning green hydrogen industry, we launched the ALK Hi1 and ALK G electrolyzers and devised modular and intelligent solutions as we explored the path of “multi-technological route + multi-scenario application” for green hydrogen.

As the tide of global digitalization rises, we have embraced digital transformation, enhanced the transparency and visibility of intelligent manufacturing operations across our factories, and elevated our data management to a robust level. For instance, our Jiaxing base incorporated the industry 4.0 to showcase over 30 digitized use cases, pioneered AI-powered intelligent cell sorting and full-process AI quality inspection, and ensured precise and quality delivery. The base was also recognized as one of the first “Global Lighthouse Factories” in the PV industry, leading the industry trend of “smart manufacturing”.

We drove the deep integration of sustainability issues with corporate strategy and operations. For instance, we promoted the sustainability concept of “LIGHT”, onboarded our first Chief Sustainability Officer, received the Science Based Target initiative (SBTi) approval, and initiated the “Collaboration Action for Green and Sustainable Supply Chain Development”. We also set up the “Solar+ Pavilion” in the Blue Zone at COP 28, partnered with the UN Refugee Agency, and ultimately went a step further in our sustainability and ESG journey.

At LONGi, we embrace the idea that companies flourish by serving the changing tides of time and societal imperatives, not just their own interests. As the world accelerates toward “carbon neutrality”, the PV industry stands on the cusp of further growth. Regardless of the uncharted waters ahead, LONGi stays true to placing our customers at the forefront and tackling challenges with both wisdom and resilience. We will honor our commitment to spearhead sustainable advances as the world strides toward net-zero targets.

## Message from the Chief Sustainability Officer

Vice President and Chief Sustainability Officer of LONGi Green Energy Technology Co., Ltd. **Zhang Haimeng**



As the cycle of a year closes and new beginnings take shape, I am delighted to address you for the first time as LONGi's Chief Sustainability Officer. It is my aspiration to bolster communication with our customers, investors, and a broad spectrum of stakeholders, showcasing LONGi's ambitions and actions in practicing sustainability.

Over the past two decades, PV companies like LONGi have made solar power the most economically viable and widely accessible clean energy source globally through technological innovation, and LONGi is proud to be the trailblazer among peers. This transformation has leveled the playing field, previously skewed by disparities in energy resources, making solar power a universal and beneficial resource. It has become a fundamental force in the global shift to carbon neutrality and green transformation.

In the past year alone, LONGi achieved shipments of 125.42 GW of photovoltaic silicon wafers, with a cumulative shipment reaching 414.24 GW. This means that by the end of 2023, LONGi manufactured 27% of the global cumulative installed photovoltaic capacity, equivalent to generating 1.7361 trillion kWh of green electricity and cutting the emission of 812 million tCO<sub>2</sub>e. This underscores LONGi's significant contribution to global climate action and sustainable development!

While LONGi drives down the cost of achieving global carbon neutrality through innovation in green energy technology, we are also dedicated to strengthening our internal environmental, social, and governance (ESG) practices.

Advancing climate actions to achieve harmony between humanity and nature. LONGi actively addresses climate change, systematically identifies, assesses, and manages climate risks, continuously fulfills climate action commitments, and promotes low-carbon and energy-efficient initiatives. In 2023, we became the first Chinese PV company to be approved by the independent Science Based Targets initiative (SBTi) and established a product lifecycle carbon footprint management system. At COP28, we released our third climate action white paper and introduced the “Green Electricity” and “Green Hydrogen” carbon-neutral solution,

propelling the global energy transformation and climate action progress. We utilized photovoltaics for ecological restoration projects and initiated the “Zero-Carbon Life Plan for Pandas”, leveraging solar power to support biodiversity conservation.

Collaborating with supply chain partners for wider sustainability. We prioritized collaborative partnerships with supply chain partners to build green and sustainable supply chains, conducted comprehensive lifecycle management of supplier CSR, completed the initial phase of the “Supply Chain Green Partner Empowerment Program”, and conducted carbon footprint assessments for 50 key suppliers. Additionally, we investigated 13 suppliers of tin-containing materials for conflict mineral supply chain compliance, promoting responsible procurement and advancing the sustainable growth across the value chain.

Conveying goodwill to build a harmonious win-win society. LONGi consistently fulfills its social responsibilities. Internally, we ensure employee rights and welfare, uphold human rights, advocate for equality and diversity, and create a safe, healthy, and inclusive work environment through the ISO 26000 social responsibility system. Externally, we strongly support public welfare projects in education, energy, and environmental protection sectors and actively support community development.

In 2023, in line with our mission of “making the best of solar energy to build a green world”, we set sustainability goals of “making clean energy affordable for all” and the energy equality concept of “achieving unity in diversity due to sunlight”, which represents the greatest goodwill in LONGi's business philosophy. We hope that LONGi's business development can benefit all stakeholders, including the environment and society. We have integrated the concept of sustainability into the Company's strategic and operational practices, increased investment in technological innovation, green and low-carbon initiatives, responsible management, and diversity and inclusion, to meet the needs and expectations of global customers and partners. With a more open, inclusive, and pragmatic attitude, we aim to create a more sustainable and brighter future.

# About LONGi

**About us** Established in 2000, LONGi Green Energy Technology Co., Ltd. is headquartered in Xi'an, Shaanxi Province, and became publicly listed on the Shanghai Stock Exchange in April 2012 (stock code: 601012.SH). With a vision to "To be the most compelling solar technology company by leading the world's transition to green energy", the Company is dedicated to making clean energy affordable and accessible worldwide.



**Mission**

To make the best of solar energy to build a green world



**Vision**

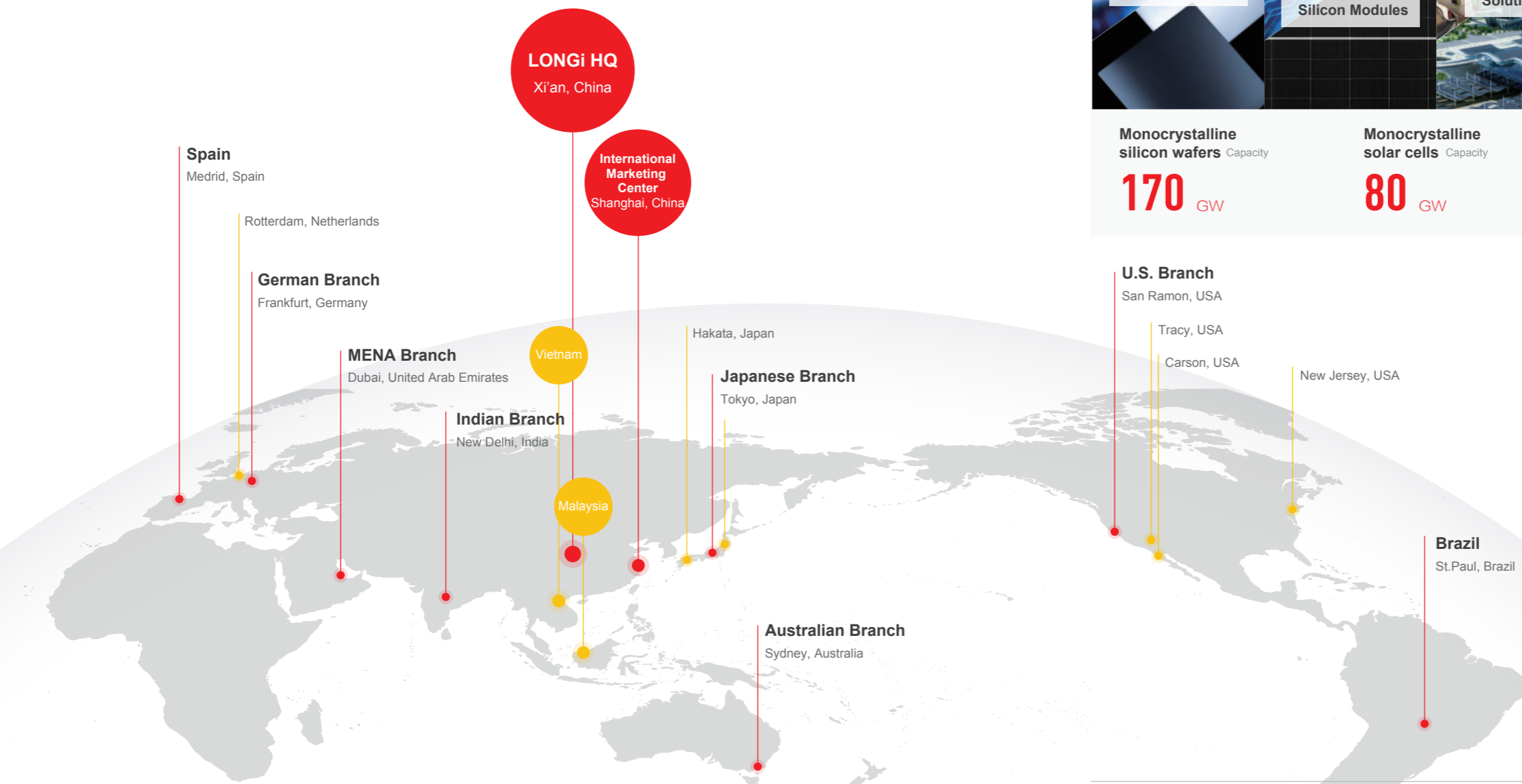
To be the most compelling solar technology company by leading the world's transition to green energy



**Core values**

Reliability, Value-add, Fulfillment

● Global Marketing Center ● Global Logistics Center



## Our business footprint

LONGi focuses on technological innovation and operates in five major business segments: monocrystalline silicon wafers, solar cell modules, distributed PV solutions, ground-mounted PV solutions, and hydrogen energy equipment. LONGi's monocrystalline silicon wafer shipments have ranked first globally for many years, while its monocrystalline module shipments ranked second globally in 2023. LONGi has also developed alkaline water electrolysis hydrogen production system and offered "green power" and "green hydrogen" products and solutions to support the global goal of net-zero emissions.



LONGi's major product capacities in 2023

We have manufacturing facilities strategically located in China, Vietnam, and Malaysia, with sales offices in countries such as the United States, Japan, India, Australia, the United Arab Emirates, and others. Our business footprint spans across more than 150 countries and regions globally.

Note: The map is up to date as of December 2023.

# LONGI Honours and Awards

## Awards and recognition in 2023

<p>2023 Fortune China 500</p> <p><b>No. 177</b></p> <p>Fortune</p>	<p>2023 China' Top 500 Private Enterprises</p> <p><b>No. 66</b></p> <p>All-China Federation of Industry and Commerce</p>
<p>2023 China's Top 500 Private Manufacturing Enterprises</p> <p><b>No. 42</b></p> <p>All-China Federation of Industry and Commerce</p>	<p>2023 China's Top 500 Energy Enterprises (Groups)</p> <p><b>No. 39</b></p> <p>China Institute of Energy economics research</p>

Title	Awarded by
Won the "All Quality Matters" Award for PV modules for 7 consecutive years	TÜV Rheinland
Quality and Sustainability Excellence Award	SGS
Pioneer Partner of ISSB Sustainability Disclosure Standards	International Sustainability Standards Board
2023 China's Top Runner for Industrial Carbon Peaking	China Federation of Industrial Economics
2023 ESG Inspiration Cases	Forbes
2023 China ESG Impact List	Fortune
Best ESG Practices for Listed Companies	China Association for Public Companies
Bloomberg Green ESG - Environmental	Bloomberg Green
Dual Carbon Technology Innovation Exemplary Case	China Energy News
ESG Pioneer Practitioner	Securities Daily
Selected as 2023 "CSR Competitiveness" Typical Responsibility Case	China Business Journal
Zero-Carbon Pioneer Cases	36Kr
Humanitarian medal	Red Cross Society of China



## ESG ratings (The rating results have been updated as of April 2024.)

<p><b>MSCI</b> ESG RATINGS</p> <p><b>BB</b></p> <p>MSCI ESG Ratings measure companies' resilience to long-term finance-related ESG risks.</p>	<p><b>FTSE RUSSELL</b> An LSEG Business</p> <p>FTSE4Good Index Series measure the performance of companies with distinguished ESG practices.</p> <p><b>3.0</b></p>	<p><b>LSEG DATA &amp; ANALYTICS</b></p> <p>Refinitiv ESG Scores measure companies' ESG performance based on public data across 10 different ESG topics.</p> <p><b>B+</b></p>
<p><b>中证指数</b> CHINA SECURITIES INDEX</p> <p>China Securities Index ESG Ratings reflect companies' ESG performance in the industry, revealing the impact of ESG factors on sustainable operations.</p> <p><b>AA</b></p>	<p><b>SUSTAINALYTICS</b></p> <p>Sustainalytics ESG Risk Rating comprehensively measures and analyzes the potential risks a company may face as well as the company's risk management capacity.</p> <p>ESG Risk Rating <b>26.6</b> Medium Risk</p>	<p><b>Win.d</b></p> <p>Wind ESG Rating assesses companies' substantive ESG risks and their capacity for sustainable operation, measuring the companies' ESG commitments and performance.</p> <p><b>BBB</b></p>
<p><b>S&amp;P Global</b></p> <p>S&amp;P Global Corporate Sustainability Assessment (CSA) analyzes companies through multiple indicators such as governance, environmental protection, and social responsibility, reflecting the companies' capabilities in ESG management and information disclosure.</p> <p><b>50</b></p>	<p><b>CDP</b></p> <p>CDP is a not-for-profit charity that runs the global disclosure system for investors and companies to measure and manage their environmental impacts.</p> <p>Climate change <b>B</b>      Water security <b>B</b></p> <p>Supplier Engagement Rating (SER) <b>B-</b></p>	<p><b>IPE</b> 公众环境研究中心</p> <p>Institute of Public &amp; Environmental Affairs (IPE) evaluates companies' climate governance and environmental management of supply chain through disclosed information.</p> <p>Corporate Climate Action Transparency Index (CATI): <b>60.40</b> (No. <b>18</b>)</p> <p>Green Supply Chain CITI Index: <b>30.08</b> (No. <b>57</b>)</p> <p>Ranking first among other PV equipment manufacturers for both indices</p>
<p><b>ecovadis</b> Sustainability Rating MAR 2024</p> <p>EcoVadis evaluates corporate social responsibility (CSR) performance, covering topics including environment, labor and human rights, ethics, and sustainable procurement.</p> <p><b>Silver</b></p>		

# Sustainability Highlights

## Lead

Driven by a core commitment to “lead”, we strive to propel our own growth, advance the industry, and foster societal progress.



## Innovative



	2023	YoY change
R&D investment	<b>7.721</b> billion RMB	8%
R&D revenue ratio	<b>5.96</b> %	8%
Total patents granted	<b>2,879</b>	35%

- LONGi’s monocrystalline silicon wafer shipments have ranked first globally for many years
- Self-developed crystalline-perovskite tandem cell achieved an efficiency of **33.9%**, and the HBC cell achieved an efficiency of **27.09%**, setting new global records for such products
- LONGi Solar Technology(Jiaxing) Co., Ltd. was recognized as a “Lighthouse Factory” by the World Economic Forum (WEF), becoming the first lighthouse factory in the global PV industry
- In 2023, LONGi held a **24%** market share for hydrogen energy in China, ranking first
- **100%** of production bases have been certified by ISO 9001 quality management systems

## Green



Environmental protection investment	<b>558.3262</b> million RMB	38%
Renewable energy consumption	<b>3.815</b> billion kWh	-11% <sup>1</sup>
Water conservation	<b>5,529</b> kilotonne	-42% <sup>2</sup>
Reducing annual electricity consumption by	<b>1,064</b> GWh	75%

- **100%** of production bases have been covered by ISO 14001 environmental management systems
- Environmental risk assessment coverage rate reached **100%**
- China’s first PV enterprise to be certified by the Science Based Targets initiative (SBTi)
- **25** bases have been certified with ISO 50001 energy management systems
- Recognition with **3** new national and **3** new provincial green factory certifications
- Silicon wafers and modules have received **62** carbon footprint and/or environmental product declaration (EPD) certificates worldwide<sup>3</sup>
- Hi-MO 5 products were the first to achieve Korean carbon footprint certificates
- Overall electricity consumption per unit of product decreased by **18.32%** compared to 2020
- Overall water consumption per unit of product decreased by **33.52%** compared to 2020

## Harmonious



Total full-time employees	<b>75,066</b>	24%
Overseas employees attracted	<b>9,872</b>	508%
Total annual training hours	<b>2.27</b> million hours	30%
Satisfaction rate of corporate atmosphere	<b>91.97</b> %	1%
Union welfare	<b>60.469</b> million RMB	63%
Total hours of EHS training	<b>2.90</b> million hours	31%
Days lost due to work-related injuries	<b>353</b>	-16%
Value of charitable donations	<b>12.7592</b> million RMB	19%

- **100%** of production bases have been certified with ISO 45001 occupational health and safety management systems
- Carried out **48** charitable donation projects benefiting nearly **36,000** people

## Trustworthy



Anti-corruption training and promotion sessions	<b>1,205</b>	108%
Total supplier training hours	<b>608</b>	164%
Supplier revisits	<b>590</b>	216%

- Certified with ISO 37301 compliance management system
- Certified with ISO 37001 anti-bribery management system
- Achieved **100%** coverage rate for anti-corruption training for employees at medium and high risk
- All IT infrastructure and information systems have been certified with ISO 27001 and ISO 27701 systems
- **100%** of suppliers have signed the *CSR Code of Conduct of LONGi Suppliers* and the integrity agreement
- The annual CSR due diligence audit coverage for suppliers reached **83%**
- LONGi achieved **0** use of conflict minerals, and the revenue from products using conflict minerals was also **0**
- Conducted integrity advocacy for **396** key suppliers throughout the year
- **60** significant suppliers in Tier-1 have obtained green factory certifications
- Launched LONGi’s “Diversified Supplier” support program

1. In 2023, LONGi’s use of electricity in the Ningxia and Inner Mongolia regions were no longer recognized as renewable energy according to the latest national policy standards.  
 2. During the year, 118 water-saving projects were carried out, resulting in a water saving of 5.5293 million tonnes, and upon completion of all projects, the expected total water conservation will be 12.037 million tonnes.  
 3. LONGi’s silicon wafer products have received certifications at various stages according to the certified bases, gaining a total of 39 French carbon footprint certificates; the module products have received a total of 23 carbon footprint or EPD certificates.

# Sustainability Management

At LONGi, we adhere to sustainability philosophy and strive to refine our ESG governance framework and management system to integrate sustainability philosophy with our corporate development strategy and business decisions. We listen to and embrace the demands of various stakeholders, striving for continuous communication with partners across our value chain and the wider community.

## Sustainability Philosophy

In 2023, LONGi introduced the LIGHT sustainability philosophy, comprising the core elements of Lead, Innovative, Green, Harmonious, and Trustworthy. This philosophy align our corporate development strategy with the United Nations' 2030 Sustainable Development Goals, aiming to achieve clean, renewable, and efficiently utilized energy while collaborating with stakeholders to create a future where "clean energy is affordable for all".

### ESG Sustainable Development Vision

Lead for the clean energy world

### ESG Sustainable Development Goal

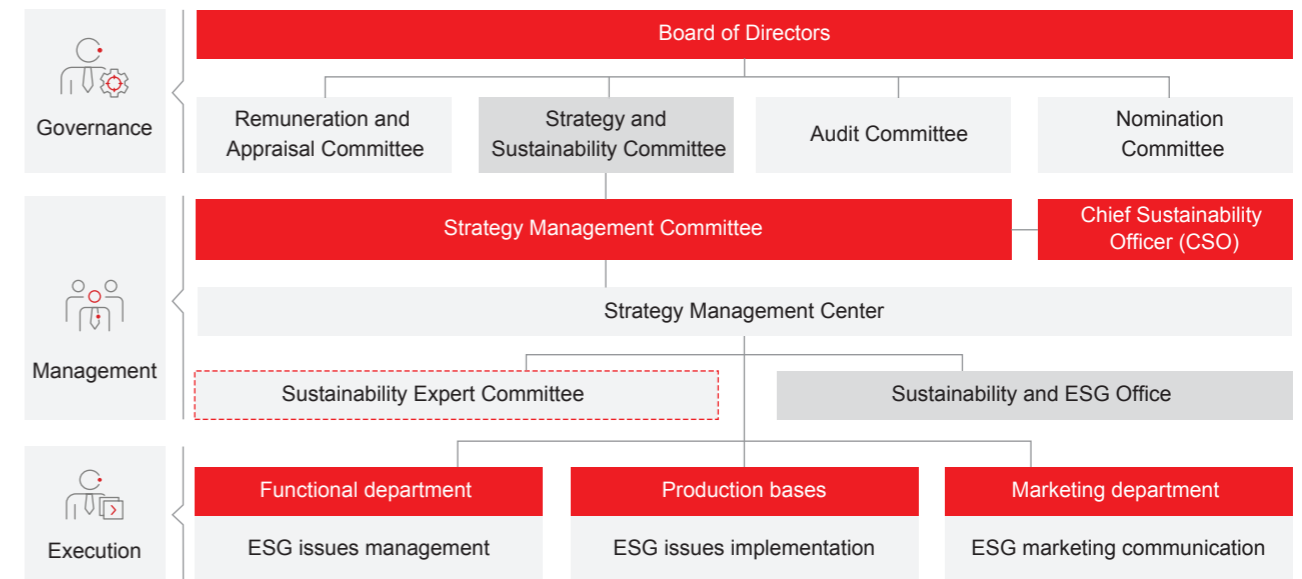
Affordable for all



## ESG Governance

LONGi has established a three-tier ESG governance structure covering the governance, management, and execution levels. The Board of Directors and its Strategy and Sustainability Committee serve as the highest decision-making bodies, while the Strategy Management Committee oversees the coordination and management of ESG efforts. This involves devising sustainability goals, regularly conducting assessments, reviews, and advancing implementation to ensure the Company's activities always align with our in-house sustainability philosophy and targets.

### ESG governance framework and responsibilities of each level



Strategy and Sustainability Committee	Strategy Management Committee	Sustainability and ESG Office	Sustainability Expert Committee	ESG Task Force
Managed by the committee members, the Strategy and Sustainability Committee provides comprehensive oversight and approval of the Company's ESG strategy, medium- and long-term ESG planning, annual planning, and the formulation and execution of ESG policies. The Committee approves the annual ESG report, reviews material ESG topics and the progress toward ESG goals, and approves and delineates ESG-related risks and opportunities associated with the Company's development.	Led by the Group's Strategy Management Center and composed of heads of relevant departments, the Committee manages the ESG development strategy, work planning, and ESG management systems through the Group's business analysis meetings. It reviews the progress toward ESG goals, risk and opportunity assessments, identification of material topics, and the ESG report. The Company has appointed a Chief Sustainability Officer (CSO) to represent the executive level in external stakeholder communications.	Set up within the Group's Strategy Management Center, the Office has established and regularly reviews the sustainable development and ESG governance system with feasible suggestions. It is responsible for setting strategic sustainability goals, planning, policies, and systems; identifying material ESG issues, crafting the ESG indicator framework and setting ESG goals; creating an ESG information platform; and staying abreast of the latest global sustainability concepts, policies, regulations, and actions.	Composed of external ESG experts, the Committee is charged with researching and analyzing external ESG trends, policies, and demands facing the Company and providing suggestions. It assesses the current state of the Company's ESG management and offers recommendations for improvement.	The Task Force, including members from the Group's headquarters, various functional departments, and subsidiaries or regional offices, is responsible for identifying and assessing the impact of climate change and ESG-related risks on business operations. They are tasked with implementing ESG performance goals, supporting the Sustainability and ESG Office with information disclosure and project implementation, understanding stakeholder ESG demands, and promoting the Company's sustainability achievements.



## Engagement in sustainability at all levels in 2023




In 2023, we fine-tuned our ESG governance structure, renaming the “Sustainable Development Management Committee” as the “Strategy Management Committee” to promote a deeper integration of our sustainability initiatives with the Company’s overall strategy. Additionally, we have engaged five external experts to form the Sustainability Expert Committee, providing ESG management guidance, and have also hosted five sessions of the ESG Academy.







### Case | Held five sessions of the ESG Academy internally at LONGi

In 2023, LONGi conducted five sessions of the ESG Academy internally. Covering topics such as green trade barriers, green supply chains, human rights responsibilities, global ESG policies and regulations, and biodiversity, these sessions aimed to empower attendees with ESG knowledge. Over 500 participations were recorded, and with expert support, we identified social and environmental risks and opportunities within our operations and value chain, continuously advancing the integration of sustainability and ESG philosophy into our business practices.

## Stakeholder Engagement

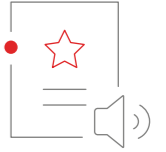
To thoroughly grasp the expectations and concerns of our stakeholders, we are ever broadening our engagement channels. We are dedicated to keeping the dialogue with our stakeholders vibrant, tuning in to their aspirations and issues, and ensuring swift, thoughtful responses.

Stakeholder	Expectations	How we engaged	Highlights in 2023
 Customers	<ul style="list-style-type: none"> <li>Reliable and efficient products</li> <li>Quality service</li> <li>Contract compliance</li> <li>Ethical business environment</li> </ul>	<ul style="list-style-type: none"> <li>Customer technical exchanges and new product launches</li> <li>Industry exhibitions</li> <li>400 service platform on the official website and satisfaction surveys</li> <li>Customer ESG exchanges</li> </ul>	<ul style="list-style-type: none"> <li>Headquarters conducted a total of <b>43</b> on-site ESG communication sessions with customers, concentrated in Europe, the Americas, Oceania, and the Asia-Pacific regions</li> <li>The total number of visitors to the Group’s headquarters smart energy exhibition hall exceeded <b>80,000</b>, with an annual visit count <b>2.66</b> times that of the previous year</li> </ul>
 Employees and labor unions	<ul style="list-style-type: none"> <li>Health and safety</li> <li>Career development</li> <li>Positive working environment</li> <li>Rights protection</li> </ul>	<ul style="list-style-type: none"> <li>Workers’ Congress and Labor Union Committee</li> <li>Training and education, employer branding</li> <li>Employee forums, activities, and clubs</li> <li>Chairman’s mailbox</li> <li>LONGi Happy+ and a complaint reporting mini-program</li> </ul>	<ul style="list-style-type: none"> <li>All levels of the Group’s labor unions conducted <b>129,736</b> employee communications throughout the year, averaging <b>1.79</b> communications per person, collecting <b>7,654</b> employee issues, with a <b>95.56%</b> issue closure rate</li> <li>The Chairman’s mailbox received <b>335</b> employee issues, with a closure rate of <b>98.99%</b>, and regularly disclosed the handling status of issues</li> </ul>
 Shareholders and investors	<ul style="list-style-type: none"> <li>Investment returns</li> <li>Financial stability</li> </ul>	<ul style="list-style-type: none"> <li>Performance briefings, investor hotlines, roadshows, and conference calls</li> <li>Shareholders’ meetings, regular reports and announcements, and on-site survey</li> </ul>	<ul style="list-style-type: none"> <li>The Company held a total of <b>159</b> investor conference calls, <b>55</b> strategy meetings, <b>46</b> roadshow events, received <b>99</b> on-site survey visits, and hosted <b>4</b> performance briefings</li> </ul>

Stakeholder	Expectations	How we engaged	Highlights in 2023
 Suppliers and partners	<ul style="list-style-type: none"> <li>Win-win cooperation</li> <li>Contract compliance</li> <li>Green supply chain</li> <li>Ethical business environment</li> </ul>	<ul style="list-style-type: none"> <li>Supplier code of conduct and transparent procurement</li> <li>Supplier website platform, collaborative innovation, and supplier conferences</li> <li>Supplier empowerment training</li> <li>Supplier risk assessments and on-site audits</li> </ul>	<ul style="list-style-type: none"> <li>Conducted <b>258</b> supplier training sessions, totaling <b>608</b> hours, with <b>5,993</b> participants</li> <li>Conducted annual CSR due diligence surveys on suppliers covering <b>83%</b> of procurement spending</li> </ul>
 Government and regulatory authorities	<ul style="list-style-type: none"> <li>Taxation</li> <li>Employment</li> <li>Compliance operation</li> </ul>	<ul style="list-style-type: none"> <li>Oversight and inspections, policy recommendations</li> <li>Involvement in government-related summits</li> </ul>	<ul style="list-style-type: none"> <li>Participated in events such as the 28th session of the United Nations Climate Change Conference (COP28), the “Industrial Sustainable Innovation”, and partnered with the United Nations High Commissioner for Refugees (UNHCR)</li> </ul>
 Industry associations	<ul style="list-style-type: none"> <li>Fair competition</li> <li>Promoting industry development</li> <li>Technology and experience sharing</li> </ul>	<ul style="list-style-type: none"> <li>Industry exchanges and seminars</li> <li>Project collaboration</li> </ul>	<ul style="list-style-type: none"> <li>Established collaborative relationships with more than <b>30</b> universities and research institutes such as Tsinghua University, Chinese Academy of Sciences Institute of Electrical Engineering, and Lanzhou University</li> <li>Conducted nearly <b>100</b> project collaborations with partners upstream and downstream of the industry chain and held nearly <b>60</b> technical exchange activities, addressing more than <b>80</b> technical demands</li> </ul>
 Community and NGOs	<ul style="list-style-type: none"> <li>Environmental protection</li> <li>Rights protection</li> <li>Safety</li> <li>Supporting community development</li> </ul>	<ul style="list-style-type: none"> <li>Proactive community communication, participation in project cooperation</li> <li>Charitable donations, public welfare activities</li> <li>Involvement in industry associations, societies, corporate open days</li> <li>Engagement in corporate and non-governmental organization meetings</li> </ul>	<ul style="list-style-type: none"> <li>Partnered with organizations such as the UNHCR, Heriot-Watt University Dubai Campus, and ATP TOUR</li> <li>Attended closed-door meetings on “Accelerating Net Zero Emissions: Innovative Strategies for Manufacturing” at the Davos Winter Summit</li> <li>Conducted <b>48</b> public welfare donation and education support projects, with a total donation of RMB <b>12.7592</b> million, benefiting nearly <b>36,000</b> people</li> </ul>
 Media	<ul style="list-style-type: none"> <li>Transparent information</li> <li>Smooth communication</li> </ul>	<ul style="list-style-type: none"> <li>News coverage</li> <li>management interviews</li> <li>ESG event media communication meetings</li> </ul>	<ul style="list-style-type: none"> <li>LONGi participated in the “ESG in China” interview produced by CCTV.com Finance</li> <li>Conducted <b>10</b> media interviews and <b>1</b> interview with Abu Dhabi National TV during the COP28 event, and held <b>1</b> themed press conference on low-carbon transformation and fair communication</li> </ul>
 Academic experts/scholars/professional organizations	<ul style="list-style-type: none"> <li>Policy trends</li> <li>Industry dynamics</li> </ul>	<ul style="list-style-type: none"> <li>Professional seminars</li> <li>Focus groups</li> <li>Expert lectures</li> </ul>	<ul style="list-style-type: none"> <li>Conducted <b>5</b> sessions of expert lectures on ESG</li> <li>Invited professional ESG practitioners and experts to LONGi for closed-door discussions on cutting-edge ESG topics</li> <li>Joined the China ESG Alliance and became a member of the Social Value Investment Alliance</li> </ul>

## Highlights of stakeholder engagement in 2023

LONGi has eagerly expanded the channels and forms of stakeholder engagement, seeking external feedback and suggestions to drive the sustainable development of the LONGi value chain, thus contributing to global sustainability efforts. We remain diligently involved in industry events organized by international bodies to showcase the sustainable achievements of Chinese PV enterprises to the world.



### Case | LONGi's full-scale response to the United Nations SDGs at international events

We have participated in discussions on sustainability disclosure guidelines and criteria by the International Sustainability Standards Board (ISSB) and the China Association for Public Companies, joining "ISSB Partnership for Early Awareness of Sustainability-Disclosure Today".



March

Chairman Zhong Baoshen attended the Boao Forum for Asia for the China-Australia Entrepreneurs Dialogue



April

President Li Zhenguo was invited to the Malaysian Prime Minister's Roundtable



June

LONGi attended the Colombia Global Energy Summit



August

LONGi took part in the Intersolar South America Exhibition



September

President Li Zhenguo attended the ESG Global Leaders Conference, the high-level week of the United Nations General Assembly, the United Nations SDG Summit 2023, and the Global Energy Interconnection Conference



November

President Li Zhenguo spoke at the 2023 APEC CEO Summit



December

LONGi set up the Solar+ Pavilion in the Blue Zone at the 28th United Nations Climate Change Conference (COP28), organizing 29 events, engaging with organizations such as the International Sustainability Standards Board (ISSB), the Carbon Disclosure Project (CDP), and Carbon Trust, and released the third climate action white paper

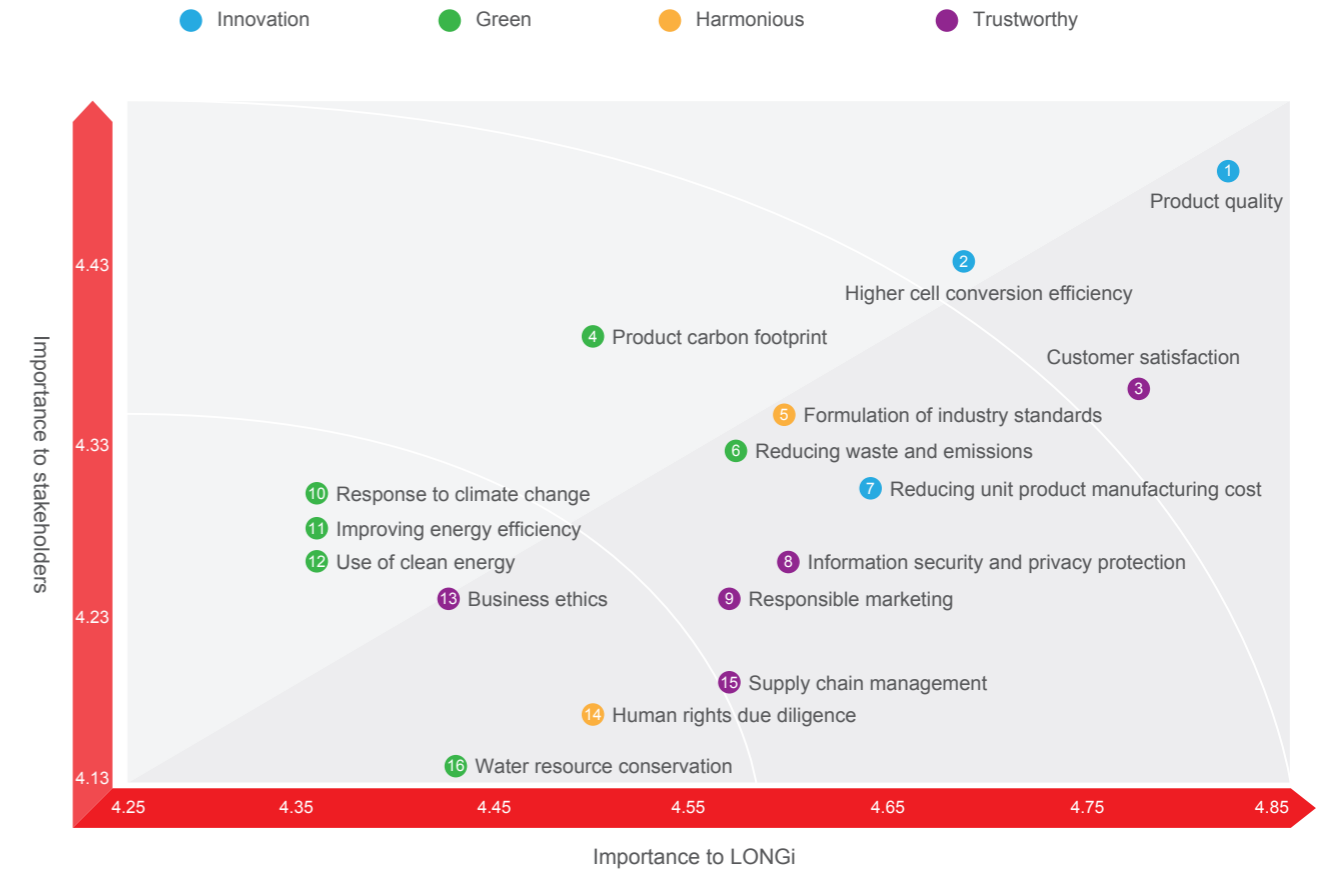
## Materiality matrix and response to highly important issues

Evaluating materiality involves a comprehensive analysis of potential risks and opportunities, constituting a critical task for the management during decision-making processes.

In 2023, following the steps outlined in our materiality assessment process—stakeholder engagement, topics identification, topics evaluation, materiality confirmation, issue review—we carried out systematic research involving our stakeholders. We pinpointed key ESG issues facing the Company and potential future paths and applied the “double materiality” perspective, which considers both “importance to business continuity and development” and “importance to stakeholders”. This led to the identification of 39 topics with high relevance to the Company. The final matrix, created based on the survey results, features 16 topics that are highly important from both dimensions for the 2023 ESG materiality matrix.



## LONGi’s materiality matrix in 2023



### Ranking of material topics

### In this report

1 Product quality	2 Higher cell conversion efficiency	3 Customer satisfaction	Products and Services
4 Product carbon footprint	5 Formulation of industry standards		Products and Services
6 Reducing waste and emissions			Environment
7 Reducing unit product manufacturing cost			Products and Services
8 Information security and privacy protection			Corporate Governance
9 Responsible marketing			Products and Services
10 Response to climate change	11 Improving energy efficiency	12 Use of clean energy	Environment
13 Business ethics			Corporate Governance
14 Human rights due diligence			People and Community
15 Supply chain management			Supply chain
16 Water resource conservation			Environment

# Corporate Governance

## Topics covered in this chapter

Governance and operations | Risk management and control  
Business ethics | Information security

## In response to SDGs



## Governance and Operations

With its standardized governance structure in place as well as great emphasis on board diversity and investor relations, LONGi is committed to compliance in day to day operations. In order to build a safe and stable operating environment, we made proactive efforts in risk management and control, accompanied by anti-corruption and clean business initiatives.

## Corporate governance

Strictly abiding by laws and regulations as well as regulatory requirements as in the *Company Law of the People's Republic of China*, *Securities Law of the People's Republic of China*, *Code of Corporate Governance for Listed Companies*, and *Rules Governing the Listing of Stocks on Shanghai Stock Exchange*, we established within the Company a clear corporate governance structure where responsibilities are clearly defined and delineated.

In April 2023, the Company developed and implemented the *Compensation Management Measures for Directors, Supervisors, and Senior Managers*, providing clear guidelines for executive compensation. The compensation for directors, supervisors, and senior managers consists primarily of base salary and performance-based compensation, which is an incentive pay for value created for the Company during the operating period. The performance-based compensation for senior managers such as CEO/President is associated with the Company's ROE, operating revenue, net profits, and other business performance indicators, as well as the individual's contribution to risk management and other sustainable development performances. This mechanism gives full display to the compensation philosophy of Pay-for-Performance. On top of that, a clawback mechanism was established for performance-based compensation, so that in the event of incorrect financial statement or other specified circumstances, the Company retains the right to recover performance-based compensation.

### Controlling shareholder and listed companies

The controlling shareholder strictly regulates shareholders' behaviors 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 five sessions of Annual General Meeting to communicate with investors on important issues ranging from corporate governance, financial performance, to business strategies.

### 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 specialized committees perform their duties to oversee and manage the corporate governance.

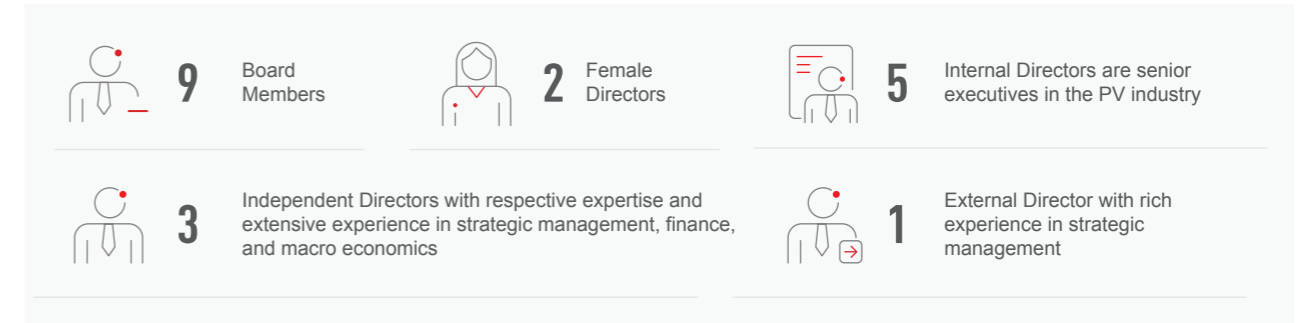
### Supervisors and Board of Supervisors

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 meets compliance requirements.

LONGi's corporate governance structure

## Board diversity

LONGi considers board diversity a key pillar to its sustainable development. The Company's Board of Directors is renewed every three years, and the nomination of Board members undergoes a rigorous selection process that incorporates diversity in terms of industry experience, educational and academic background, ability, and gender as part of the criteria for board election.



To foster scientific and efficient operation of its specialized committees, taking into full consideration of factors including the directors' professional background and experience, the Board decided to make some adjustments to certain members of the specialized committees for the fifth Board: Director Mr. Tian Ye will no longer serve as a member of the Board's Audit Committee, and Independent Director Ms. Guo Ju'e was elected as a member of the Board's Audit Committee. Additionally, Director Mr. Tian Ye was elected as a member of the Board's Strategy and Sustainable Development Committee.

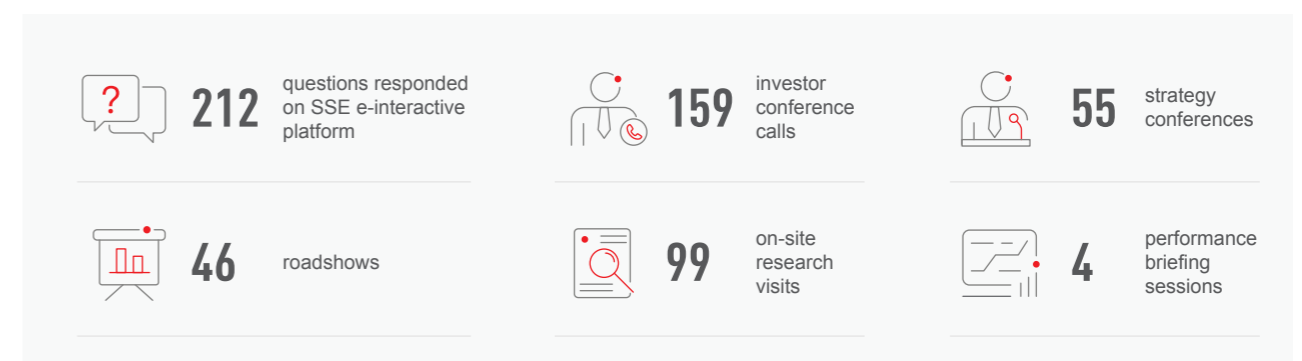
◆ Audit Committee	Xu Shan <b>Chair</b> , Lu Yi, Guo Ju'e
◆ Strategy and Sustainable Development Committee	Zhong Baoshen <b>Chair</b> , Li Zhenguo, Liu Xuewen, Wang Zhigang, Lu Yi, Tian Ye
◆ Remuneration and Appraisal Committee	Guo Ju'e <b>Chair</b> , Li Zhenguo, Xu Shan
◆ Nomination Committee	Lu Yi <b>Chair</b> , Guo Ju'e, Bai Zhongxue

Members of the Board's specialized committees after the adjustments

## Investor relations

LONGi maintains good communication with investors. In 2023, we responded to 212 questions on SSE e-interactive platform, hosted 159 investor conference calls and 55 strategy conferences, held 46 roadshows, received 99 on-site research visits, and organized 4 performance briefing sessions, sustaining long-term, stable, and frequent communication with investors worldwide.

In June 2023, LONGi ranked the first in the "Best Investor Relations Program" category of the "2023 Asia Executive Team Survey" by *Institutional Investor*, one of the most influential financial magazines globally.

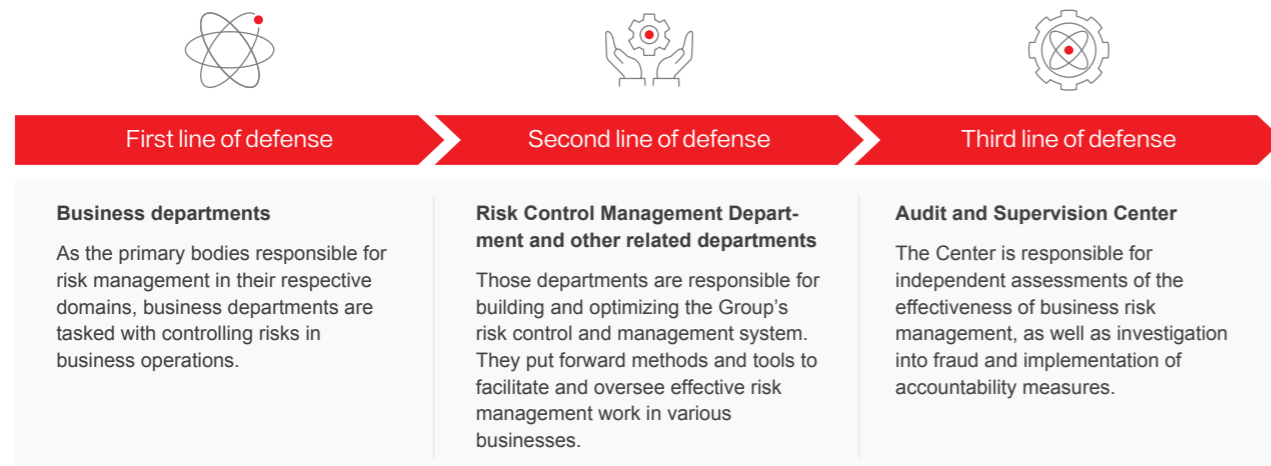


## Risk Management and Control

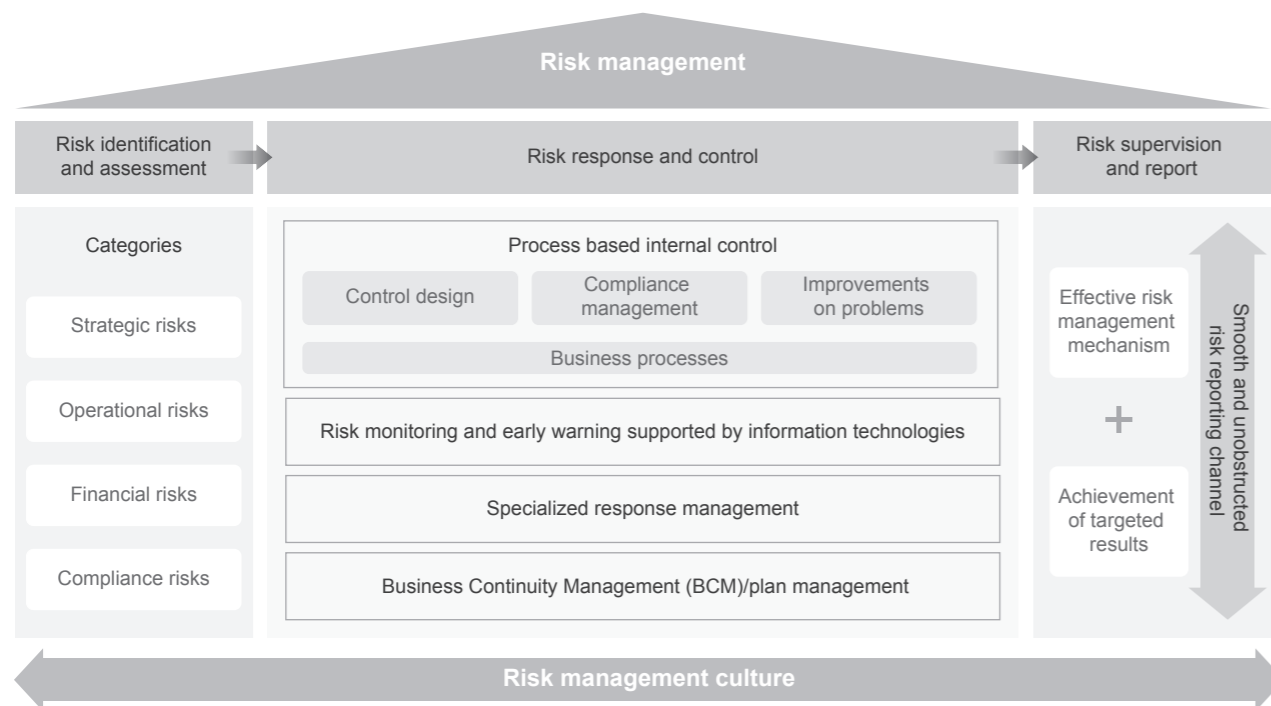
LONGi always believes that comprehensive risk management is the cornerstone of sustainable corporate development. The Company has established and continuously improved its risk management mechanism. The Company enhanced internal risk control and compliance, and stepped up efforts in audit and supervision, taking concrete steps to bolster risk management and control capabilities.

### Risk management system

The Company strictly complies with relevant domestic and overseas laws and regulations, and has issued relevant system documents such as the *Internal Control Management Policy*, *Compliance Management Policy*, and *Code of Business Conduct*. In 2023, we continued our endeavors to improve the “three lines of defense” of compliance risk management, and clarify the responsibilities of all departments at all levels to ensure the Company's stable and compliant operations.



LONGi's "three lines of defense" in risk management



LONGi's risk management system

## Compliance management

LONGi has built the compliance management system and carried forward the certification projects in line with the *ISO 37301: 2021 Compliance Management Systems - Requirements and Guidance*. The Company managed to identify and assess business risks involving around 14 compliance issues including but not limited to labor employment, anti-monopoly, and anti-bribery. And the company is developing targeted measures to address the risks identified, embedding compliance risk management into daily operations and management. In 2023, we obtained the ISO 37301 Compliance Management Systems certification.

In addition, the Company factored “Compliance Violation Incidents” indicators into the performance of departments and organizations, with corresponding scoring rules put in place.



LONGi's Compliance Management Structure

## Audit and supervision

Internal and external audits are conducted on a scheduled basis to drive business units and internal control departments to improve their management.

During the reporting period, the Company has conducted	
<b>37</b> audit projects of various types	identifying <b>180</b> risk points, all rectified already

## Business Ethics

LONGi strictly abides by the standards of business ethics, formulates and implements the Code of Business Conduct, promotes a culture of probity, resolutely resists commercial bribery, corruption, monopolization, money laundering, and unfair competition. LONGi also devotes itself to creating an honest, fair and transparent business environment, maintaining a good market order and industry image, and achieving sustainable development. In 2023, LONGi obtained the ISO 37001 certification for its anti-bribery management system.

For more information about the Code of Business Conduct, please refer to



## Anti-unfair competition

LONGi advocates for fair competition and strictly abides by laws and regulations such as the *Anti-Unfair Competition Law of the People's Republic of China*. We have established the *Regulations for Anti-monopoly Compliance Management* and the *Anti-Monopoly Compliance Manual* to prevent any actions that may confuse the market or mislead consumers, and does not implement bribes and other unfair competition means to seek trading opportunities. Moreover, the Company respects and protects trade secrets, does not engage in false publicity, and guarantees the fairness and transparency of prize sales. When participating in online business activities, LONGi does not disrupt the normal operation of web products or services and is committed to creating a market environment for fair competition. In 2023, the Company did not encounter any litigation related to unfair competition or monopoly practices.

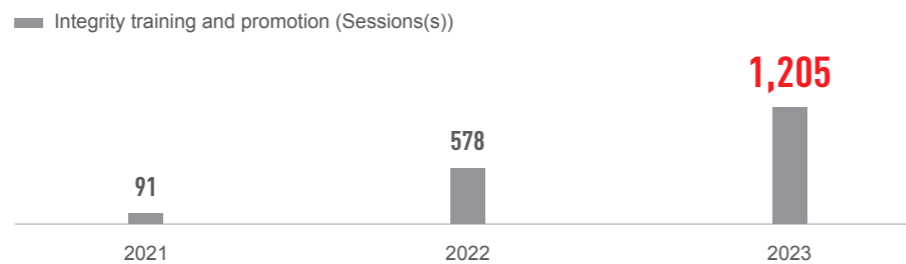
## Anti-corruption

Cases of violations due to fraud and corruption were

0

LONGi has always been committed to probity and clean administration, observing the anti-corruption and anti-bribery policies outlined in the United Nations Convention against Corruption. We have established and updated internal regulations such as the *Anti-Commercial Bribery Management Measures* and the *Position-Specific Fraud Risk Management Rules*. Regular investigations are conducted in accordance with the supervision procedures to address any violations. No direct or indirect political donations were engaged by the Company in 2023. All charitable donations were subject to the specific approval process, in accordance with the laws and regulations of the respective regions. Cases of violations due to fraud and corruption were 0.

Trend Chart LONGi's integrity training (2021-2023)



Integrity training	Our production bases conducted integrity training and self-inspection activities, with a total of <b>1,205</b> integrity training sessions achieving full participation. The coverage rate of anti-corruption training for medium and high-risk employees reached <b>100%</b> .
Integrity commitment	New employees are required to sign the Integrity and Self-discipline Commitment, with a <b>100%</b> signing rate
Integrity promotion	Throughout the year, more than <b>15</b> integrity promotion events were held, including clean business quiz competitions among the entire group during the Corporate Culture Festival, with a participation rate exceeding <b>90%</b> , involving over <b>60,000</b> employees.
Integrity research	A survey on the integrity and compliance culture indicators was conducted, participated by <b>69.07%</b> of our employees. Among them, <b>98.6%</b> were evaluated as above-average level in terms of integrity awareness.
Integrity collaboration	We planned and organized the Dec 9 International Anti-corruption Day event in collaboration with peer companies. Integrity promotion activities were carried out for <b>396</b> key suppliers during the year. The Company's principle of integrity was delivered and disseminated through themed promotion at the Supplier Conference.

LONGi's integrity promotion efforts in 2023

## Anti-money laundering

LONGi adheres to the *Anti-Money Laundering Law of the People's Republic of China*, and has enhanced internal anti-money laundering compliance management to ensure compliant operations and safeguard financial security. The Company actively cooperates with law enforcement agencies, regulatory bodies, and the financial industry to combat money laundering activities. Regular training sessions are provided to enhance employees' awareness and understanding of anti-money laundering efforts, ensuring that anti-money laundering policies are faithfully implemented by employees.

## Complaint reporting

With a view to facilitating integrity and compliance, LONGi has established normalized reporting and complaint management mechanism, and revised the *Complaint Reporting Management Measures* in 2023. The Company encourages employees and stakeholders to report any behaviors that are detrimental to the interests of the Company and its employees. The Company has put in place various channels for complaint reporting such as hotline, website, WeChat official account, WeChat mini program, and email. In addition, the Company improved whistle-blowers protection measures, firmly safeguarding their legitimate rights and interests. Relevant departments are required to strictly keep confidential the personal information of whistle-blowers to prevent any occurrences of discrimination or retaliation.

## Information Security

LONGi has a strong commitment to users' information security and privacy protection. Based on local applicable laws and regulations, such as the *Data Security Law of the People's Republic of China*, *Personal Information Protection Law of the People's Republic of China*, and *European Union's General Data Protection Regulation (GDPR)*, we formulated regulatory documents such as the *Information Security and Privacy Management System Manual*, *Guidelines for Data Subject Rights Response*, *Guidelines for Personal Information Security Incident Management*, and *Information Security Management Policies*. For the transmission of user information involving cross-border products or services, the Company strictly follows the provisions of applicable laws and regulations, manages and transmits cross-border data legally and securely, and ensures the security of users' personal information.

The Company established a comprehensive management system for information security and privacy protection, incorporating privacy protection policies and related efforts into the overall risk and compliance management across the Company. Internal and external audits on privacy policy compliance were conducted on a regular basis to ensure effective implementation of the Company's privacy policies. In 2023, all of our IT infrastructure and information systems have obtained the ISO 27001 and ISO 27701 certifications. To ensure effective operation of the system, the Company conducts regular internal audits and regulatory reviews annually, and undergo audit trails by external organizations.

### Emergency management

The Company adopts a set of whole-process information security response and protection measures: rigorous preventive efforts before incidents, proactive response during incidents, and swift handling upon incidents. The Company formulated the Information Security Emergency Response Plan and an information security issue reporting process to ensure timely handling of cybersecurity emergencies. At least one penetration testing is conducted on all information systems of the Group every year, with third-party vulnerability analysis and rectification based on the results ensured. In 2023, 263 system vulnerabilities were identified, all of which have been fully rectified or have a remediation plan in place, without impacting any customers or internal employees. No privacy breach incidents occurred during the year.

### Capacity building

In terms of information security training for employees, the Company sent over ten tweets throughout the year via email and LONGi's WeChat official account, disseminating information security knowledge to all employees, so that they handle information security issues with caution. In cases where information leakage incidents occur due to personal reasons of employees, the Company will implement disciplinary actions corresponding to the severity of the incident. In order to strengthen information security management of suppliers, the Company integrated supplier information security management standards into the Supplier Management Regulations, checked and assessed suppliers' information security capabilities when necessary, and ensure information security rights and interests of both parties through confidentiality agreements, service monitoring, reviews, and other measures.

# 01

# Products and Services

## Topics covered in this chapter

Technology and Innovation	27
Products and Solutions	33
Responsibility for Products	39
Customer Services	44

## In response to SDGs

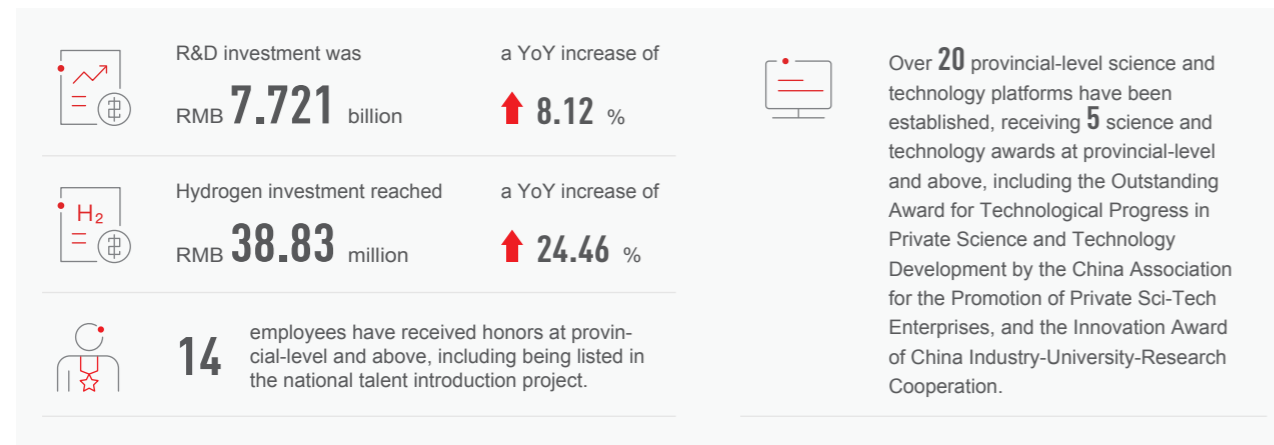


# 1.1 Technology and Innovation

Adhering to its “3+1” technological innovation concept, encompassing producing, developing, researching and exploring new generation of technologies, LONGi improved its technological innovation system, boosted digital and smart transformation, standardized innovation management operations, strengthened intellectual property management, and accelerated the application of innovative outcomes to comprehensively enhance the Company’s scientific and technological strength, serving as a new benchmark for technological leadership in clean energy.

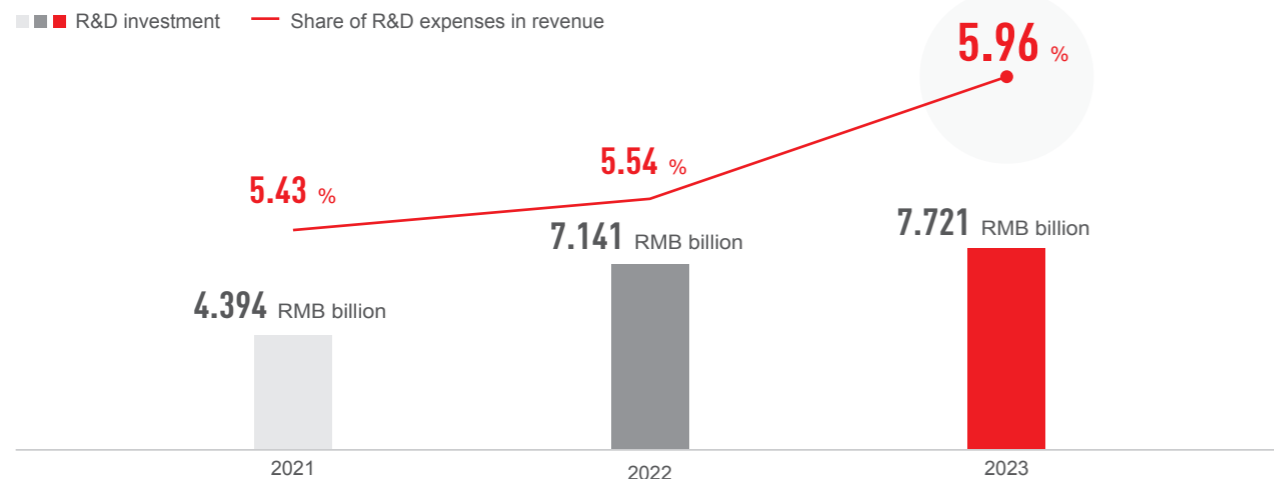
## R&D Innovation

LONGi has established a sound management system for R&D innovation. We have formulated management system policies, including the *Management Measures for Technological Innovation*, *Management Measures for Technological Planning* and *Management Measures for Technological R&D Projects*, as well as 41 system policies for technological R&D process, covering aspects such as R&D resource allocation and innovative project management, etc.



We prioritized R&D investment in clean technology, set annual R&D plans and targets, and provided financial guarantees. Meanwhile, we also offered innovation training courses for technical personnel. Our Golden Seed Program, a series of innovation training courses launched in 2023, covering 271 employees and completing 22 innovation incubation projects in total.

### LONGi’s R&D investment and its share in revenue (2021-2023)

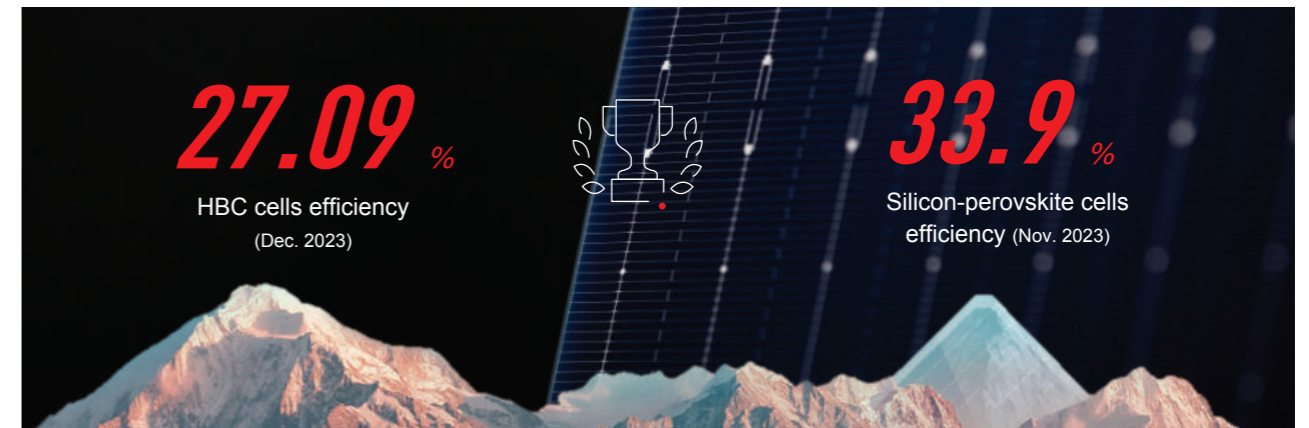


## Innovation in silicon wafers

Silicon wafers are indispensable in cell development, whose quality directly impacts the yield and conversion efficiency of cells. Despite the slower improvement of silicon wafer performance across the PV sector in recent years, LONGi has long been striving to meet the demands of high-efficiency cells through R&D and innovation. In March 2024, LONGi launched the Tairui wafers. These wafers feature significant advantages such as suitable for multiple cells, more concentrated resistance distribution, and more effective metal impurity absorption, marking an innovative breakthrough in silicon wafer technology unseen in nearly a decade.

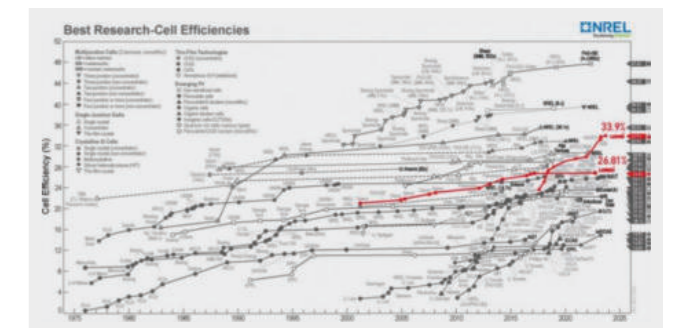
## Innovation in cells

With extensive expertise in PERC<sup>1</sup>, HJT<sup>2</sup>, TOPCon<sup>3</sup>, and HPDC<sup>4</sup> cell technologies, LONGi firmly committed itself to the BC<sup>5</sup> cell technology among the crystalline silicon cell technologies and constantly increased its R&D investment. A BC cell technology matrix covering HPBC<sup>6</sup> and HBC<sup>7</sup> is gradually being formed, among which the efficiency of HBC cells set a new world record in 2023. In particular, LONGi has made significant strides in improving the efficiency of crystalline silicon-perovskite tandem cells, setting a new world record of 33.9% in November, after the announcement of 31.8% in May and 33.5% in June.



◆ In November, the crystalline silicon-perovskite tandem solar cells independently developed by LONGi has reached an efficiency of 33.9%, once again setting a new world record. Such technology was included in the *Best Research-Cell Efficiencies Chart* released by the National Renewable Energy Laboratory (NREL) in the U.S., and the *Solar Cell Efficiency Table* by Professor Martin A. Green, the “Father of Solar Energy”.

◆ In December, the 27.09% efficiency of HBC cells, developed independently by LONGi, setting a new world record for single junction crystalline silicon, breaking the 26.81% efficiency record it announced in November 2022 in just about one year. In addition, LONGi has developed an ultra-thin TCO<sup>8</sup> layer with reduced indium usage, lessening dependency on traditional indium-based transparent conductive oxide layers (ITO) and lowering process costs compared to bifacial heterojunction solar cells.



The Best Research-Cell Efficiencies Chart released by the NREL

1. PERC: Short for Passivated Emitter and Rear Cell.  
 2. HJT: Short for Heterojunction with Intrinsic Thin-film.  
 3. TOPCon: Short for Tunnel Oxide Passivated Contact.  
 4. HPDC: Short for High Performance and Hybrid Passivated Dual-Junction Cell.  
 5. BC: Short for Back Contact.  
 6. HPBC: Short for Hybrid Passivated Back Contact Cell.  
 7. HBC: Short for Heterojunction Back Contact Cell.  
 8. TCO: Short for Transparent Conductive Oxide



## Innovation in modules

Based on advanced cell technologies, we upgraded our process and modified structures of PV modules, providing several high-performance products capable to operate in various complex environment in 2023.



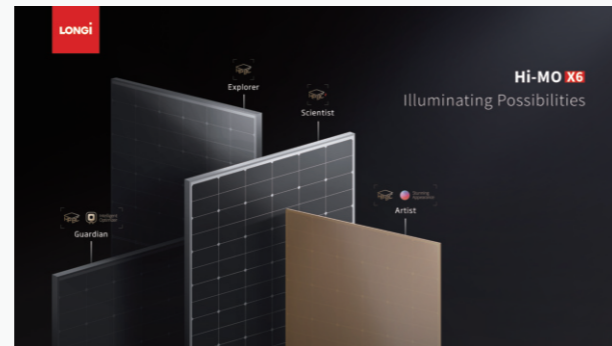
### Hi-MO 7 module

LONGi launched its Hi-MO 7, a new module based on HPDC technology. With a mass production power of 580W and a conversion efficiency of 22.5%, this product is created by LONGi for large ground power stations around the world. Besides its high efficiency, the Hi-MO 7 module also features high-quality monocrystalline silicon wafers, customized cell pastes, optimized module encapsulation film systems, SMBB high-precision interconnection, and high-reliability automatic welding of junction boxes, further ensuring product reliability throughout its lifecycle.



### Hi-MO X6 Guardian Anti-Dust module

LONGi unveiled the distributed Hi-MO X6 high-efficiency anti-dust PV module. Featuring HPBC technology and busbar-free design in its front-side, Hi-MO 6 can increase light absorption by 2.27% while maintaining its aesthetic appearance. More importantly, the innovative frame design allows the solar panel to effectively utilize rainwater to wash away dust, solving the long-existing problem of dust accumulation in the distributed PV market. Comparative data shows that solar panels with anti-dust features can achieve a power generation gain of 2.04%, with a maximum gain of up to 6%.



### New-generation LONGi ROOF 4.0 BIPV

LONGi, together with Center INT, a building construction company, introduced its new-generation BIPV product LONGi ROOF 4.0, the world's first commercial and industrial rooftop PV system equipped with BC batteries. Based on the HPBC cell technology, ROOF 4.0 can reach a record-high efficiency of 22.6% and an output of 580W. The product is safe and reliable, meeting Class A fire protection rating, the highest level, Class I, of waterproof rating, and resistant to 17-level typhoon. Such features make it suitable for 99.9% of regions in China.



## Smart Manufacturing

As a trailblazer in the digital transformation of the industry, LONGi integrated new-generation information technology into advanced PV manufacturing, and boosted the transition from "manufacturing" to "smart manufacturing" in the PV sector, thus injecting new momentum to the sustainable development of the whole industry.

In December 2023, Jiaxing LONGi Solar was selected as the Global Lighthouse Factory by the World Economic Forum (WEF). Having been awarded the only lighthouse factory in the global PV industry, LONGi distinguished itself as a world-leader in smart manufacturing and digitalization.

### Case | LONGi's Jiaxing production site: the first Lighthouse Factory in the PV sector

LONGi completed its Lighthouse Factory project within 9 months since its initiation in 2022. Empowered by the extensive adoption of new technologies like industrial Internet, big data, and artificial intelligence, Jiaxing LONGi Solar developed over 30 AI models and algorithms to drive the application of smart manufacturing outcomes.

#### Overall Equipment Effectiveness (OEE) Management System

Covering 20 production lines, the unified system interconnects over 900 devices and more than 210,000 data points. This has risen 30% or more in production line OEE and single-line daily output, and save 28% of time on average in solving equipment issues.

#### AI-powered real-time precise traceability technology

As an industry-first patented technology, it can complete the source machine information identification of 12 cell strings every 18 seconds after imputing the real-time AI chain tracing models. Such technology can also identify anomalies quickly and precisely, providing solutions for the challenge related to traditional barcode tracing limitations and low accuracy of virtual code tracing in producing components.

#### Automatic Flexible Production

Such system overcomes 7 automatic production problems, enabling one-click switching of product types to meet personalized customer product demands. Currently, the overall automation rate has exceeded 90%.

Empowered by the Lighthouse Factory, LONGi's Jiaxing production site has significantly improved over 30 key financial and operational indicators. Single-line manpower allocation has reduced by 33%, manufacturing costs has reduced by 28% and yield loss has dropped by 43%. The production delivery cycle goes down by 84%, and the unit energy consumption is reduced by 20%.



LONGi selected as the Global Lighthouse Factory

## Intellectual Property Rights

LONGi has strictly adhered to domestic and international laws related to intellectual property rights (IPR) such as the *Patent Law of the People's Republic of China*, *Trademark Law of the People's Republic of China*, *Patent Cooperation Treaty (PCT)*, and *TRIPS Agreement*<sup>1</sup>. What's more, considering its own R&D features, LONGi has also developed internal policies such as the *Intellectual Property Management System*, *Management Measures for Implementation of Patent Protection*, and *Management Measures for Intellectual Property Incentive and Evaluation*. These policies cover various aspects, including R&D risk warning, risk prevention, quality management, and strategic planning, to ensure the standardization and efficiency of the Company's IPR-related affairs.

As of the end of the reporting period, we have held

**2,879**

granted patents

LONGi has established an Intellectual Property Management Committee as the top decision-making body for its intellectual property management, responsible for formulating and implementing IPR strategies. The Intellectual Property Department, under the Committee, is the working body to comprehensively manage all kinds of intellectual property affairs, to effectively manage and maintain the utilization of the Group's intellectual property assets.

international trademark registrations in nearly

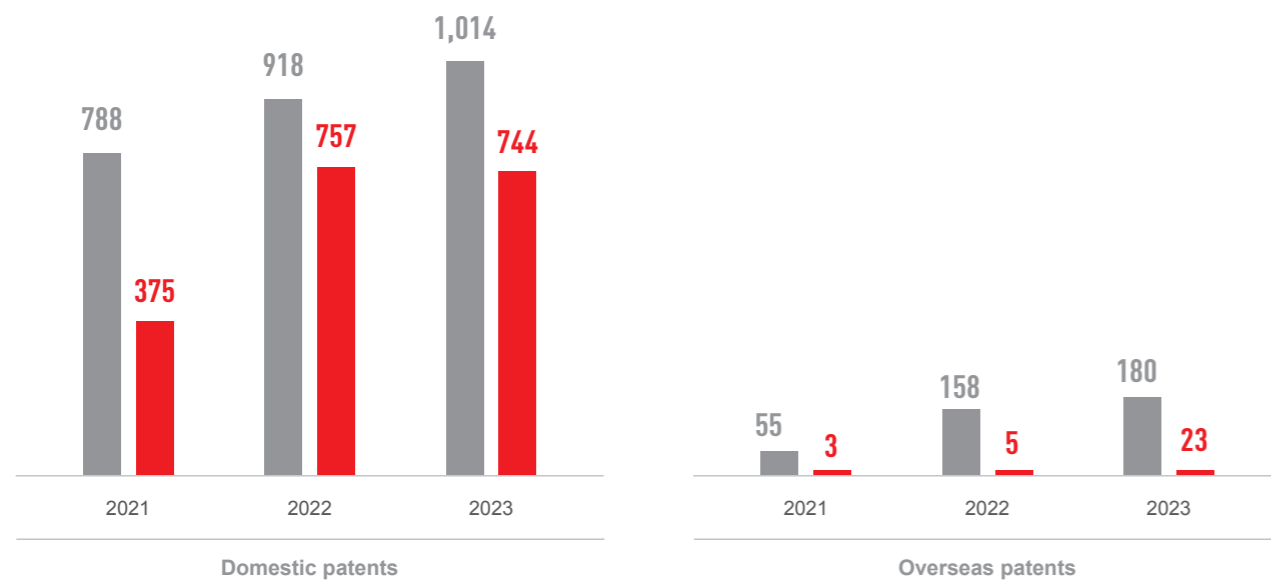
**200**

countries/regions

In 2023, following the policy of categorized management and unified designing of IPR, we planned in detail and established a comprehensive layout IPR system covering patents, trademarks, copyrights, trade secrets, and domain names, based on criteria such as timing, geographical distribution, technical fields, and types of patents. In addition, we strengthened IPR risk monitoring and management during the product sales and supplier management, to reduce infringement risks.

### LONGi's patent applications and granted patents (2021-2023)

■ Number of patent applications ■ Number of patents granted



1. The TRIPS Agreement is short for the Agreement on Trade-Related Aspects of Intellectual Property Rights.

## Cooperation for Innovation

Centering technology cooperation, LONGi values technological innovation and has built a collaborative innovation operation system across the entire value chain to drive high-quality development in the industry. This year, the group has strengthened standardized management of its cooperation with other parties by developing and publishing innovative cooperation system documents such as the *Management Measures for Collaborative Innovation Business*, *Management Measures for External Technical Cooperation Projects*, and *Management Measures for School-Enterprise Cooperation*.



**Industrial cooperation**

Working jointly with partners along the industrial chain, LONGi has advanced nearly 100 projects, organized close to 60 technical exchange events. As a result, we have solved over 80 technical problems, covering many core areas in clean energy technology, such as silicon wafers, cells, modules, recycling, and smart manufacturing.



**School-enterprise cooperation**

In 2023, we actively introduced quality resources to establish a platform combining industries, academy and research institutions. To that end, we have built stable cooperation relationships with over 30 top universities and research institutes including Tsinghua University, Institute of Electrical Engineering of Chinese Academy of Sciences, Lanzhou University, and Northwest University. The LONGi Solar also collaborated with the School of Photovoltaic and Renewable Energy Engineering of UNSW on a joint project to train talents in new energy technologies.



**International cooperation**

We engaged actively with the International Green Hydrogen Organization (GH2) in green hydrogen and signed a strategic cooperation framework agreement during the COP28, aiming for deep cooperation in the future on international green hydrogen standards and certification, and green hydrogen industry planning.

Leveraging its rich experience in this industry, LONGi took an active part in the formulation of technical standards to foster high-quality collaborative industry development.



1. SEMI: short for Semiconductor Equipment and Materials International.

# 1.2

## Products and Solutions

Leveraging its technological innovation capabilities and aiming for customer values, LONGi developed a diversified product matrix, providing practical solutions for global decarbonization efforts, embracing the transition to a zero-carbon era.

### Low-carbon Products

LONGi carried out carbon footprint calculations of products to precisely quantify carbon emissions throughout the product lifecycle. This year, we led upstream silicon material suppliers in participating in these calculations and obtained authorization to use the results. Meanwhile, by introducing third-party institutions to certify carbon footprint, LONGi rigorously inspected the carbon emissions throughout the product lifecycle. Given their outstanding eco-friendly features, several LONGi silicon wafer and module products received carbon footprint certifications from third-party institutions in 2023, of which the module products included 18 carbon footprint certifications from France, 4 carbon footprint certifications from South Korea, and 1 International Environmental Product Declaration (EPD)<sup>1</sup>.

carbon footprint certifications from France

18

carbon footprint certifications from South Korea

4

International Environmental Product Declaration (EPD).

1

- ◆ The entire range of silicon wafer products obtained the carbon footprint CRE4<sup>2</sup> certificate and PPE2<sup>3</sup> certificate
- ◆ Hi-MO 7 module products were granted the ECS<sup>4</sup> carbon footprint certificate by Certisolis in France, marking that LONGi's mainstream modules were all granted this ECS carbon footprint certificate
- ◆ Hi-MO 5 and Hi-MO 7 products obtained the carbon footprint PPE2 certificate from Certisolis
- ◆ Hi-MO 5 products obtained carbon footprint certification from South Korea, making LONGi the first Chinese module supplier completing carbon footprint certification of South Korea
- ◆ Hi-MO 7 modules have obtained EPD



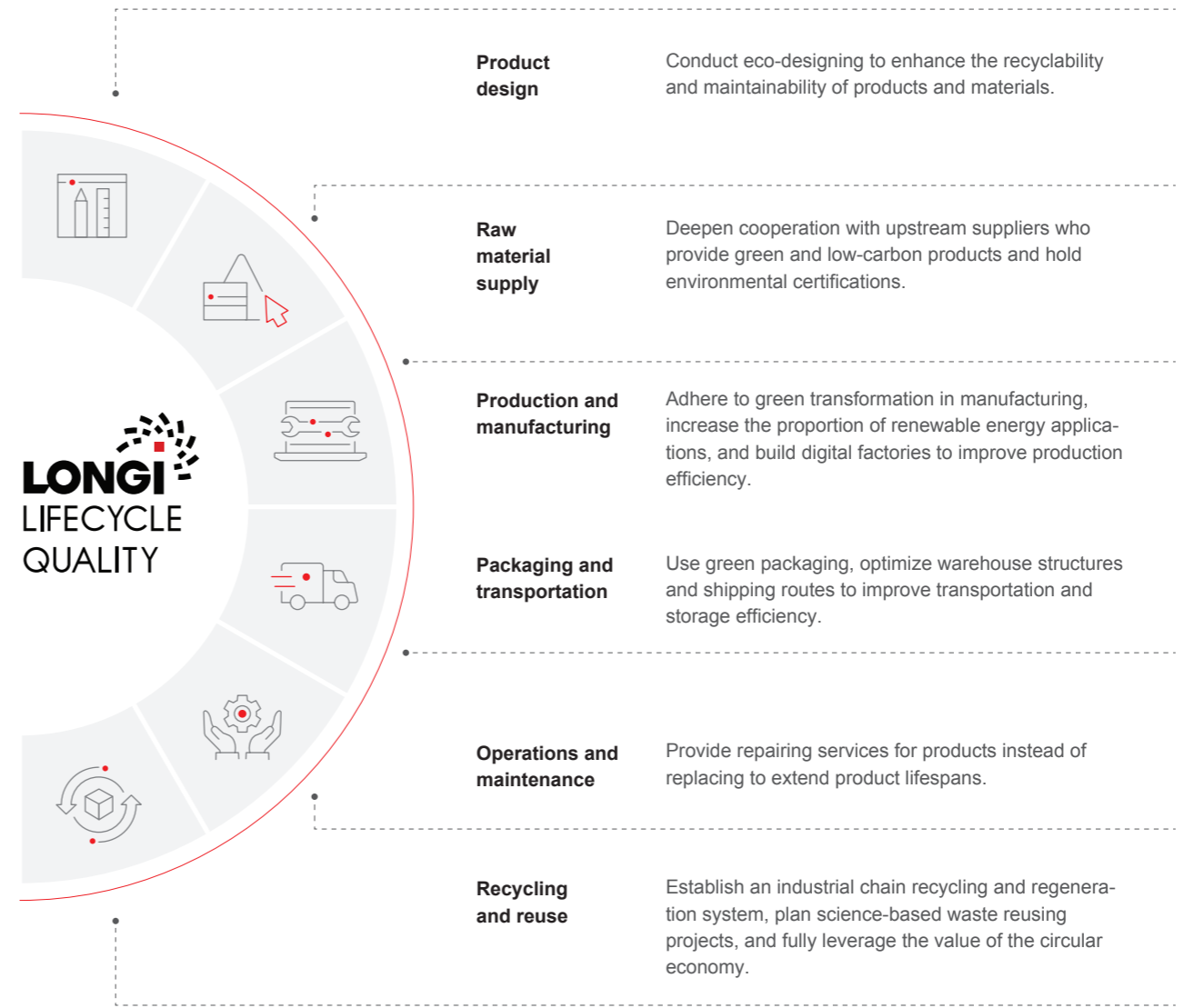
French Carbon Footprint ECS Certification by Certisolis



International Environmental Product Declaration

1. The International EPD System is the world's first, longest running and most far-reaching EPD system, originally established in 1997 by the Swedish Environmental Protection Agency (SEPA) and industry as the Swedish EPD System, which introduced the Environmental Product Declaration (EPD) and Product Category Rules (PCR).  
 2. CRE4: A standard proposed by the French Energy Regulatory Commission in 2016, which requires companies to assess the carbon footprint of their PV module products.  
 3. PPE2: short for AO PPE2 PV Sol. Proposed by the French Energy Regulatory Commission in 2023, it is set to revise the ECS assessment requirements.  
 4. ECS: short for Evaluation Carbone Simplifiée, an assessment method proposed by the French Energy Regulatory Commission for PV module products.

Based on carbon footprint calculations, we have identified key emission reduction potentials in areas such as silicon materials and crystal pulling. In addition, we have implemented a series of emission reduction measures, focusing on building a green and low-carbon industrial chain covering the entire lifecycle of PV products, in order to create even lower-carbon PV products.



Whole Product Life Cycle Carbon Reduction Initiative

LONGi strengthened control over hazardous substances in the design and production process of PV modules, aiming to minimize environmental impact. Strictly adhering to EU's *Restriction of Hazardous Substances in Electrical and Electronic Equipment (RoHS)* and the *Regulation on the registration, evaluation, authorization and restriction of chemicals (REACH)*, we handled and eliminated harmful substances such as lead, mercury, cadmium, DEHP, BBP, DBP, and DIBP<sup>1</sup> in glass, frames, back panels, film, labels, and all other parts. In addition, we accelerate the detection of per- and polyfluoroalkyl substances (PFAS) in products and plan to gradually recycle PFAS-containing components to meet the requirement of the global market in the future.

1. DEHP (di (2-ethylhexyl) phthalate), BBP (benzyl butyl phthalate), DBP (dibutyl phthalate), and DIBP (di-isobutyl phthalate) are all toxic industrial plasticizers.

## Carbon emission reduction solutions for the industry

By exploring the deep integration of "PV+" with multiple scenarios, LONGI provided innovative solutions for global centralized and distributed customers.



### Power

- Implement ground-mounted power stations and distributed generation applications tailored to local conditions, reducing dependence on fossil fuels.
- Implement multi-energy complementary integrated solutions, with PVs as the main component, combining wind, water, and other resources to build a clean and low-carbon energy supply system.



### Industry

- Provide tailored green power replacement solutions for energy-intensive industries such as petrochemicals and metallurgy.



### Construction

- Leverage the advantages of digital and smart engineering to customize building integrated PV-BIPV and households PV to enhance building sustainability.



### Transportation

- Explore the new ecology of the integration of transportation and PVs to promote efficient collaboration between NEVs and renewable energy.
- Launch comprehensive green solutions for transportation, making full use of various transportation sites.



### Agriculture, forestry and fisheries

- Launch agri-PV, forestry agri-PV, animal husbandry agri-PV, and fishery agri-PV, and develop new PV businesses such as solar panel power generation, and planting, animal husbandry and fish farming underneath panels, to use land and resource more efficiently.



### Case | Power industry: The centralized power plant in Uzbekistan connecting to the grid

Using exclusively LONGI's Hi-MO 7 modules, Uzbekistan conducted a 1 GW solar project, whose first phase of 400 MW was connected to the grid in December 2023. Once fully operational, the project will generate 2.4 billion kWh, and reduce natural gas consumption by approximately 588 million m<sup>3</sup> annually. While effectively alleviating local power shortages, this project will also increase the share of renewable energy to improve local power supply structure. Meanwhile, it is projected to create around 1,600 local jobs, bringing \$140 million in tax revenue for the local government.



The 1GW solar project in Uzbekistan

### Case | Power Industry: The PV power plant on the shores of Lake Balkhash, Kazakhstan

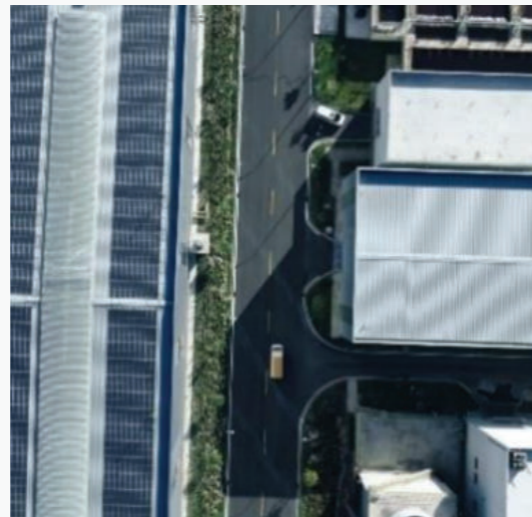
Serving as an important copper refining center in Kazakhstan, Lake Balkhash has witnessed a deteriorating eco-environment due to the high energy consumption and carbon emissions of local metallurgical industry. To solve this problem, a 100MW PV power plant project has been launched for the Balkhash region. LONGI's Hi-MO 5 bifacial modules were selected thanks to their efficient, stable, and reliable features, despite the extreme cold weather locally with temperatures dropping to -20 C in winter. After its completion, the project is estimated to generate an average of about 295,000 kWh per day, with an annual output exceeding 79 million kWh, reducing about 170,000 tonnes of CO<sub>2</sub> emissions per year.



The 100MW PV power plant on the shores of Lake Balkhash

Case | **BIPV: Green transformation in collaboration with the Taiyuan Iron and Steel Group**

The 11.04MW LONGi BIPV project, an innovative energy project provided by LONGi and Center INT for the Taiyuan Iron and Steel Group, has become a model for green transformation in the global steel industry. The total installed capacity is 11.04 MW, with an estimated annual power generation of 283 million kWh over 25 years, replacing coal consumption by about 130,000 tonnes and reducing carbon dioxide emissions by about 250,000 tonnes. Electricity generated through this project has reached 110% of its target in 2023. Having been entirely used for steel production, such energy effectively alleviated the intensive energy consumption and carbon emissions in traditional steel production, constantly injecting green power into the sustainable development of the steel industry.



BIPV rooftop of the Taiyuan Iron and Steel Group, Shanxi province

Case | **Circular economy: Empowering green industries with green electricity**

LONGi's Hi-MO X6 modules have been utilized in SANKO, a Japanese comprehensive recycling company, to maximize power generation within limited roof space for recycling and reusing. Besides high conversion efficiency, Hi-MO X6 also boasts an obsidian-like appearance, adding a tech-inspired touch for the recycling factory. Echoing SANKO's eco-friendly philosophies, green power supply makes possible 100% sustainability in recycling and clean energy, putting the label of low-carbon for this recycling company.



Hi-MO X6 deploying on the rooftop of the recycling factory

## Green Hydrogen

Sticking to hydrogen products as its strategy and core development direction, LONGi focuses on the R&D of alkaline electrolyzer technology and provides large-scale green hydrogen equipment and solutions worldwide. It is committed to creating premium products with high performance, high intelligence and low cost. In 2023, LONGi released two alkaline water electrolysis hydrogen production products. The LONGi ALK Hi1 series reduce the power consumption down to 4.0 kWh/Nm<sup>3</sup> for the first time. And the single electrolyzer production capacity of the LONGi ALK G series reaches 3,000 Nm<sup>3</sup>/h, which is industry-leading. By the end of the reporting period, the annual manufacturing capacity of LONGi Hydrogen has reached 2.5 GW.

LONGi's "Green Power + Green Hydrogen" system solution now can undertake off-grid and grid-connected hydrogen production projects independently, integrating systems across multiple professional fields including new energy, power electronics, energy storage, chemical engineering, and automation control. The solutions provides full lifecycle services, including low-LCOH<sup>1</sup> green power and green hydrogen project design, economic analysis, system steady-state/transient simulation verification, and chain-wide product supply. In 2023, LONGi participated in multiple national green hydrogen demonstration projects, holding 24%, the largest, of the market share domestically. Specifically, in the hydrogen-rich smelting project, LONGi's ALK G series reduce carbon emissions by over 10%, demonstrate its advantage in "replacing carbon with hydrogen", and save over 20% equipment investment and more than 30% civil work cost.

Case | **Power industry: The centralized power plant in Uzbekistan connecting to the grid**

In 2023, LONGi Hydrogen Energy provided core products and solutions for China's first large-scale green hydrogen demonstration project. The project produces 20,000 tonnes of green hydrogen annually, replacing natural gas used for hydrogen production in oil refining, thus achieving low-carbon coupling development between modern oil processing and green hydrogen.

By the end of 2023, the project had operated smoothly for

**4,200** hours

supplying

**22.36** million m<sup>3</sup> of hydrogen



1. LCOH: the levelized cost of hydrogen production.

# 1.3 Responsibility for Products

LONGi adheres to the bottom line of “reliability” and insists on providing the maximum value to customers with the best products. We have established a large-scale quality management system covering the whole value chain, including customer/product requirement management, product R&D, procurement and supplier management, product manufacturing, engineering design and installation, after-sales service, etc., in accordance with the standards of the ISO 9001 quality management system. We have clarified quality management workflows and standards from functional departments to production bases.

LONGi has established the Quality Management Committee and set up a continuous improvement organization covering the entire group in 2023. We issued four documents on the procedure and system of continuous quality improvement to enhance the capability of all employees to identify and address quality issues and specify quality management responsibilities at all levels. Through a comprehensive and science-based quality management system, we strive to ensure effective implementation of quality management to facilitate the implementation of the company’s business strategies.

## Comprehensive Management of Lifecycle Quality

LONGi is committed to achieving high quality in line with high standards and integrates LONGi’s “Product Lifecycle Quality Standard” into every stage of product design, production, and application to ensure excellence in quality standards throughout the entire product lifecycle.



Product Lifecycle Quality Standard

In 2023, we focused on optimizing the quality management process for new product development. With module products as the pilot, we standardized quality strategy, quality planning, quality data management, quality risk, and issue management for new products. By clarifying quality objectives from the project initiation stage and breaking down these objectives into specific requirements and standards for each stage, we achieved effective and stringent monitoring of key processes, which significantly enhanced the quality and efficiency of new product development.



Lifecycle Quality Management for New Product Development

### Honours of LONGi's product quality in 2023

◆ With high performance and quality, LONGi won the “PV Module Energy Simulation AQM” awarding for its Hi-MO 6 and Hi-MO 7 modules from TÜV Rheinland Germany in September. This is already the seventh consecutive year they have won an award in the PV module category at the “Quality First” Solar Conference.



AQM Awards

◆ In December, LONGi won the award for “Outstanding Management of Quality and Sustainable Development” by SGS.



SGS Award for Outstanding Management of Quality and Sustainable Development



## Quality System Management

All of our manufacturing plants have obtained ISO 9001 quality management system certification, and our module products have obtained IEC 62941 manufacturing quality system certification for ground-mounted PV modules. In 2023, we have introduced a value-added quantitative evaluation model based on traditional quality system internal inspections, effectively integrating the T/CAQ10102 quality system maturity assessment guidelines into the GB/T19580 criteria for performance excellence, and customizing evaluations based on the features of different organizational levels.

### Domestic manufacturing base

LONGi Solar Technology obtained again the TÜV IEC TS 62941 quality system certification for photovoltaic module manufacturing.

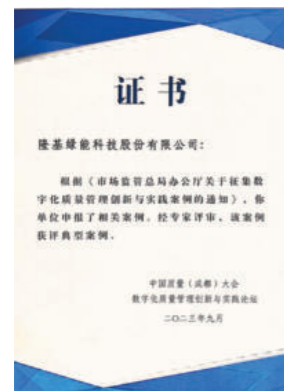
### Overseas manufacturing base

**Vietnam base:** The NWestern Vietnam, Vietnam module factory, and Vietnam cell factory have all received the on-site inspections by Certification Partner Global (CPG) and have obtained QEHS certification.

**Malaysia base:** The Serenda module factory, Kuching silicon solar factory, and Kuching cell factory have all passed inspections by the British Standards Institution (BSI) and the National Institute for Occupational Safety and Health (NIOSH) and have obtained ISO 9001 certification and EHS certification.

## Quality Information System

Longi regards Quality Big Data as core driving force to promoting the *Total Quality Management Digitalization* strategy. We have built an '1+7+1' Quality Informatization management system, focusing on quality data throughout product full life cycle to achieve collection, management and analysis of quality data in all aspects as while as establishing an on-line traceability system to ensure stability and traceability of product quality. In 2023, by operating under '1+7+1' Quality Informatization management system, we have achieved 10% man power reduction, 4.9% roll throughput yield improvement and 30% defect rate reduction through application of AI algorithm, which significantly contributes to product quality and optimization.



Digital Quality Management Innovation and Classic Case at the Fifth China Quality Conference hosted by the State Administration for Market Regulation



Origin of Digital Quality Management - Large Quality Management System

Seven Major Quality Management Business Modules - Quality System Management, R&D Quality Management, Reliability Management, Supply Chain Quality Management, Process Quality Management, Customer Satisfaction Management, Continuous Improvement Management

Quality Big Data Center with the aim to achieve end-to-end digital quality management of the whole process

LONGi's "1+7+1" Quality Informatization Management

## Quality Culture

LONGi has established a Quality Culture Model by drawing on international and domestic industry standards and integrating them with the Company's current development of quality culture. The model is guided by one vision, five core concepts, and supported by four-dimensional system measures, to deepen the development of quality culture from all aspects.



Quality Culture Model of LONGi

## Empowerment Training

To ensure the efficient operation and continuous optimization of the group's quality management system, we have expanded beyond ISO 9001 system auditors to include internal auditors and have trained a total of 206 professional evaluators, including chief, senior, intermediate, and junior levels. In addition, we have established a "321" quality training system tailored to enhance capabilities based on team members' quality management responsibilities at various levels. For team leaders, we conducted quality management capability training; for manufacturing personnel, we implemented an efficient "4D" problem-solving method across all production bases<sup>1</sup>, considerably enhancing the efficiency of quality management in the manufacturing process. In 2023, we adopted Six Sigma quality management empowerment training and certified 47 Green Belts, 16 Black Belts, and 2 Master Black Belts.

### Case | LONGi's Quality Month

In September 2023, LONGi kicked off a 90-day Quality Month event. During the event, we organized over 404 activities, including more than 130 customer exchange events, 79 skill competitions, and 141 targeted empowerment training, with the total number of participants exceeding 90,000. This initiative effectively improved quality awareness among all employees and fostered a strong quality culture, thereby solidifying the foundation of product quality.



1. The 4D method refers to Depict, Detect, Design, and Do.

## 1.4 Customer Service

At LONGi, we adhere to the service philosophy of "Reliability, Value-add, and Fulfillment", and follow the customer service policy of "delivering professional services to create customer value". We also formulated the *LONGi Customer Service Manual*. In 2023, we continued to implement the GB/T 27922-2011 standards for after-sales service, completed the *Post-sale Service Evaluation System* supervision, and further optimized the handling process for customer technical issues by revising the *Technical Issue Handling Process Document*.

### Customer health and safety

We are committed to safeguarding our customers' health and safety, ensuring all products we provide are secure and reliable. During the product design phase, we assess risks such as electric shock and fire hazards, identifying and mitigating potential safety issues.

#### ◆ When selecting materials for products:

we adhere to strict standards and norms, aiming to avoid substances harmful to human health and reducing health risks at their source.

#### ◆ After the sale:

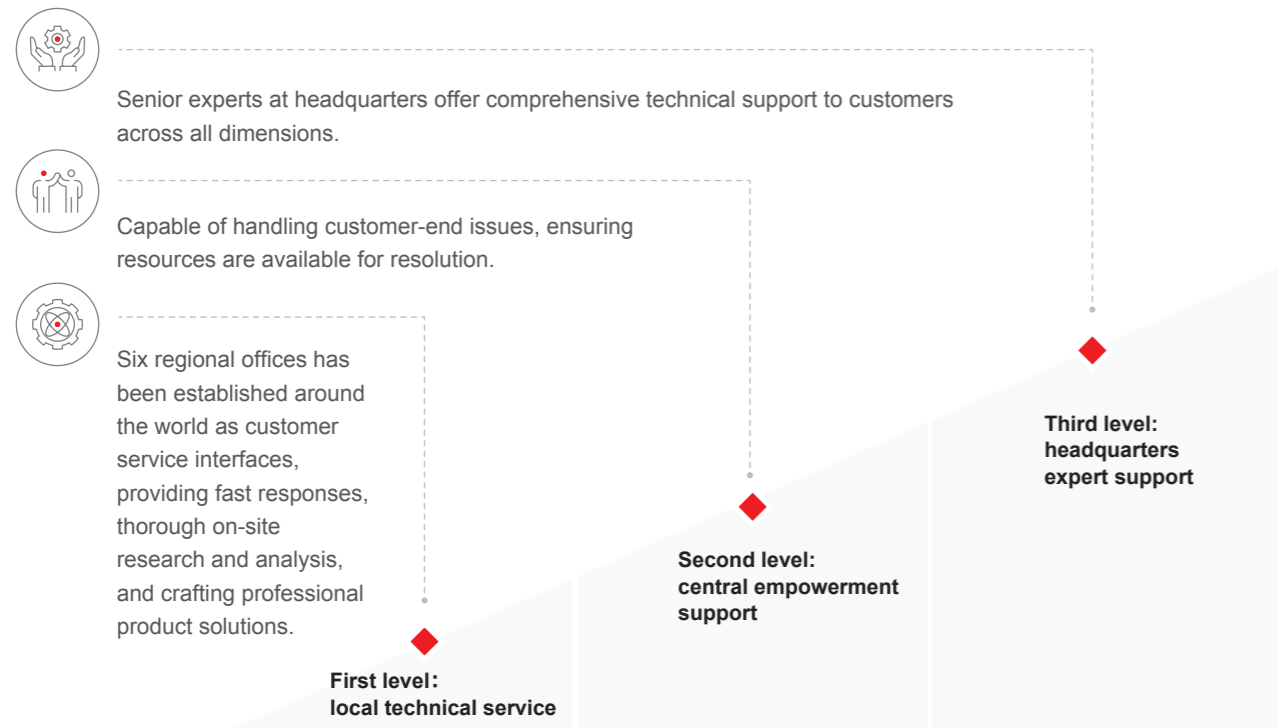
we continue to monitor product safety risks, promptly initiating recalls and disposal actions upon identifying defects or safety concerns.

We have established a product recall management procedure, clearly defining both proactive and reactive product recall processes. In the event of a product recall, we quickly prepare a detailed report outlining the reasons for the recall, the scope, and the resolution, and we take targeted corrective and preventive measures to prevent similar incidents. By the end of the reporting period, all LONGi component products have been certified with IEC 61730 PV module safety certification, and no product recalls occurred within the reporting period.

### Customer service system

LONGi has built a three-tiered global customer service system that connects regional offices, customer service departments at marketing centers, and quality management departments. This system efficiently allocates service resources to respond swiftly and professionally to customer needs. We have developed "business-technology-service", an "iron triangle" tripartite service model, to meet customers' full lifecycle needs for business solutions, product technology, and delivery services. In 2023, we added business, delivery, and product technology liaison networks within this service model to ensure real-time connection and prompt resolution of customer issues, securing efficient and rapid service closure.

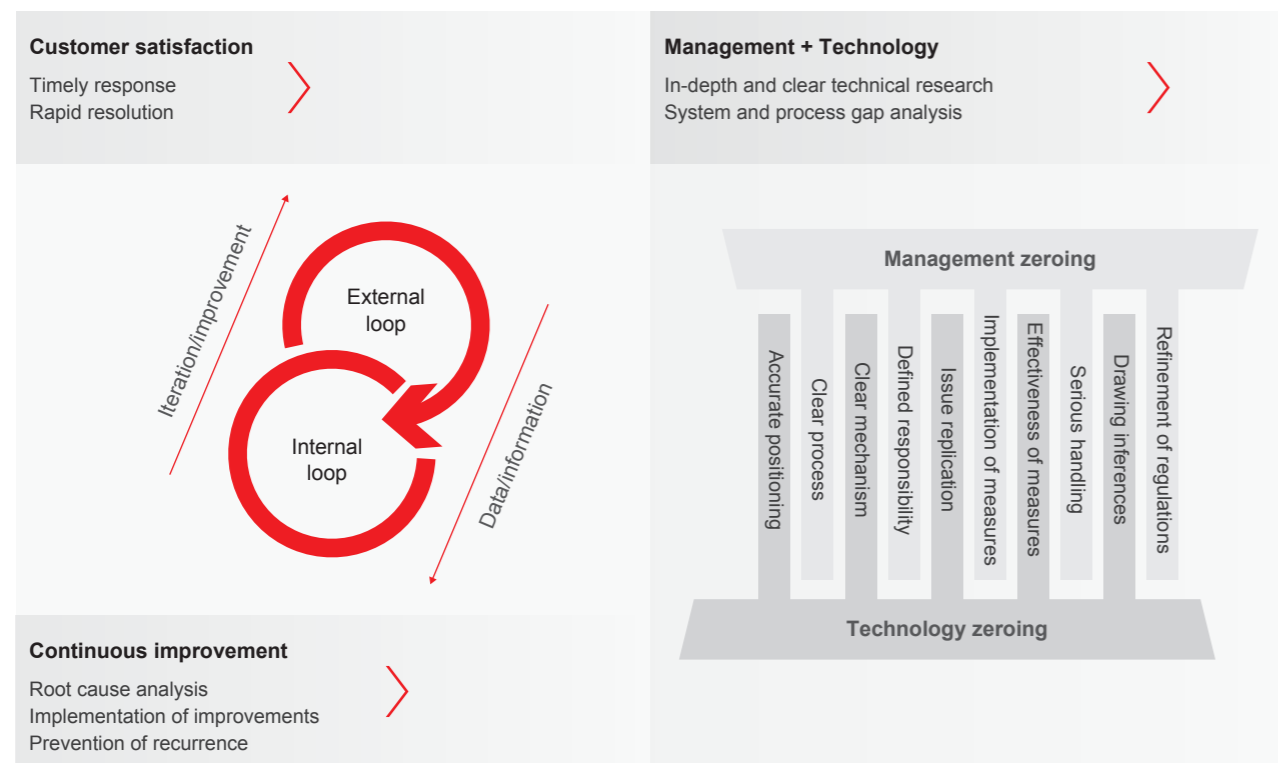




LONGi's global customer service system

## Customer satisfaction

LONGi respects the opinions and feedback of every customer and has established diverse and accessible communication channels. We have instituted a “dual closed loop, dual zeroing” system for handling customer complaints, detailing the promptness of resolutions, principles for graded and escalated responses, and standards for closing the loop, ensuring that customer complaints are resolved efficiently and properly.



“Dual closed loop, dual zeroing” system

In 2023, to further understand customer needs and enhance their experience, we established a customer satisfaction survey mechanism based on the Net Promoter Score (NPS) system. Monthly customer satisfaction follow-ups were conducted, scoring across four aspects: overall service, timeliness, professionalism, and attitude. After collecting and analyzing customer feedback, we therefore improved our products and services. In 2023, customer satisfaction scores increased from 4.51 to 4.80 out of 5 by the end of the year.

- CC3 organizations Sales managers, delivery managers, and solution managers provide direct service support.
- Service hotline 4008601012
- Official website <https://www.longi.com/en/>
- LONGi e-mail [customercare@longi.com](mailto:customercare@longi.com)

## Responsible marketing

Embracing the core values of responsible marketing, LONGi has put in place rigorous review and oversight processes for all marketing content. This ensures each piece of material receives the green light from our authorized managers before going public, aligning with all legal and regulatory requirements. In 2023, LONGi had 0 instances of marketing violations.

In 2023, LONGi had

**0** instances of marketing violations

To instill a culture of accountability among our sales force, LONGi consistently rolls out an array of trainings focused on adherence to marketing best practices. In 2023, the Group launched the “iron triangle” enhancement initiative for frontline sales teams and provided comprehensive marketing courses for new employees. This initiative strengthens sales personnel’s understanding of corporate ethos and product knowledge and heightens their awareness of responsible marketing risks, ensuring the compliance of product promotion and sales activities.

# 02

# Environment

## Topics covered in this chapter

Responses to Climate Change	49
Water Resources Management	55
Clean Production	59
Circular Economy	63
Biodiversity Conservation	67

## In response to SDGs



## 2.1 Responses to Climate Change

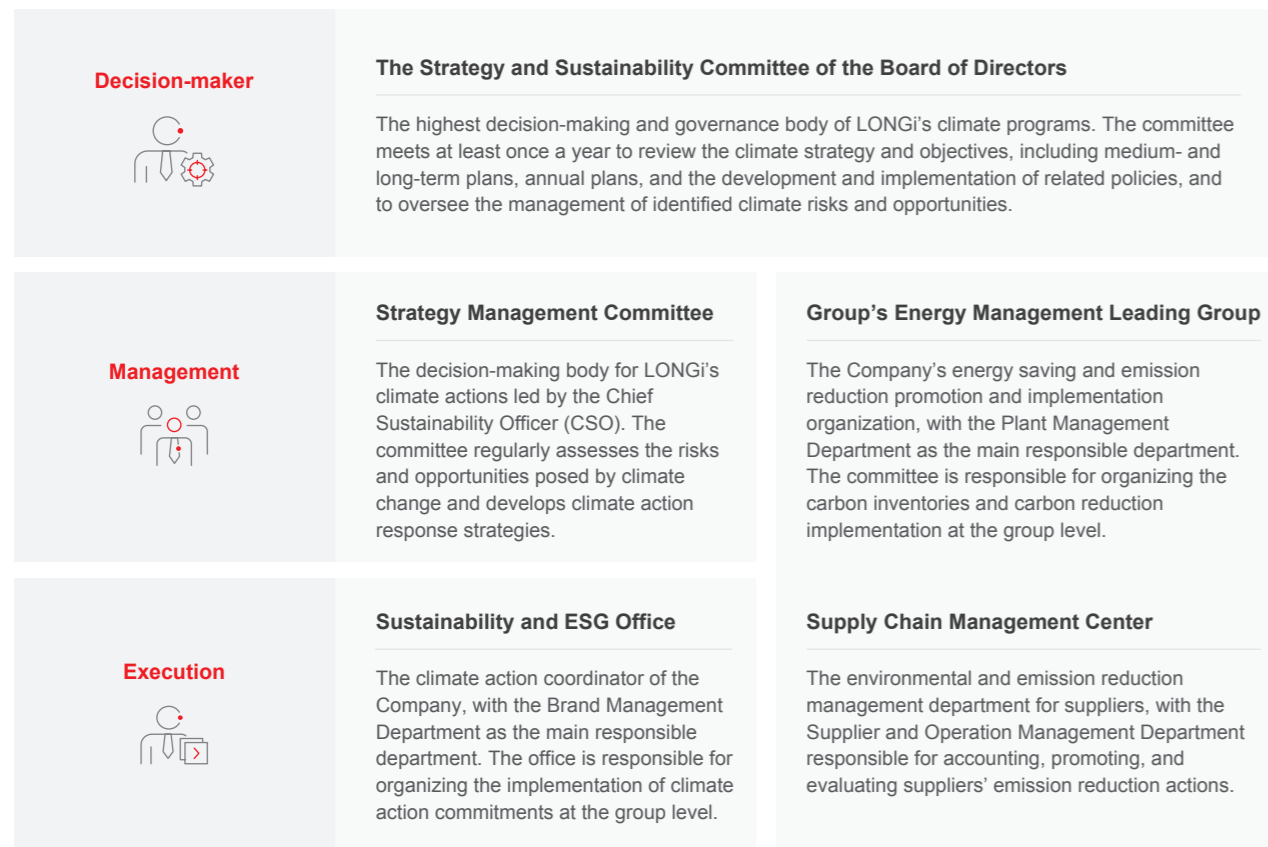
As a leading global PV manufacturer, LONGi is deeply aware of its responsibility to reduce emissions. We have joined the RE100, EP100, EV100 initiatives and the Science Based Targets initiative (SBTi) in 2020, established a full value chain greenhouse gas emission accounting system, identified and managed climate risks following international standards, and set emission reduction targets that are in line with PV industry's development and our operating conditions. We have also advocated energy conservation, emission reduction, and the use of renewable energy in our production bases, accelerated the certification of product carbon footprints, and thus became a forerunner in the industry's climate action and green development.

### Climate Risk Management

As one of the first PV companies to address climate risks, LONGi has been disclosing its climate actions for many years and has gradually aligned itself with recommendations of the *International Financial Reporting Sustainability Standard 2 - Climate-related Disclosures* issued by the Task Force on Climate-related Financial Disclosures (TCFD) and the International Sustainability Standards Board (ISSB).

### Governance

LONGi has established a climate change governance system led by the Board of Directors. Several members of LONGi's Board of Directors are experts with years of experience in the PV and energy sectors and are thus able to accurately identify and manage risks, seize opportunities in the global green transition, ensure the effectiveness of climate risk management, and formulate climate actions suitable for the company's long-term development.



LONGi's climate governance structure

### Strategy

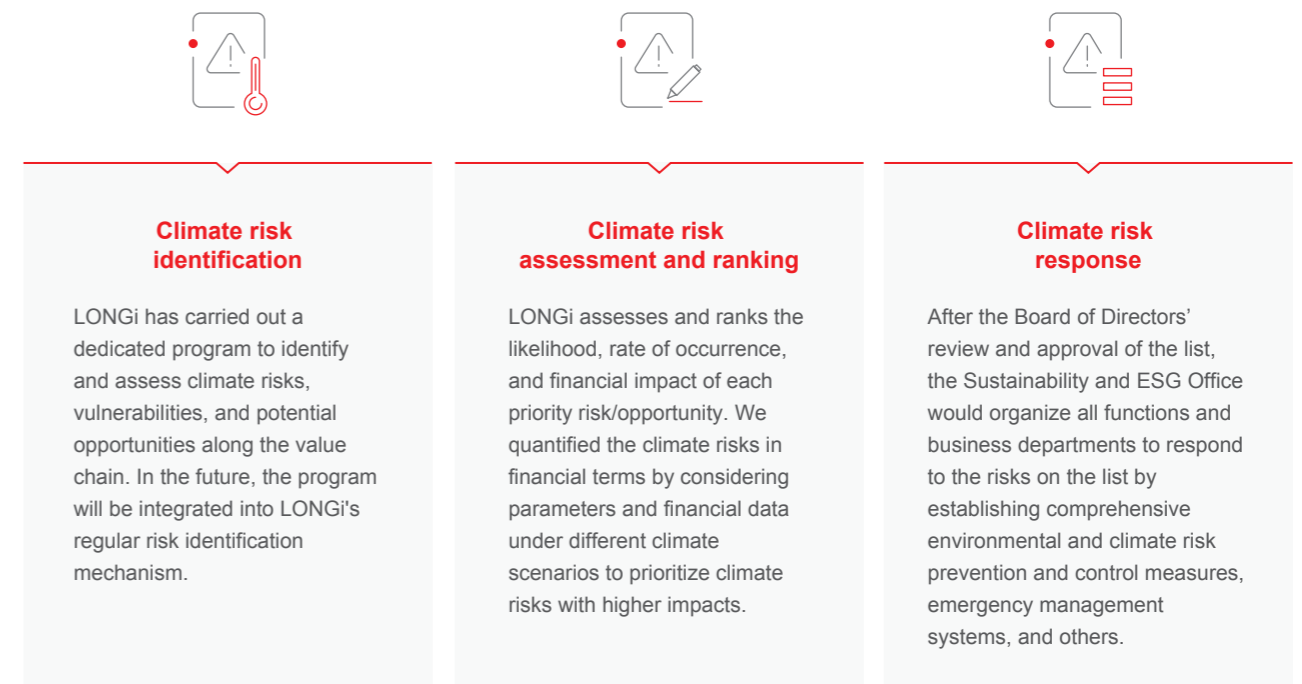
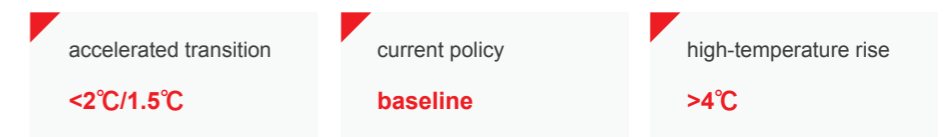
We have identified and analyzed the climate risks, vulnerabilities, and potential opportunities along the value chain through review, climate database risk screening, and industry research, forming a long list that involves 16 transformational risks, 65 physical risks, and 15 climate opportunities. Meanwhile, we have developed the corresponding climate risk management system, which is published in the *2023 Climate Action White Paper of LONGi*.

Learn more about the *2023 Climate Action White Paper of LONGi*



### Risk management

We have managed climate risks following the methods and processes stipulated in our risk management system and conducted analysis for 3 temperature rise scenarios, i.e. accelerated transition (<2°C/1.5°C), current policy (baseline), and high-temperature rise (>4°C), to comprehensively incorporate the risk identified and assessed into the strategic decision-making and daily operations.



LONGi's climate risk management in 2023

### Indicator and goal

In 2023, according to the Group's situation, LONGi set climate-related indicators and targets with reference to international climate action target-setting methods and initiatives, and became the first PV company in China to pass the audit of SBTi.



SBTi	RE100	CLIMATE GROUP EP100	CLIMATE GROUP EV100
<ul style="list-style-type: none"> <li>Scope 1 and 2 emissions are reduced by <b>60%</b> by 2030 compared to 2020</li> <li>Scope 3 emission intensity per tonne of purchased goods and services is reduced by <b>52%</b> by 2030 compared to 2020</li> </ul>	<ul style="list-style-type: none"> <li>Achieve <b>70%</b> renewable energy use by 2027 and <b>100%</b> renewable energy use by 2028</li> </ul>	<ul style="list-style-type: none"> <li>Complete the deployment of an energy management system by 2025 and improve energy utilization rate by <b>35%</b> from the baseline of 2015</li> </ul>	<ul style="list-style-type: none"> <li>Install charging facilities at all manufacturing sites by 2030. <b>100%</b></li> </ul>

### Climate Actions

In 2023, we focused on internal operation and supply chain emission management, implemented a series of initiatives including carbon accounting, energy management, and construction of clean energy facilities, and formulated the *Carbon Emission Management System Manual* and *Work Instruction for Construction and Evaluation of Zero-carbon Plant*. We also built an online emission data management system leveraging the EMS system and in line with the requirements of the ISO 14064 standard, continuing to improve the verification of internal emission data.

#### Emission reduction in operations

- 8** production bases have deployed the Energy Management System (EMS)
- 25** production bases have been certified with the ISO 50001 Energy Management System
- 31.2%** enabling the Group's overall energy productivity to increase by 31.2% compared with 2015

We have organized centralized procurement of charging piles at the group level

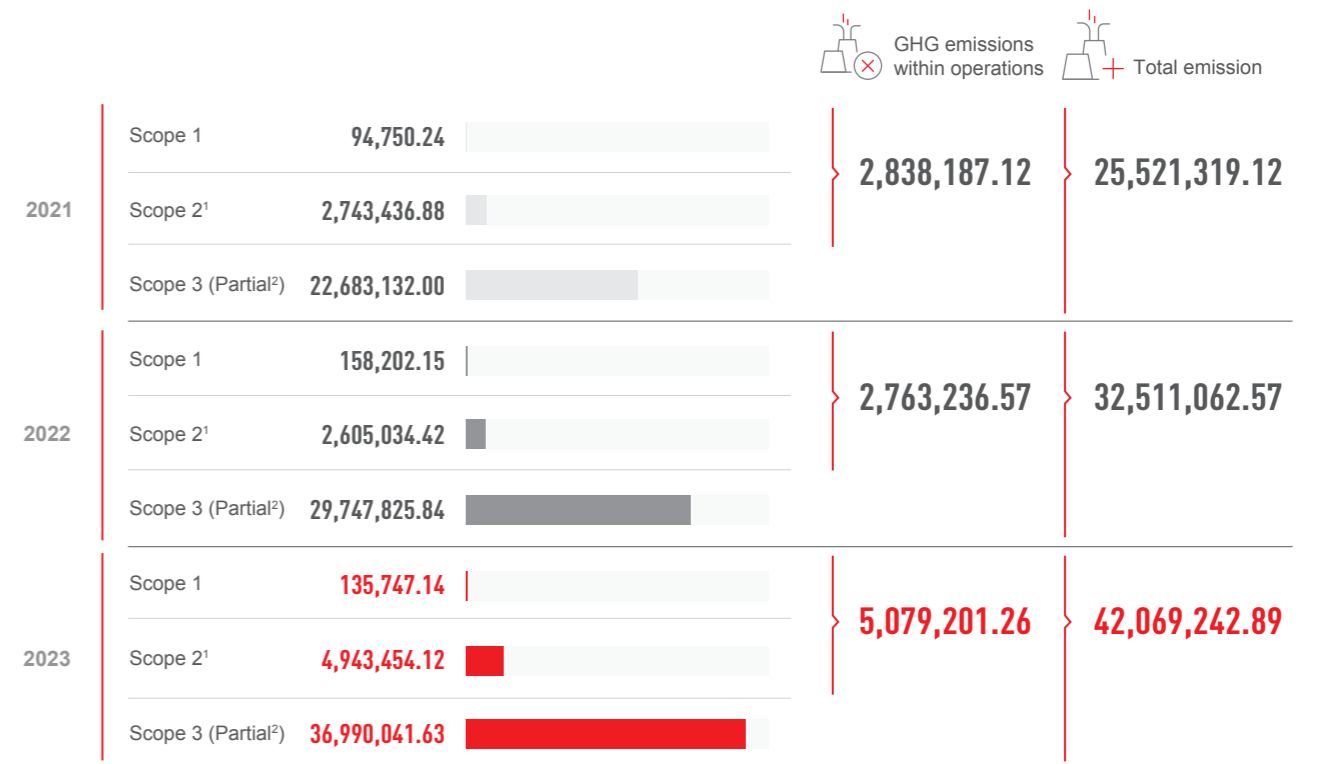
We have installed a total of **253** new charging piles at **23** operating sites

We have also accelerated the construction of Baoshan LONGi "Zero Carbon Factory" and have been awarded the PAS 2060 Carbon Neutral Certification in December 2023 by SGS.

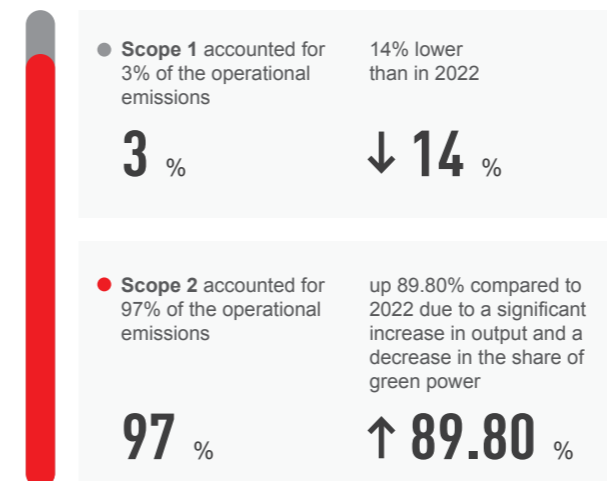
#### Supply chain emission reduction

- 550** We have launched the "Supply Chain Green Partner Empowerment Program", with more than 550 suppliers actively participating in two consecutive sessions.
- 50** We have also completed the carbon inventory of 50 key suppliers and assisted them in analyzing their energy use and conducting carbon inventories to explore their reduction potential.

### LONGi's total carbon emission (2021-2023) (tCO<sub>2</sub>e)



### In the Group's carbon emission structure in 2023



As for Scope 3, outsourced goods and services (category 1) accounted for more than 90% of the total. Scope 2 and Scope 3 emissions showed a slight increase from 2022, mainly due to the increasing output and transportation cost for meeting the rapidly growing global demand for PV products.

Given the growing demand in the PV market demand, we will actively carry out carbon reduction projects, including setting three-year short-term emission reduction targets and pathways, completing and advancing the construction of more zero-carbon factories, participating in green power trading, and strengthening carbon reduction synergy with suppliers.

1. Due to the update of the regional power grids carbon dioxide emission factors, this report recalculates Scope 2 data for 2022 and 2021 based on the updated version of the *Announcement of the Ministry of Ecology and Environment and the National Bureau of Statistics on the Release of CO<sub>2</sub> Emission Factors for Electricity in 2021*.  
 2. Scope 3 emissions encompasses purchased goods and services, upstream fuel and energy related activities, upstream transportation and distribution, waste generated from operations, business trips, employee commuting, downstream transportation and distribution, and final disposal of sold products.

## Energy Saving and Emission Reduction

LONGi has formulated the *Energy Management Manual*, *Energy Management System*, *Energy Data Management Measures*, and other institutional documents, set up the Group's Energy Management Leading Group led by the chairman of the Board of Directors, and an Energy Management Office and Expert Team under it to ensure the standard implementation of the whole energy management process.

In 2023, we conducted an annual energy evaluation on 29 bases within the scope of assessment<sup>1</sup>, and completed a total of 509 energy improvement projects; as of the end of the reporting period, a total of 25 bases have completed their Energy Management System construction and passed the certification, and 10 new bases were added in 2023. We have taken multiple measures including energy-saving technological reforms, energy management, and evaluation, and succeeded in realizing a remarkable annual electricity saving of 1,064 million kWh. This resulted in a 9.53% YoY decrease in the Group's overall power consumption and an 18.32% drop compared with the base year.



### Power saving targets

The Group's overall power consumption target in 2023

**13.43 %**

lower than that of 2020

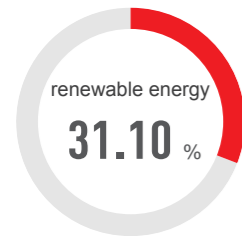
The Group's overall power consumption target in 2024

**9.14 %**

lower than that of 2023<sup>1</sup>

**18.32 %**

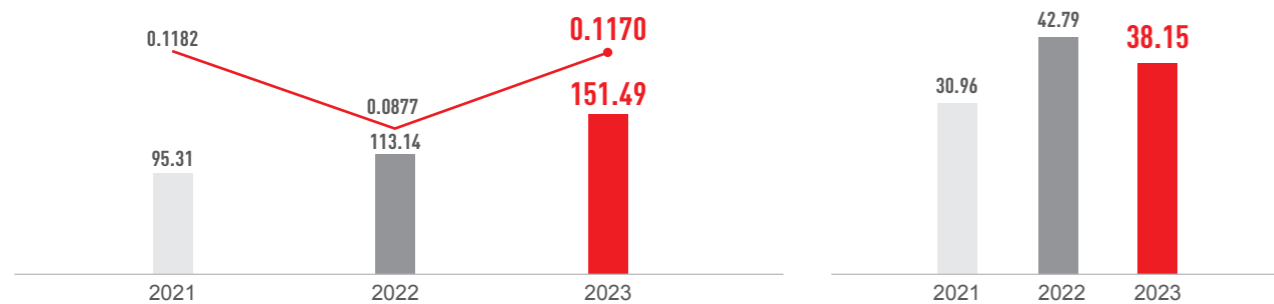
was the actual achievement



We have adopted green power in our production actively and optimized our energy structure. In 2023, 3,815 million kWh of LONGi's total electricity consumption came from renewable energy, accounting for about 31.10% of the total electricity consumption, which was equivalent to about 2,124,399.46 tCO<sub>2</sub>e emission reduction.

### LONGi's energy usage (2021-2023)

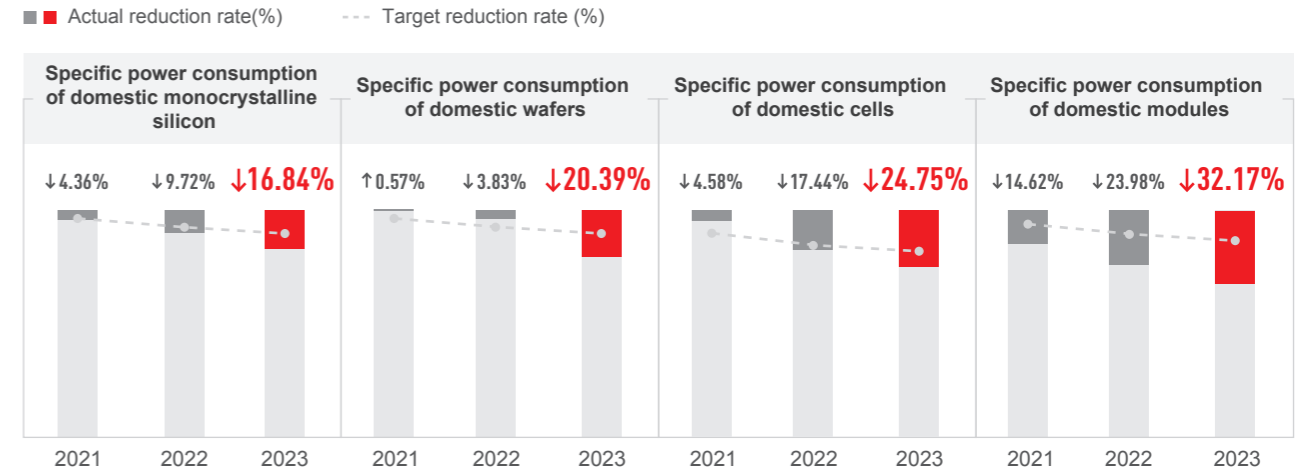
■ Overall energy consumption intensity (10K tce) ■ Consumption of renewable energy (100 million kWh)  
— Overall energy use intensity (10K tce/100 million RMB)



We take 2020 as the base year, set the power consumption target for each product, and monitor the achievement of the target every year. In 2023, the reduction of power consumption per product for monocrystalline, wafers, and cells exceeded expectations.

1. LONGi has a total of 31 bases in China, among which 2 have not been reviewed and are still in production ramp-up.

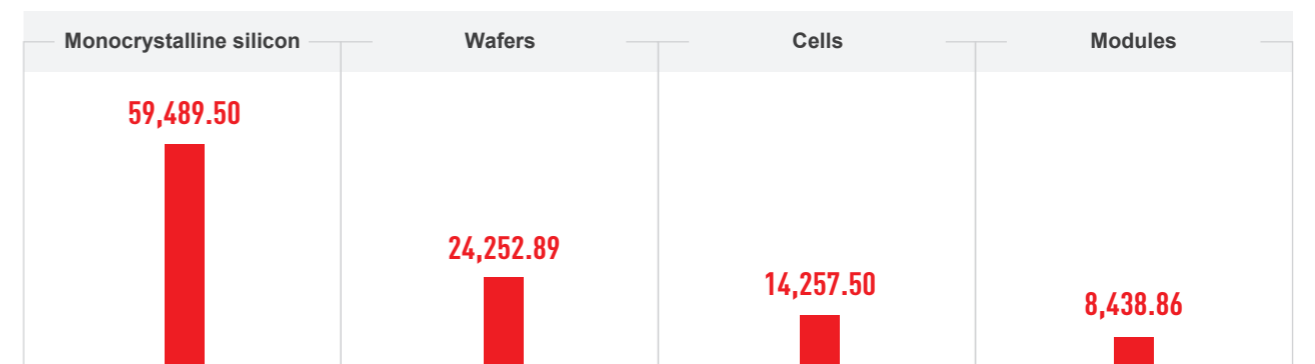
### LONGi's power consumption reduction v.s. base year target (2021-2023)



In 2023, we further improved the energy utilization in the production process of our products, implemented technological transformation for the different products based on their characteristics (e.g. monocrystalline, wafer, cell, and module), and managed to save energy during the whole process.

Monocrystalline silicon	Wafers	Cells	Modules
Using the waste heat of the air compressor, we can heat the pure water in the washing machine and increase its temperature by 25~30°C, thus saving the power originally required for the process	Utilizing the cool air outdoors in winter, we can shut down the chiller unit and still cool off the chilled water used for the slicing process	Fully leveraging the waste heat, we can heat the pure water used in the surface texturing water heater to reduce the power and water consumed	Dual-channel air supply through the stringer can help us increase the volume of air supply, reduce the set pressure at the power station, and thus save the energy consumption of the compressed air system
Estimated annual electricity savings	Estimated annual electricity savings	Estimated annual electricity savings	Estimated annual electricity savings
<b>61.78</b> million kWh	<b>6.32</b> million kWh	<b>11.17</b> million kWh	<b>2</b> million kWh

### 2023 specific electricity saving by product<sup>1</sup> (10k kWh)



1. Calculation method for product power saving: product power saving = Σ type of product (power consumption in the previous year - power consumption in the current year) × product output this year

## 2.2

### Water Resources Management

Water resources management is a crucial strategic goal of sustainable development for LONGi. Following the *Water Law of the People's Republic of China* and other local laws and regulations of the places where we operate at home and abroad, we have formulated the *Water Conservation Management Policy* and other management policies, set up a water resources management leading group with the Chairman as the head and the energy management leading group office as a subordinate body, and implemented the water conservation management policy of “environmental compliance, water conservation priority, economic discharge, and scientific management”.

### Water Risk Assessment

LONGi conducts an annual inventory of water resources in all its factories based on the World Resources Institute (WRI) water risk atlas, and takes the risk levels of water resources as an important reference in the setting of water conservation targets. In 2023, we conducted a water risk assessment for all operating locations. The results showed that a total of 20 bases were located in high-risk areas (57.1%), of which 15 were extremely high-risk areas and 5 were high-risk areas, and the regions affected by water shortage mainly included Ningxia, Inner Mongolia, and Shaanxi.

#### Inner Mongolia

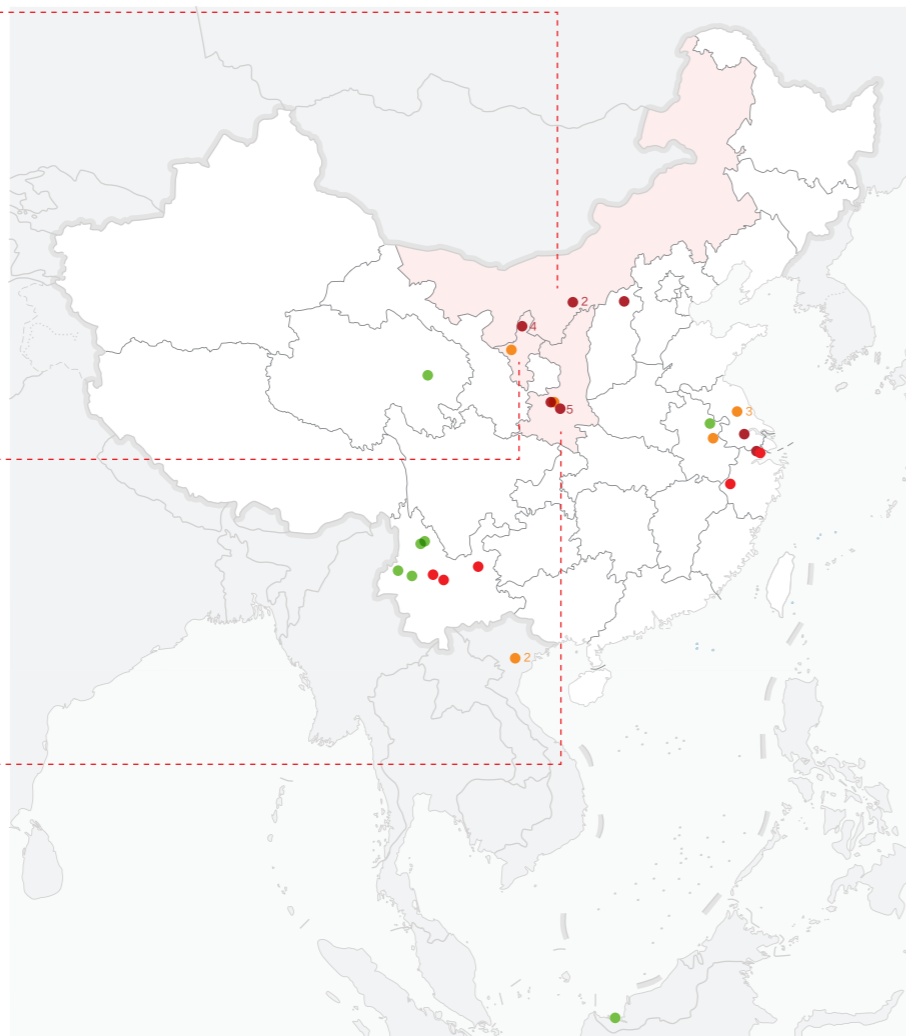
- Proactively using high-quality reclaimed water and coal mine drainage as alternative water sources, greatly reducing dependence on natural water resources
- Launching the “zero discharge” project, where production wastewater is specially treated and recycled with no wastewater discharged from the plants
- Reducing water consumption through process upgrading, water conservation projects, etc

#### Ningxia

- Installing reclaimed water and concentrated water reuse equipment, achieving an annual reclaimed water and concentrated water reuse amount of 9.361 million tonnes
- Reducing water consumption through process upgrading, water conservation projects, etc.

#### Shaanxi

- Building new plants for the “zero discharge” project with a maximum recovery rate of 97% in Xixian, Tongchuan, and Weibei
- Recycling rainwater as an additional water source
- Reducing water consumption through process upgrading, water conservation projects, etc.



● Extremely high ● High ● Medium ● Low

Responses in key areas affected by water shortage

### LONGi's responses in areas with different water risk levels

Water stress level	Number of bases	Water-saving measures					
		Water-saving target formulation	Reclaimed water reuse	Concentrated water reuse	Rainwater recycling	Zero discharge planning	Other water-saving technology upgrades
Extremely high	15	✓	✓	✓	✓	✓	✓
High	5	✓	✓	✓			✓
Medium	8	✓	✓	✓			✓
Low	7	✓	✓	✓			✓

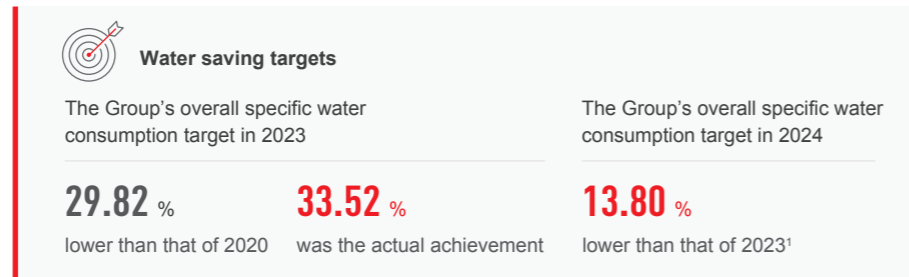
### Water-saving measures

<b>Water-saving target formulation</b>	<ul style="list-style-type: none"> <li>• Establishing water management systems to detect, assess, and improve water utilization</li> <li>• Formulating water-saving policies and plans, clarifying water-saving targets, responsible departments, and implementation steps, and ensuring the implementation of water-saving measures</li> </ul>
<b>Reclaimed water reuse</b>	<ul style="list-style-type: none"> <li>• Conducting wastewater treatment and purification and distributing the recycled water to irrigation, flushing, industrial production, and other activities</li> </ul>
<b>Concentrated water reuse</b>	<ul style="list-style-type: none"> <li>• Collecting production concentrated water and removing particles such as solid particles and metal ions through treatment</li> <li>• Conducting concentrated water treatment and purification through ion exchange and other means</li> <li>• Distributing the recycled water to flushing, industrial production, and other activities</li> </ul>
<b>Rainwater recycling</b>	<ul style="list-style-type: none"> <li>• Designing roof drainage systems and water collection devices</li> <li>• Installing filters to remove impurities and store rainwater</li> </ul>
<b>Zero discharge planning</b>	<ul style="list-style-type: none"> <li>• Assessing wastewater discharge, and recording the source, type, and amount of wastewater</li> <li>• Leveraging the recyclable resources in wastewater and realizing the recycling of energy, water, and materials</li> <li>• Achieving the goal of zero discharge through technology, management, and testing</li> </ul>
<b>Other water-saving technology upgrades</b>	<ul style="list-style-type: none"> <li>• Including technologies such as the reuse of process circulating water, power facilities circulating water, and other types of water (such as condensate water), pure water purification rate improvement, and equipment upgrades to improve water conservation</li> </ul>

## Water Conservation

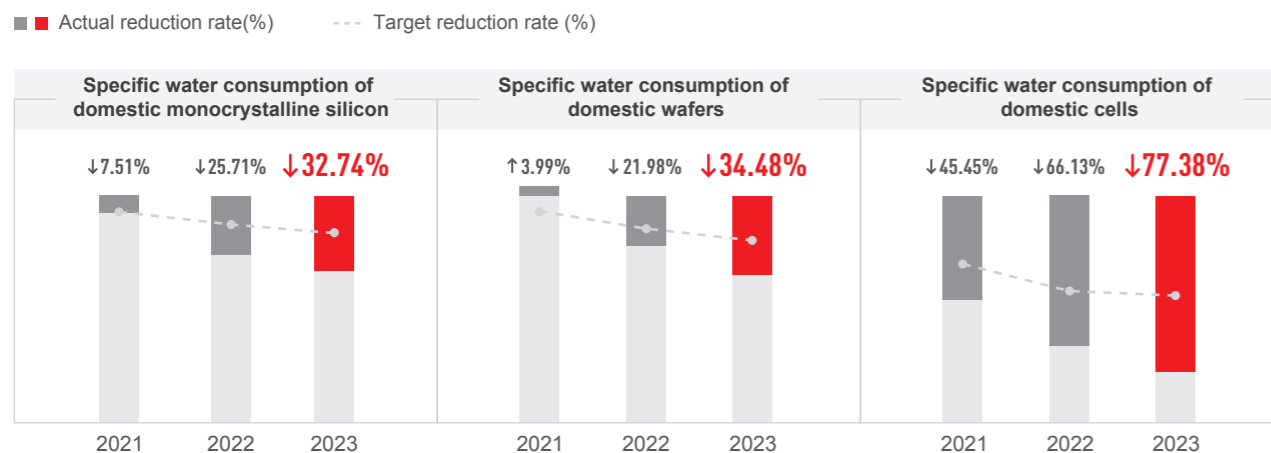
We have incorporated water resources management into LONGi's sustainable development strategy. In line with the management policy of "environmental compliance, water conservation priority, economic discharge, and scientific management", we have formulated the *Water Conservation Management Policy* which includes water-saving management planning, water-saving management implementation, water-saving management performance appraisal, and water-saving management optimization. Meanwhile, we have set up a hierarchical management and control mechanism of production water at the three levels of the manufacturing business group, each center/division, and the base. We have also formulated a performance appraisal mechanism with water-saving target assessment at its core and linked the appraisal results with the remuneration of the persons in charge to promote the extensive participation of all employees in energy management and increase water resource utilization efficiency of the Company.

In 2023, by analyzing the water-saving potential of all production processes and adopting measures such as exploring alternative water sources and optimizing capacity utilization rate, we carried out 118 water-saving process projects within the Group and saved 5.5293 million tonnes of water annually. As a result, the overall water consumption of the Group decreased by 12.75% year-on-year, and 33.52% compared with the base year.



We focus on the water footprint of products, develop tailored water footprint measurement management plans for different types of products, and monitor the water consumption intensity per unit product. In 2023, the reduction rate of water intensity per unit product of mono-crystalline silicon, wafers, and cells exceeded the expected target. Meanwhile, we built production water "zero discharge" plants.

### LONGi's specific water consumption reduction rate v.s. the base year target (2021-2023)<sup>2</sup>

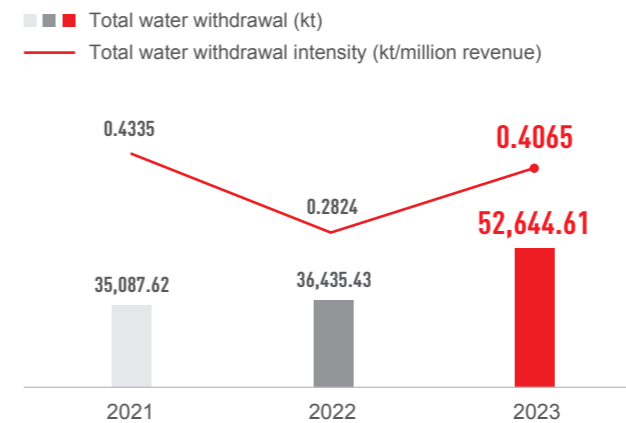


1. LONGi's specific water consumption target and product water consumption target are set in comparison with the base year of 2020. Due to product type adjustment, the targets after 2024 are compared with those in 2023.  
2. Modules require little water consumption and therefore no target has been set.

### Case | The Ordos Plant achieved "zero discharge" of wastewater

In 2023, Ordos LONGi invested in a new "silicon wafer + cell" project. LONGi Ordos took into account the local water resources shortage at the beginning of construction, introduced zero-discharge facilities for industrial wastewater in the design of the project, and built zero-discharge treatment plants and reuse devices outside the plant. By the end of the reporting period, the Ordos Plant had achieved "zero discharge" in its operation. The zero-discharge treatment plants outside the plant had treated 2.7 million tonnes of industrial wastewater, which was from coal mine drainage, and the Ordos Plant used 57,000 tonnes of recycled water from the zero-discharge treatment plants every day. With these efforts, LONGi Ordos has greatly alleviated the current water shortage in Ordos.

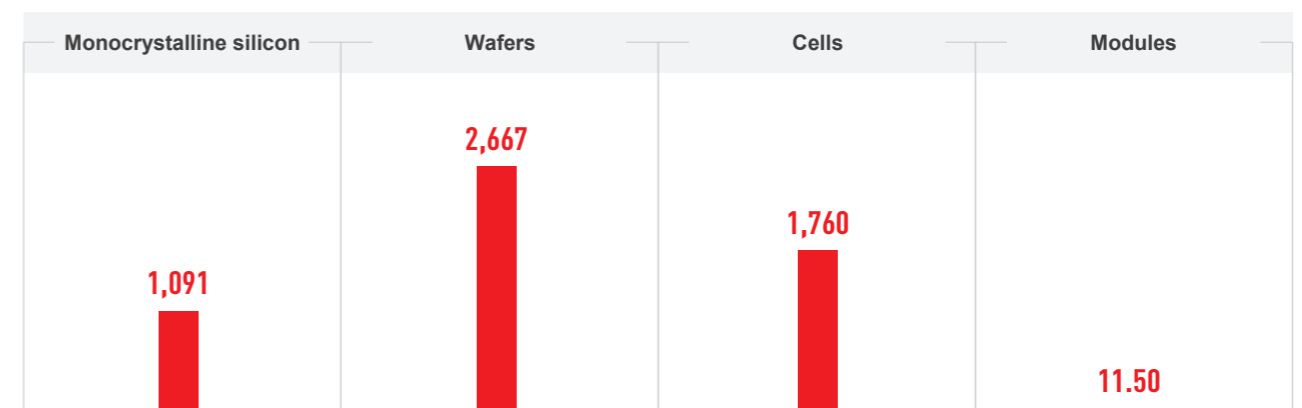
### LONGi's water consumption (2021-2023)



### 2023

Total water consumption	<b>10,922.80 kt</b>
Ultrapure water consumption	<b>28,728.10 kt</b>
Reclaimed water reuse rate <sup>1</sup>	<b>53.82 %</b>
Water conservation	<b>5,529 kt</b>

### LONGi's unit product water consumption (2023)<sup>2</sup> ( Thousand tonnes )



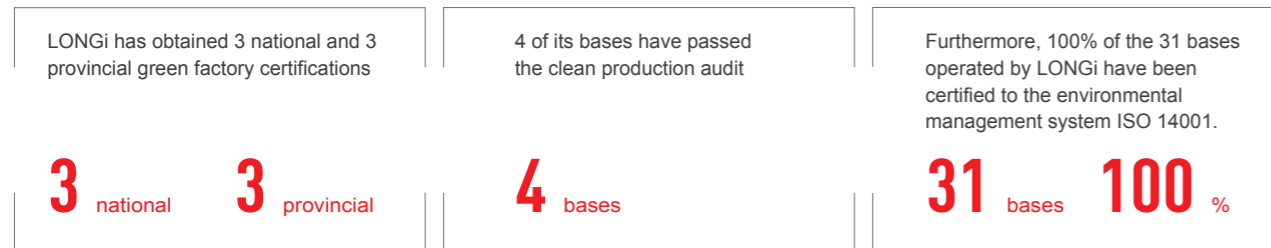
1. Calculation of reclaimed water reuse rate: reclaimed water reuse rate = amount of reused reclaimed water ÷ total amount of water withdrawal × 100%  
2. Calculation of product water conservation: product water conservation = ∑ product type (specific water consumption last year - specific water consumption this year) × product output

## 2.3

### Clean Production

LONGi continues to improve the refined environmental management in the process of production and operation, increase investment in environmental protection, and reduce environmental impact. Following the national policies on clean production audit, we have established an environmental management system led by the Company's EHS Management Committee. In 2023, LONGi invested a total of RMB558.33 million in environmental protection and recorded zero major illegal emissions and leakage incidents.

As of the end of the reporting period



### Environmental management

LONGi's main system documents on internal environmental management

*Environmental Protection Control Procedure*

*Waste Gas Management Policies*

*Technical Guidelines on the Operation and Supervision of Waste Gas Treatment Facilities (New)*

*Rainwater and Wastewater Management Policies*

*Solid Waste Management Policies*

*Technical Guidelines on Hazardous Waste Management (New)*

In 2023, LONGi launched specialized inspections and empowerment initiatives to bolster the implementation of environmental management systems and enhance overall environmental management skills. We conducted specialized managerial tasks to standardize environmental practices, creating assessment checklists based on policy requirements, and performed targeted inspections at all bases, promoting hazard rectification. We recognized four bases as "model bases" for excellence in environmental management. At the same time, systematic empowerment was provided to all sites through training and seminars. At the group level, 14 internal empowerment sessions were held with 1,554 participants; business units and centers conducted 163 hours of cascaded training with 17,523 person-times of participation; on-site seminars established communication platforms that generated solutions for 27 existing challenging issues. Additionally, to drive the standardized management of "environmental investment" data, we refined the definitions of environmental investment categories, achieving one-click retrieval of environmental investment data.



1. LONGi's standardized environmental management model bases in 2023 are: Shaanxi LONGi Solar, Lijiang LONGi Silicon Wafer Production Base and Huaping LONGi Silicon Wafer Production Base (participating as a single team), LONGi Hydrogen in Yanliang, and Jiaying LONGi Solar.

### Waste gas management

The waste gas produced by LONGi mainly includes nitrogen oxides, sulfur oxides, particulate matter, etc. We formulated emission reduction management plans for different manufacturing processes and carried out inspections and emission reduction guidance in 31 operating bases during the reporting period to ensure the implementation of relevant standards.

In 2023, LONGi's production bases proactively upgraded waste gas treatment facilities to improve treatment efficiency and reduce emissions of nitrogen oxides and volatile organic gases. Among them, the new wet scrubbers of Qijing Mono-crystalline Silicon Plant have improved the capacity of nitrogen waste gas treatment devices, raising the acid fog waste gas treatment efficiency to more than 95%. Moreover, Xi'an Module Plant has upgraded the treatment process of lamination waste gas and added the regenerative catalytic combustion process to improve the treatment efficiency of non-methane hydrocarbons.

Manufacturing process	Surface texturing and diffusion	Laser selective emitting (SE)	Wet etching	Coating	Laser grooving	Screen printing
Waste gas types	Hydrogen chloride, fluoride, chlorine	Particulate matter	Nitrogen oxide, fluoride	Ammonia, particulate matter	Particulate matter	Non-methane hydrocarbon (NMHC)
Emission reduction measures	Second-level alkaline spraying	Pulse or bag dust collectors	Fourth-level alkaline spraying; More wet scrubbers to improve nitrogen waste gas treatment capacity	Silane combustion, dust collectors, and first-level spraying	Pulse or bag dust collectors	Activated carbon adsorption boxes

LONGi's regular waste gas emission reduction measures in manufacturing processes



1. In 2023, the Group put into operation a new cell and silicon wafer production plant. The production capacity was therefore greatly increased, resulting in a significant increase in waste gas emissions. At the same time, we have implemented centralized treatment of the unorganized waste gas from the factories in operation before discharge, so as to increase the accuracy of the waste gas emission statistics.  
 2. In 2023, the Group improved the cell production process to reduce the use of nitric acid and nitrogen oxide emissions.  
 3. In 2023, most of the boiler facilities at the Group's module production bases were not in operation, resulting in a reduction in sulfur oxide emissions.  
 4. The emission of chlorine gas in 2022 was calculated according to the instantaneous air volume of the test report, and the emission of chlorine in 2023 was calculated according to the rated air volume of the fans.  
 5. Some overseas bases did not carry out tests in 2023, because the local government (such as Vietnam) did not release control indicators.  
 6. Other waste gas emissions mainly include volatile organic compounds (VOC), non-methane hydrocarbons, sulfuric acid fog, hydrochloric acid fog, etc.



## Wastewater management

LONGi's industrial wastewater is mostly generated during processes such as silicon rod slicing, cell production, preparation of concentrated water, and ground cleaning. To mitigate water pressure and environmental impact, we have been improving the capacity of wastewater treatment to ensure that wastewater meets the discharge requirements before entering the municipal pipe network. In 2023, we adopted measures such as coal mine drainage recycling and evaporation and filtration wastewater recycling, which further reduced production wastewater discharge.

### Case | LONGi implemented the wastewater treatment capacity improvement project

In 2023, several production bases of LONGi carried out wastewater discharge reduction projects. Shaanxi LONGi solved the problems of chloride ion erosion in the original ultrafiltration (UF) system, second-stage membrane fouling in reclaimed water reverse osmosis (RO), and the low position of the drainage pipe of the reclaimed water and concentrated water tanks. In doing so, Shaanxi LONGi ensured a more environmentally friendly and stable reclaimed water treatment system and reduced tap water consumption by 1.26 m<sup>3</sup>/10,000 wafers. In response to the increase in wastewater pollutants caused by greater production capacity, some of LONGi's production bases in Yunnan, Ningxia, and Xi'an have upgraded the wastewater treatment system and installed the Fenton treatment system, effectively controlling the discharge of chemical oxygen demand (COD) in wastewater.

### LONGi's wastewater discharge in 2023



Wastewater discharge  
**42,351** kt

Wastewater discharge-  
municipal drainage  
**39,329** kt

Wastewater discharge-  
surface water  
**3,022** kt

COD emission  
**3,648** t

Ammonia nitrogen emission  
**72,252** kg

Total phosphorus emission  
**12,018** kg

Suspended solid emission  
**580,921** kg

## Solid waste management

LONGi has established a complete system for technical guidance and regular diagnosis and assessment to improve waste management ability. For the disposal of hazardous waste, we entrust third parties with business licenses of hazardous waste utilization or disposal and track the entire process to ensure the closed-loop management of hazardous waste. For non-hazardous waste treatment, we mainly adopt comprehensive utilization by selling, supplemented by disposal, to improve the recycling rate of non-hazardous waste.

In 2023, we carried out a special project to recycle solid waste and reduce emissions at the source. Specifically, we minimized solid waste generation by identifying dangerous characteristics and selling the recycled solid waste as by-products. As a result, the recycling rate of non-hazardous waste increased to 73.3%.

### LONGi's solid waste generation in 2023



Hazardous waste transported for disposal  
**41,224.88** t

Landfills  
**28,576.54** t

Waste incineration and energy recovery  
**12,648.34** t

Hazardous waste disposed of by LONGi  
**0** t

Hazardous waste recycled  
**694.81** t



Recyclable non-hazardous waste  
**323,803.54** t

Non-hazardous waste recycling rate  
**73.3** %



Unrecyclable non-hazardous waste  
**117,850.58** t



Landfills  
**93,260.47** t

Waste incineration and energy recovery  
**24,590.11** t

## 2.4 Circular Economy

LONGi follows the 14<sup>th</sup> Five-Year Plan for Green Industrial Development, 14<sup>th</sup> Five-Year Plan for Circular Economy Development and EU's A New Circular Economy Action Plan and other relevant policies and initiatives at home and abroad, adheres to the product design concept of minimizing environmental impact, and prioritizes energy saving and environmental protection in the whole lifecycle of products. Under the premise of ensuring product quality, LONGi has reduced the impact of packaging on the environment through the use of renewable, recyclable, and other environmentally friendly materials and optimized the logistics and product recycling system to promote the sustainable development of the PV industry chain.

Link	Concepts	Achievements in 2023
 <p>Product design</p>	<ul style="list-style-type: none"> <li>Implementing the "Four New" initiative, which aims to achieve process upgrading and technological advancement through new materials, new processes, new technologies, and new pattern;</li> <li>Advocating the principle of waste-free design;</li> <li>Designing more recyclable products to improve the recyclability and material efficiency of our own products;</li> <li>Reducing the carbon footprint during the entire product lifecycle;</li> <li>Extending the quality guarantee time and the service life of modules;</li> <li>Increasing recyclable materials and reducing the non-recyclable materials in modules;</li> <li>Reducing the use of harmful chemicals and the environmental impact of PV modules at the manufacturing and end-of-life stages.</li> </ul>	<ul style="list-style-type: none"> <li>Developing fluoride-free solar backplanes to reduce the use of fluorine as a non-recyclable material;</li> <li>Obtaining the LEED certification of PV CYCLE, which proves that all of LONGi's PV products meet the <b>100%</b> recyclable standard;</li> <li>PV cells: achieving a product recovery rate of 100%; for silicon-based PV cells, <b>93.5%</b> were recovered directly and <b>6.5%</b> were recovered by incineration; for non-silicon-based PV cells, <b>98%</b> were recovered directly and <b>2%</b> were recovered by incineration;</li> <li>Module products: achieving a utilization rate of recyclable materials of over <b>5%</b>, and using <b>10%-30%</b> recycled glass in the backplanes; compared with 2018, the unit consumption of aluminum frame and film was reduced by <b>33%</b> and <b>20%</b> respectively.</li> </ul>
 <p>Green packaging</p>	<ul style="list-style-type: none"> <li>Paying close attention to policies such as the 14<sup>th</sup> Five-Year Plan for Green Industrial Development, implementing green production, building green factories and reducing carbon footprints of products</li> <li>Source reduction: improving the efficiency of material usage within the standard range, manufacturing recyclable and repairable products, and adopting module designs that feature cost reduction, efficiency improvement, and quality assurance at the commercial level, to enhance the market competitiveness of products;</li> <li>Giving priority to recyclable and renewable materials in the production and manufacturing of PV products;</li> <li>Abiding by the internal documents on packaging recycling in the warehouses and keeping the standing books of the information and amount of packaging materials expected to be recycled and actually recycled everyday.</li> </ul>	<ul style="list-style-type: none"> <li>Promoting the recycling of waste paper pulp for carton packaging;</li> <li>Cooperating with suppliers to actively explore new ways to recycle packaging materials such as replacing the original packaging with pallet boxes for silicon materials to achieve silicon packaging recycling;</li> <li>LONGi's silicon wafers and cells sold domestically now boast <b>100%</b> recyclable packaging, with a coverage rate of <b>97%</b> across all domestic bases</li> <li>Moving away from the constraints of traditional cardboard packaging—its limited reusability, inability to be stacked, poor suitability for automated packing, and restricted transport efficiency—LONGi has been advocating for and adopting recyclable PP packaging solutions.</li> </ul>

Link	Concepts	Achievements in 2023
 <p>Transportation</p>	<ul style="list-style-type: none"> <li>Promoting circular packaging in product transportation and realizing packaging reuse from the transportation end to the delivery end;</li> <li>Improving the efficiency of resource utilization in multiple links, such as packaging, storage, and transportation, and building a sustainable, intelligent, and information-based logistics system;</li> <li>Implementing a highly efficient logistics model and planning eco-friendly economic routes that reduce unnecessary intermediary steps.</li> </ul>	<ul style="list-style-type: none"> <li>Establishing and improving a green logistics and transportation system to achieve carbon reduction in the whole process from consolidation to delivery of goods;</li> <li>Establishing a visualized full-process transport status online platform: The platform offers real-time risk alerts and contingency plans, ensuring <b>100%</b> visibility of external customer order statuses, with a <b>64%</b> ratio for both domestic and international electronic proof of delivery (ePOD) signing. Additionally, it integrates an NPS customer satisfaction survey system to amplify coordination efficiency internally and externally;</li> <li>Building an integrated logistics and warehouse network: By syncing real-time with delivery schedules and customer orders, LONGi planned transport routes and methods in advance. Utilizing various intermodal transport options, such as railroad (rail trains and cars) and rail-sea (rail trains and ships) and establishing advanced/central warehouses with a container storage strategy, the Company effectively minimized unnecessary warehousing and short-haul transit, thereby reducing logistics waste;</li> <li>Selected as a case study company for a global sustainable supply chain student competition, LONGi supported the Tsinghua University student team who achieved the global bronze award.</li> </ul>
 <p>Product recycling</p>	<ul style="list-style-type: none"> <li>Conducting scientific treatment of waste modules in strict accordance with EU's <i>Industrial Emissions Directive</i> (IED) 2010/75/EU and <i>Waste from Electrical and Electronic Equipment Directive</i> (WEEE Directive).</li> </ul>	<ul style="list-style-type: none"> <li>Proactively carrying out research on the recycling process of scrap electronic and electrical equipment;</li> <li>Assisting customers in the collection, grouping, treatment, and preparation of waste PV solar panels;</li> <li>LONGi's silicon-based PV panels achieve a recovery rate of <b>100%</b>, of which <b>93.5%</b> can be directly recycled and the remaining <b>6.5%</b> can be recovered by incineration. For non-silicon-based PV panels, we also achieved a <b>100%</b> recovery rate, with up to <b>98%</b> being recycled directly and the remaining <b>2%</b> being recovered by incineration.</li> </ul>

LONGi's full-chain circular economy concepts and practices

Case | **LONGi built a green logistics system**

In 2023, LONGi improved the efficiency of resource utilization in multiple links such as packaging, storage, and transportation, and built a sustainable, intelligent, and information-based logistics system;



LONGi's logistics visualization platform

- **Multi-modal transportation** adopting the mode of “overseas railway - offshore barge - inland water transportation - cross-channel ferry” to reduce environmental pollution during transportation;
- **Containers instead of warehouses** replacing warehouses with containers for storage and transportation to increase operational flexibility and reduce resource occupation;
- **Cooperation with shipowners** reaching strategic cooperation with ports and logistics enterprises to realize the efficient allocation of resources from different parties;
- **Green transportation** achieving green transportation at the source by adopting new energy heavy trucks, drop-and-pull transportation, and other modes;
- **Warehouse network planning** planning the optimization plan of warehouse allocation to shorten transportation distance and expand distribution radiation range, and establishing a scientific global logistics network;
- **Recycling** realizing 100% recyclable packaging in the 14 transportation routes between the silicon wafer production bases and cell production bases, and reducing the annual cost by about RMB23 million;
- **Logistics digitalization** launching a whole-process transportation status visualization platform, realizing logistics route planning, risk warning, and other functions, and improving the efficiency of logistics transportation.

In 2023, LONGi had been assisting customers in completing the collection, grouping, treatment, and preparation of waste PV solar panels. As a member of PV Cycle, a world-leading waste management organization, LONGi has established close cooperation with partners such as Soren, Open, and 3Drivers to jointly promote the sustainable development of the PV industry. As of the end of the reporting period, LONGi has registered waste electronic recycling businesses in Belgium, the United Kingdom, France, Germany, Italy, the Netherlands, Portugal, Spain, and other countries, making positive contributions to building a circular economy.



LONGi obtained the PV CYCLE membership



LONGi established close cooperation with Soren

## 2.5

### Biodiversity Conservation

LONGi places a high value on biodiversity conservation in the process of production, operation, and project development. We require all construction projects to identify and evaluate the impact on the ecological environment and biodiversity during project design and give priority to the principle of avoidance to avoid the sensitive and vulnerable areas in the ecological environment to the greatest extent. In 2023, we did not own, lease, or manage any operational sites in or adjacent to conservation areas and areas of high biodiversity value outside conservation areas.

#### Design and planning

- Carrying out ecological base research on the project sites to understand the local species and their growth characteristics with a focus on the factors related to biodiversity conservation, and giving priority to the protection of endemic species and their habitats;

#### Construction

- Strictly abiding by the relevant laws and regulations on biodiversity conservation, and conducting environmental impact assessments following the “three simultaneity” principle;
- Using more materials, devices, and equipment that benefit biodiversity conservation in the construction process;
- Focusing on the prevention and control of pollutants that have a major impact on the surrounding ecological environment;
- Carrying out ecological restoration in the affected areas during the construction process and ensuring maintenance in the later stage.

#### Operation and maintenance

- Carrying out regular inspections on potential environmental hazards, and conducting timely protection and restoration;
- Carrying out ecological protection publicity and education for employees to raise their awareness of biodiversity conservation.

Biodiversity conservation throughout the whole lifecycle of projects

#### Case | LONGi's high-efficiency PV modules help build the nation's largest single-installed PV power plant

Shengli No. 1 Open-pit Coal Mine is one of the coal mines of the Shengli mining area in Mengdong Base, one of the thirteen large coal bases in China. Its dumps are featured by sparse vegetation and high dust levels on bare grounds. According to the geographical characteristics of the project location, LONGi built a PV power station with an area of 50,000 acres, the largest open-pit PV project in China, on the three idle dumps in the open-pit mining area. On the one hand, this power station reduces the evaporation of surface water by 20%-30% through physical barriers, improves the living environment of plants, and helps ecological restoration. On the other hand, it brings economic benefits to the local area through the generation of green electricity.

As an important clean energy supply base of Xilin Gol League, this project generates 224 million kWh of green electricity annually, saving 98,700 tonnes of standard coal and reducing 295,000 tonnes of carbon emission.



The open-pit dump PV power station of Shengli Energy Co., Ltd. under CHN Energy Investment Group

LONGi attaches great importance to cultivating employees' awareness of biodiversity conservation and integrates biodiversity protection awareness into daily business activities in various forms. In 2023, we organized a special training on biodiversity and invited industry experts to introduce the “Kunming-Montreal Global Biodiversity Framework”. We announced the “Zero-Carbon Life Plan for Pandas”, which leverages PV technology to promote climate action and biodiversity conservation, in a side meeting themed “Green Energy Powers Climate Action and Biodiversity Conservation” at Solar+ Pavilion in the Blue Zone of COP28.



Case

### LONGi released the “Zero-Carbon Life Plan for Pandas” and officially joined the giant panda protection public welfare

In December 2023, LONGi released the “Zero-Carbon Life Plan for Pandas” at COP28. The project used Hi-MO X6 Scientist series modules to build a distributed PV power station for the Foping Rescue, Breeding and Research Base of Qinling Giant Panda (Foping Panda Base), and announced the lifelong adoption of a Qinling giant panda named “HiMO”, marking the start of a journey of giant panda protection. At the same time, in consideration of the off-grid electricity consumption of Foping National Nature Reserve, PV technology is used to provide products and technical support for the fire prevention video system and wildlife dynamic monitoring video system of the reserve, as well as providing green electricity for other facilities in the reserve.

# 03

# Supply Chain

## Topics covered in this chapter

Supply Chain Management System	71
Sustainable Procurement	74
Supplier Collaboration and Empowerment	79

## In response to SDGs



# 3.1 Supply Chain Management System

LONGi strictly adheres to the laws and regulations of operational sites both at home and abroad such as the *Tendering and Bidding Law of the People's Republic of China*. We have established comprehensive supplier management processes, covering access evaluation, risk identification, performance assessment, annual audits, and corrective action implementation for non-conformities. This full-process management of suppliers minimizes supply chain risks to the greatest extent.

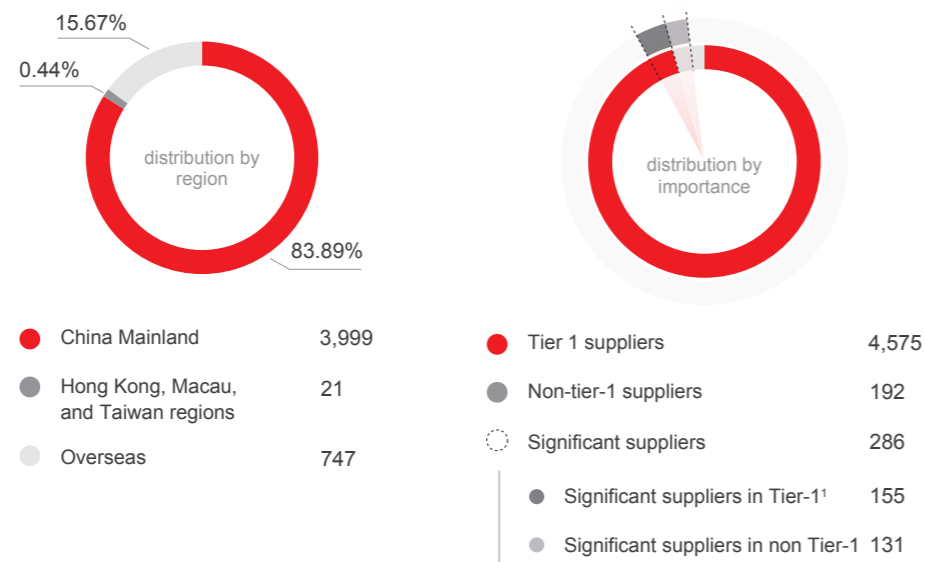
## Supplier Management Mechanisms

LONGi has formulated the *Supplier Management Procedures*, *Supplier Recruitment Management Measures*, *Supplier CSR Management Measures*, and revised and added *Supplier Development Management*, *Supplier Exit Management*, *Supplier Performance Management*, and *Supplier Communication Management*, totally 17 internal management documents. These documents break down the management framework into detailed rules and processes, achieving systematic and standardized supplier management and control.

As of the end of the reporting period, LONGi had a total of

**4,767** suppliers

### Number of suppliers in 2023



### Supplier map

Silicon material regional distribution		Module material regional distribution				Overseas suppliers regional distribution		
Sichuan	Jiangsu	Jiangsu	Shaanxi	Hebei	Hunan	Vietnam		
Inner Mongolia	Ningxia	Zhejiang	Henan	Jiangxi	Liaoning	Singapore		
Qinghai	Shaanxi	Anhui	Shanghai	Fujian	Ningxia	Malaysia		
Yunnan	Overseas	Sichuan	Guangdong	Guangxi	Tianjin	Germany		
					Overseas	the United States, and others		

1. The procurement expenditure on LONGi's significant tier 1 suppliers accounted for 85% of the total procurement budget, and 357 diversified have completing registration.

LONGi is dedicated to fostering a fair, just, transparent, and efficient supplier management system. In 2023, LONGi refined the structure of the Supplier Management Committee, clarifying functions at all levels to achieve a more efficient and professional specialization and collaboration. This ensures that management tasks are handled with a dedicated and meticulous approach.

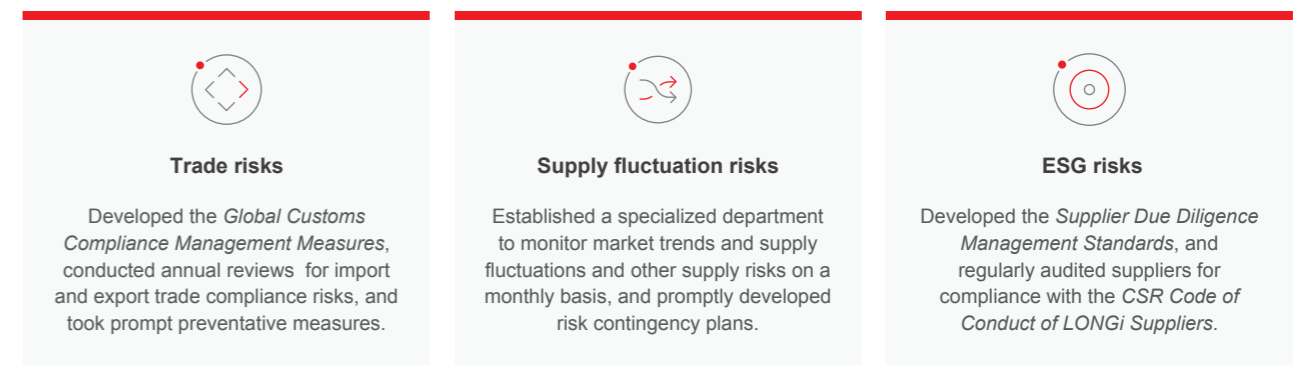


Structure of Supplier Management Committee

LONGi categorizes suppliers based on their operational characteristics and cooperation performance, scoring collaborative suppliers monthly, biannually, or annually by the dimension of quality, costing, delivery, service, technique, and ESG performance. Based on the scores, suppliers are classified as A, B, or C grading, with corresponding rewards or penalties accordingly.

## Supply Chain Risk Management

To ensure the stability and security of the supply chain, LONGi established a comprehensive risk monitoring mechanism, regularly assessing and updating supply chain risks to ensure promptness and effectiveness in risk management.



LONGi's supply chain risk management measures

In 2023, a total of

**158** suppliers

underwent annual CSR due diligence audits

covering

**83** %

of the expenditure, with

**0**

material violation of either being assessed as significant actual or potential negative impacts, or being terminated cooperations for significant actual or potential negative impacts

LONGi reviews suppliers' environmental and social risks through internal and external assessments. In the supplier access process, we conduct rigorous social responsibility risk screenings. After the supplier are approved, during the whole cooperation process, we introduce authoritative third-party risk tools to supervise suppliers' dynamic business qualifications, legal records, compliance risks, and environmental violations.

In 2023, LONGi conducted its annual due diligence surveys to identify suppliers ESG risks, covering environmental management, human rights and labor protection, health and safety, business ethics, and corruption prevention. We crafted and carried out supplier ESG risk surveys, clearly requiring procurement employees to record supplier performance in the Supplier ESG Risk Survey Form. At the same time, we conducted annual supplier ESG on-site audits. Based on scores and findings, suppliers were categorized and managed accordingly. For high-risk suppliers, we actively coached them to carry out rectification and conducted regular re-audits to ensure closed-loop corrections.

**Findings and Corrections in the CSR due diligence**

Percentage <sup>1</sup>	Category	Findings	Corrections
31 %	Labor rights	⊗ Regular collection and feedback of employee complaints were not conducted.	✔ Improved the appeal mechanism by establishing an anonymous complaint channel for regular collection and feedback of employee complaints.
		⊗ Employees bear the pre-employment medical examination fee.	✔ The medical examination fee incurred by the employee due to employment is borne by the employer.
1 %	Business ethics	⊗ Managers and relevant employees were not required to conduct regular self-inspections, nor were effective preventive and corrective measures developed based on self-inspection results.	✔ Enhanced the business ethics management system and established an internal self-inspection and correction mechanism.
5 %	Environmental protection	⊗ Lack of operation and maintenance records for waste gas and wastewater treatment facilities.	✔ Established operation and maintenance records for waste gas and wastewater facilities.
		⊗ Chemical MSDS <sup>2</sup> were not posted as required.	✔ Trains chemical management personnel to post MSDS as required.
48 %	Health and safety	⊗ Fire protection facilities (such as fire extinguishers and fire hydrants) are not checked in time.	✔ Improve the three-level responsibility system of safety management, comprehensively investigate the risk of fire protection system, and maintain the normal operation of the system.
		⊗ No medicine dispensing list prepared.	✔ Set up medicine dispensing management measures.
15 %	Management system	⊗ Sub-suppliers' signing rate of the Supplier CSR Code of Conduct is less than 100%	✔ Required suppliers to monitor sub-suppliers and sign the <i>CSR Code of Conduct of Suppliers</i> .
		⊗ Suppliers do not regularly carry out CSR risk assessment and classified management.	✔ Mandated suppliers to conduct CSR risk assessments and management to meet LONGi's requirements.

1. The procurement spending on LONGi's significant tier 1 suppliers accounted for 85% of the total procurement budget, and 357 diversified have completed registration.

2. Chemical MSDS refers to the Material Safety Data Sheet, which includes essential information on chemical hazards, safety precautions, and measures to be taken in emergency situations.

## 3.2 Sustainable Procurement

LONGi is dedicated to implementing sustainable procurement practices, striving to establish a green and responsible supply chain. We encourage our suppliers to enhance their environmental and safety management performance and ensure labor rights are protected within the supply chain, working hand-in-hand with our suppliers to build a dignified and ethical workplace environment. In line with standards such as ISO 26000, SA 8000, and relevant laws and regulations, we have developed the *Supplier CSR Management Measures*, integrating supplier CSR management into the entire procurement lifecycle and creating a comprehensive compliance management system from supplier development to cooperation management and exit management, promoting sustainable procurement, and promoted the construction of a green and responsible supply chain.

### Supply Chain Responsibility Management

LONGi has established a supply chain CSR management team, built a supplier CSR lifecycle management system, and promoted the Group's responsible procurement practices. By the end of 2023, the signing rate for the CSR Code of Conduct of LONGi Suppliers reached 100%, and the proportion of new suppliers being screened by social and environmental criteria also reached 100%.

Learn more about the *CSR Code of Conduct of LONGi Suppliers*



## LONGi

### LONGi Supplier CSR Lifecycle Management

Access management	<b>Qualification pre-screening</b>	<ul style="list-style-type: none"> <li>Assessing supplier CSR performance, including the signing of the <i>CSR Code of Conduct of LONGi Suppliers</i>, ISO system certification rate, and CSR threshold indicators performance.</li> <li>Prioritizing suppliers certified with ISO systems.</li> <li>Supplier ESG Risk Questionnaire.</li> </ul>
	<b>Supplier audits</b>	<ul style="list-style-type: none"> <li>Auditing supplier performance and capabilities based on risk levels (including labor rights, environmental protection, product traceability, and business ethics).</li> <li>Focusing on "zero tolerance" clauses like child labor and forced labor, no access once found violation of "zero tolerance" clauses.</li> <li>Requiring corrective actions for non-conforming findings, denying access if criteria are not met upon re-evaluation.</li> </ul>
	<b>Agreement signing</b>	<ul style="list-style-type: none"> <li>Signing relevant agreements with suppliers, including the <i>CSR Code of Conduct of LONGi Suppliers</i> and NDA, and ensuring the suppliers can fulfill their social responsibilities before their access.</li> </ul>
Qualified supplier management	<b>Due diligence</b>	<ul style="list-style-type: none"> <li>Conducting due diligence through desktop and on-site audits to identify supplier CSR risks and take improvement actions.</li> <li>Requiring high-risk suppliers to finish corrective actions within a set deadline, monitoring rectification and tracking the NC-findings to closure monthly.</li> </ul>
	<b>CSR performance evaluation</b>	<ul style="list-style-type: none"> <li>Monitoring and scoring supplier CSR performance and making performance improvements.</li> </ul>
	<b>Empowerment training</b>	<ul style="list-style-type: none"> <li>Regularly conducting supplier CSR system construction training empowerments.</li> </ul>
	<b>Incentives</b>	<ul style="list-style-type: none"> <li>Set up an annual supplier award to motivate and reward suppliers with excellent CSR performance.</li> </ul>
Exit management	<b>Supplier exit</b>	<ul style="list-style-type: none"> <li>Implementing exit measures for suppliers who breach CSR Zero-tolerance management requirements.</li> <li>Inform all suppliers of LONGi's zero-tolerance rules simultaneously.</li> </ul>

▼ LONGi's supplier environmental and social management system certification



Number of suppliers certified with ISO 45001

2,014

Number of suppliers certified with ISO 14001

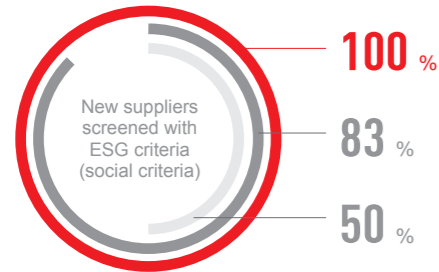
2,271

Number of suppliers certified with ISO 9001

3,519

LONGi's new suppliers screened with social and environmental criteria<sup>1</sup>

■ 2021 ■ 2022 ■ 2023



**Building a green supply chain**

LONGi actively promotes the construction of green supply chain, gives priority to suppliers who have obtained ISO 14001 environmental management system certification, and evaluates the environmental performance of suppliers in supplier assessment, and gives priority to green and low-carbon suppliers under the same conditions.

LONGi defines the requirements of suppliers' green operation behavior, including:

- The suppliers shall handle various matters in accordance with applicable statutory and international standards on environmental protection, including the management of hazardous substances and wastewater.
- The suppliers shall avoid, minimize and offset any material impact of their operations on biodiversity in their production and operation activities where necessary.
- The suppliers shall adopt conservation and alternative measures, e.g. replacing traditional energy with renewable energy, reducing the consumption of energy, water and natural resources, continually promoting energy conservation and emission reduction, and actively practicing the concept of green supply chain.
- The suppliers shall concern about the progress of national and international environmental lawmaking and assess and respond to environmental impacts according to specific projects implemented.

1. Social criteria include signing the *CSR Code of Conduct of LONGi Suppliers*, screening for social risks such as labor disputes, and submitting supplier due diligence questionnaires. Environmental criteria involve the screening for certifications such as ISO 14001 environmental management system, ISO 45001 occupational health management system, ISO 50001 energy management system, or green factory certifications. Additionally, the third-party tool from the Institute of Public and Environmental Affairs (IPE) is introduced to monitor significant environmental non-compliance records.

LONGi has established a mechanism for monitoring and managing supplier environmental violation, using the IPE platform for dynamic monitoring and pushing suppliers to carry out IPE environmental violation rectification and assisting them in removal. In 2023, we monitored 158 key suppliers (accounting for 75% of material procurement expenditure), of which 30 had successfully eliminated negative records after submitting rectification under the joint guidance of the monitoring platform and LONGi. By the end of the report period, 60 of LONGi's key tier 1 suppliers have obtained green factory certification, representing 21% of the total number of key suppliers.

With the effectiveness of our green supply chain management, LONGi became a founding member of SEMI China SCC&ECOPV Alliance<sup>2</sup> in 2023 and won the Outstanding finalist Award of ESG China Awards Green Supply Chain in 2023. In 2024, we plan to further refine green supplier evaluation standards, expand the scope of green supplier management, and improve the green performance of our supply chain.

**Supplier labor rights protection**

LONGi has formulated the *CSR Code of Conduct of LONGi Suppliers*, which provides clear regulations on the protection of labor rights and interests of suppliers, including anti-discrimination, prohibition of child labor and forced labor, fair remuneration, freedom of union and collective bargaining, and responsible raw material sourcing, provide guidance for suppliers on human rights due diligence and social responsibility management.

We require module suppliers (tier 1), component suppliers (tier 2), and key raw material suppliers (tier 3) to adhere to the core conventions and fair provisions of the International Labour Organization (ILO). We also encourage suppliers to create a fair, safe, and healthy working environment for their employees. Suppliers are screened based on their performance in labor management, and we conduct annual CSR due diligence surveys on suppliers, setting ESG scorecards for incoming suppliers. Suppliers involved in labor rights issues such as child and forced labor shall take prompt actions to rectify within a time limit or termination of cooperation. In 2023, through on-site audits, LONGi conducted in-depth confidential interviews with over 400 participants, including senior management, HR, administrative personnel, EHS employees, and operators.

In 2023, LONGi initiated the "diversified supplier" program designed for the supply chain. By setting up rapid registration and star marking in the supply chain system, we can achieve special management to prioritize the diversified suppliers under the same conditions, such as minority enterprises, women-owned enterprises, veteran-owned enterprises, and other socially recognized diversified enterprises. During the reporting year, 357 suppliers registered as "diversified supplier", and successfully established a partnership with a diversified supplier in the Yunnan region that meets the requirements of women-owned enterprises.

**Supplier integrity compliance**

LONGi and its partners are committed to building an "sunshine and transparent" supply chain, conveying business ethics and ethical bottom line of integrity to all suppliers in the supply chain. In 2023, 100% of suppliers signed the integrity agreement. We revisited 590 suppliers as planned and terminated 62 suppliers due to violations of business ethics.

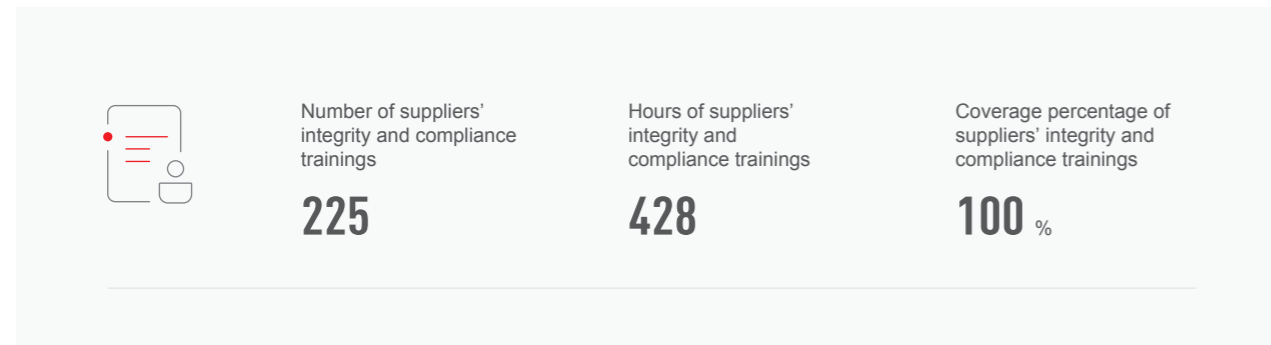
2. SEMI China SCC&ECOPV refers to the Semiconductor Climate Consortium, the climate alliance of the Semiconductor Industry Association in China, and the China ECOPV Alliance, the special committee on photovoltaics within the China Green Supply Chain Alliance.



In 2023, 100% of suppliers signed the integrity agreement

**100** %

- ▼ **Access Phase:** Business ethics is a key selection criteria, ensuring that partners adhere to the philosophy and behavior of business integrity.
- ▼ **Qualified Phase:** Regularly monitor suppliers to ensure compliance throughout the cooperation, resolutely preventing any corrupt violations.



## Responsible Mineral Management

LONGi stated in the *CSR Code of Conduct of LONGi Suppliers* that we commit to neither use nor sell any conflict minerals<sup>1</sup> and requires all direct and indirect suppliers to ensure that their supplied products are free from conflict minerals sourced from high-risk regions. By the end of the reporting period, LONGi's use of conflict minerals is 0, with 0 revenue from products that use conflict minerals, and the signing rate for the *CSR Code of Conduct of LONGi Suppliers* has reached 100%.

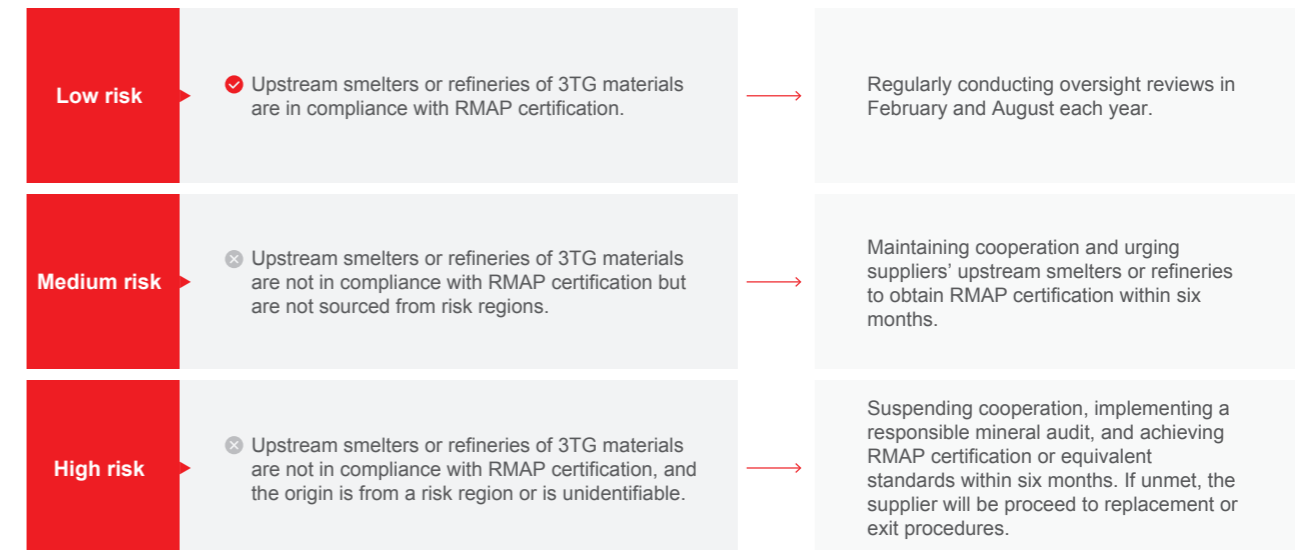
Following the five-step due diligence framework of the Organisation for Economic Co-operation and Development (OECD), LONGi covers the supply chains of all productive materials across the group. We require direct suppliers to complete the Conflict Minerals Reporting Template (CMRT) issued by the Responsible Minerals Initiative (RMI), applicable to 3TG minerals<sup>2</sup>, to identify upstream smelters or refineries and their RMAP<sup>3</sup> certification results. In 2023, LONGi achieved a 100% completion rate for conflict mineral due diligence surveys of suppliers containing 3TG. All six smelters upstream of the 13 suppliers of tin-containing materials across the Group have obtained the RMAP certification and are not involved with conflict-affected and high-risk areas. In 2024, LONGi formulated the *Conflict Minerals Supply Chain Compliance Management Measures*, continuing to refine the standard methodology and procedural guidelines for identifying 3TG materials, conducting supply chain surveys, risk assessments, and tiered supply chain controls.

Additionally, LONGi provides accessible complaint and reporting channels, allowing external stakeholders to report issues related to conflict minerals through diverse channels such as telephone, the "LONGi Honest" WeChat mini program, the Group's audit email, and the SRM portal.

1. Conflict minerals refers to coltan, cassiterite, gold, wolframite and cobalt mined in the Congo and any country with which the Congo has an internationally recognized border or their derivatives.

2. 3TG refers to the four minerals including Tantalum, Tin, Tungsten, and Gold.

3. RMAP, the Responsible Minerals Assurance Process, is an audit program under the Responsible Minerals Initiative.



LONGi's conflict mineral risk management measures

## Supply Chain Traceability

LONGi has always upheld meticulous traceability management with a rigorous attitude, establishing a traceability system that runs through the entire business process. This system ensures a scalable and routine coding management system from raw materials to products, guaranteeing reliable sources and premium quality of raw materials. We have formulated the *Quality Control Business Management Standards* and the *Supply Chain Traceability Management System Manual*. We collaborate with suppliers capable of traceability and who meet traceability regulations, effectively ensuring the safety and traceability of product quality. LONGi has also set up a digital traceability system that enables full chain traceability, from components to silicon mines, using a series of key production and sales information, such as module box numbers, module pallet numbers, cell batch numbers, monocrystalline identification, and silicon material order numbers. Our traceability system has passed audits by the U.S. Customs and Border Protection (CBP) and the Canada Border Services Agency (CBSA) and is capable of customs practices. The traceability system has received high recognition and evaluation from domestic and international customers and third-party institutions multiple times.

In 2023, LONGi tailored supply chain paths for different products and built the traceability service system (TSS) based on customer demands. Codes were assigned to each process along every pathway in the product's entire lifecycle, clarifying the production and sales trajectory and ensuring traceability at the source. We are committed to further optimizing the digital traceability system to offer customers efficient and reliable traceability services.

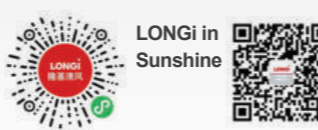
### 3.3

## Supplier Collaboration and Empowerment

Approaching with an open, cooperative, and mutually beneficial mindset, LONGi maintains close communication and collaboration with suppliers to facilitate information exchange and technology sharing. We focus on providing empowerment support to suppliers to jointly address market challenges and achieve mutual growth and prosperity.

### Supplier Communication and Collaboration

LONGi has established a relationship of mutual trust and assistance with our suppliers, building multiple channels for diverse communication. In 2023, we introduced the SRM Supplier Collaboration and Coordination Survey, which encompasses management rules, process transparency, collaboration efficiency, business ethics, and other topics. The objective is to collect supplier feedback and suggestions, enhancing cooperation efficiency with our partners. The survey collected 3,622 responses from 2,992 suppliers, indicating that suppliers have a high understanding of management rules, satisfaction with process transparency, and satisfaction with payment timeliness, overall satisfaction rate being more than 95%.

Day-to-day business coordination	Regular exchanges	Business communication	Open Complaint Channels
<b>SRM</b> Comprehensive business coordination through system modules	<b>Quarterly exchanges</b> Strategic resources	<b>SRM Appeal Center</b> Business & non-business appeals	<b>Group audit e-mail</b> audit@longi.com  <b>Complaint hotline</b> 86 029-84193391 86 18089282003
<b>Collaboration and coordination survey</b> Aimed at continual improvement	<b>Semi-annual exchanges</b> Significant & bottleneck	<b>Public e-mail for supplier management</b> Supply_Chain@longi.com	<b>Due diligence e-mail</b> compliance@longi.com
<b>SRM supplier survey</b>	Annual exchanges  Special communication  Annual audit coaching  Supplier visits	<b>"Four New" collaborative innovation program e-mail</b> scmc-innovation@longi.com	LONGi Honest  LONGi in Sunshine

Embracing openness, achieving continual improvement, engaging in transparent dialogue, and fostering deep collaboration

Supplier engagement channels

LONGi maintained close collaboration with suppliers and propelled the "Four New" cooperative innovation program, and makes joint efforts to successfully promote the landing of a series of innovation achievements, inject new vitality into product upgrading and industry development. With the goal of reducing total costs or improving efficiency, we analyzed the functions and models of our products and services, consistently driving innovation within the supply chain and enhancing the value of customer products or services.

New technologies	New materials	New manufacturing processes	New models
Introduced granular silicon certified with the French carbon footprint by overcoming technological and mass production bottlenecks; promoted new technologies such as liners, quartz boat holder, and felts to create a green, low-carbon, and eco-friendly product suite.	Collaborated on projects involving carbon fiber filaments and optimization of EVA/POE materials.	Collaborated with suppliers to optimize material manufacturing process.	Cooperated with logistics suppliers to adopt innovative logistics route design involvement models, including a digital warehouse network system, digital logistics tracking, and multi-modal transportation, effectively improving logistics efficiency.

"Four New" collaborative innovation program

### Case | LONGi's 2023 Supplier Conference

In June 2023, LONGi hosted the 2023 Supplier Conference. Themed "Cooperation for Innovation Expedition for A Carbon-Free Future", the conference discussed topics ranging from green supply ecology to open innovation, quality ecology, sunshine collaboration, and transparent management. Together with partners, we reviewed this year's implementations and future roadmaps. The conference presented the Outstanding Quality awards, the Collaborative innovation awards, the best collaboration awards, and the new CSR Special Support award to reward suppliers with outstanding CSR performance. More than 3,000 suppliers participated online in the conference, significantly strengthening cooperation and communication between LONGi and its suppliers.



LONGi Green Energy Supplier Conference

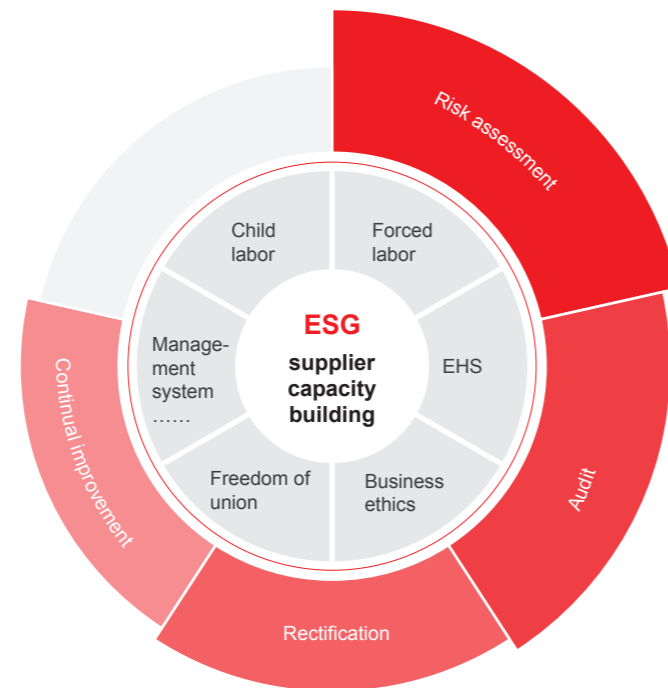
## Supplier Empowerment

Embracing the concept of empowerment, LONGi provides systematic training and professional technical support, promotes the concept of sustainability, improves suppliers' ESG management to a high standard, and collaborates with suppliers to achieve the sustainability of the supply chain. In 2023, LONGi conducted 258 supplier training sessions and carried out offline site visits to 28 key suppliers of 8 major material categories from silicon materials suppliers to module suppliers. We provided specialized guidance on key issues covering environment management, occupational health, production safety, and social responsibility management, enabling suppliers to develop systematic approaches to social responsibility.

During the reporting period, LONGi conducted 28 on-site supplier audits, did not finding any violation of child labor or forced labor; other findings were closed under LONGi's coach and monitoring. Through on-site audits and remediation empowerment, we have driven suppliers to achieve:



In 2023, we launched the Supplier ESG Capacity Building Plan (2024-2028). Significant suppliers involving in this plan accounted for 55%<sup>2</sup> of the total procurement expenditure of significant suppliers, and we plan to gradually increase this proportion to 80% during 2025-2028. We have established four key dimensions: compliance with social responsibility qualifications, management systems, labor rights, and EHS management capabilities, aiming to enhance our suppliers' ESG capability. Through the implementation of this plan, we aspire to encourage suppliers to proactively practice ESG management and establish a sustainable procurement system.



1. SEMTA stands for Sedex Members Ethical Trading Audit. It is an ethical trade audit standard designed to ensure ethics, labor rights, and human rights within global supply chains.

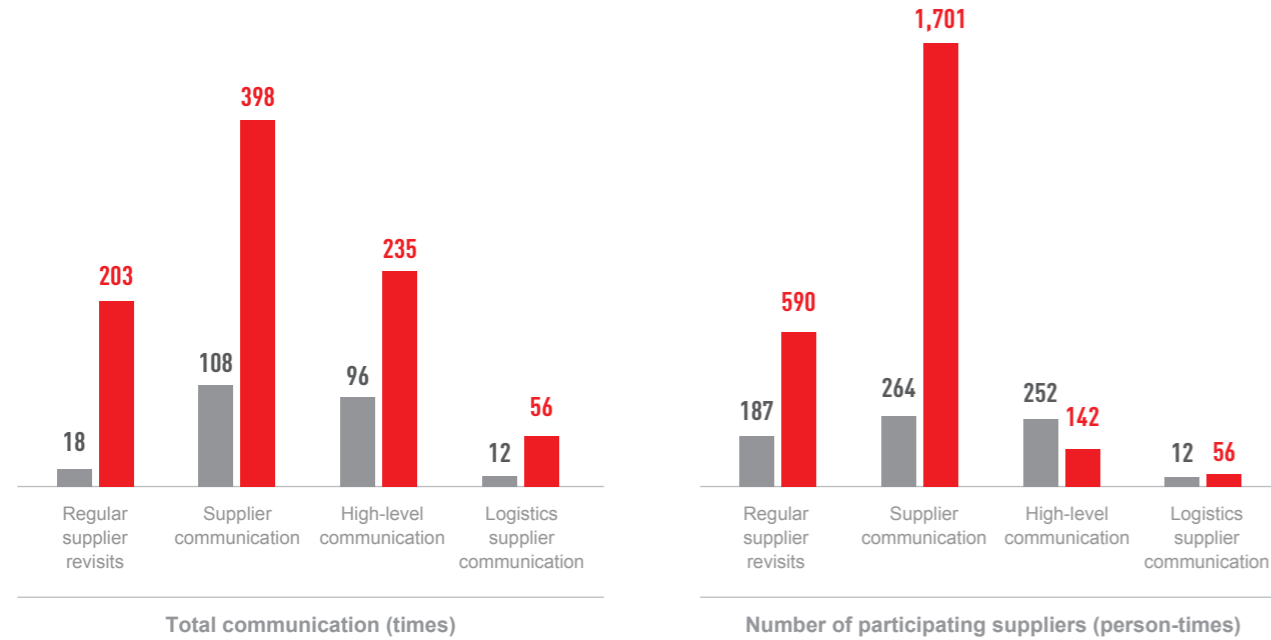
2. Significant suppliers include those identified as posing a significant negative ESG impact risk to the Company or having substantial business relevance to the Company.

Qualification compliance	System capacity building	On-site EHS management
<ul style="list-style-type: none"> <li>Completion acceptance reports checks for the main buildings and subsidiary facilities like factories, canteens, and dormitories.</li> <li>Environmental and occupational health systems.</li> <li>Three-simultaneous Safety Approval (including fire safety, i.e. simultaneous design, simultaneous construction, simultaneously putting into service)</li> </ul>	<ul style="list-style-type: none"> <li><b>Management systems:</b> management manuals, risk management, legal regulation identification, supplier/subcontractor management.</li> <li><b>Labor rights policies:</b> child labor relief and protection policy for underage workers, anti-discrimination policy, anti-harassment and abuse policy, freedom of union policy, reward and punishment policy, protection policy for female employees, etc.</li> <li><b>Environmental and safety policies:</b> occupational health, hazardous sources, labor protection, hazardous operations, special equipment, work-related injuries, etc.</li> <li><b>Business ethics</b></li> </ul>	<ul style="list-style-type: none"> <li><b>Safety of Human:</b> labor protection, safe exits, safe fire facilities, emergency drills, occupational health, etc.</li> <li><b>Safety of things:</b> machinery, chemical, solid and hazardous waste safety, etc.</li> <li><b>Safety of Environments:</b> safe discharge of waste water and gas, toxic and harmful post safety.</li> <li><b>Site management:</b> reasonable shifts, safety training, daily supervision.</li> </ul>

Supplier ESG Capacity Building Plan (2024-2028)

Performance of LONGi's supplier communication performance (2022-2023)

■ 2022 ■ 2023



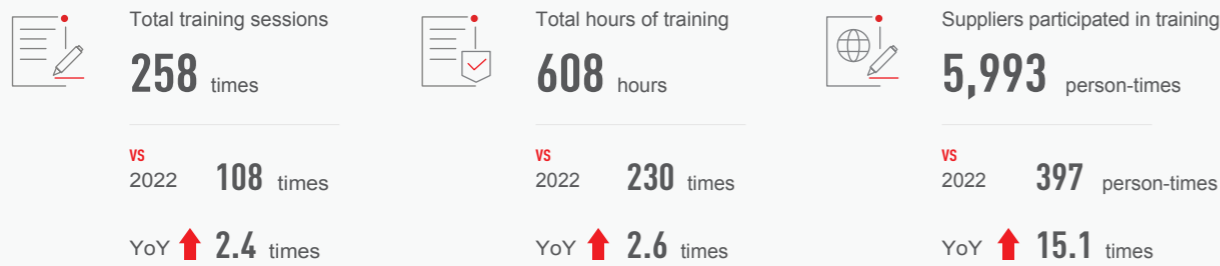
Case | LONGi's "Supply Chain Green Partner Empowerment Program" for supplier carbon management training

In April 2022, LONGi initiated the Supply Chain Green Partner Empowerment Program, partnering with collaborators to advance energy-saving and emission-reduction goals. In 2023, LONGi conducted carbon management empowerment training, assisting suppliers in analyzing energy use and carbon accounting, and sharing insights from energy-saving technological improvement projects. By the end of the reporting period, the program had wrapped up two sessions, attracting over 550 supply chain personnel to engage.



Carbon management empowerment training of LONGi's Supply Chain Green Partner Empowerment program

▼ LONGi's supplier training performance (2022-2023)



# 04

# People and Community

### Topics covered in this chapter

Labor Rights and Interests	87
Employee Development	89
Health and Safety	98
Community Engagement	102

### In response to SDGs



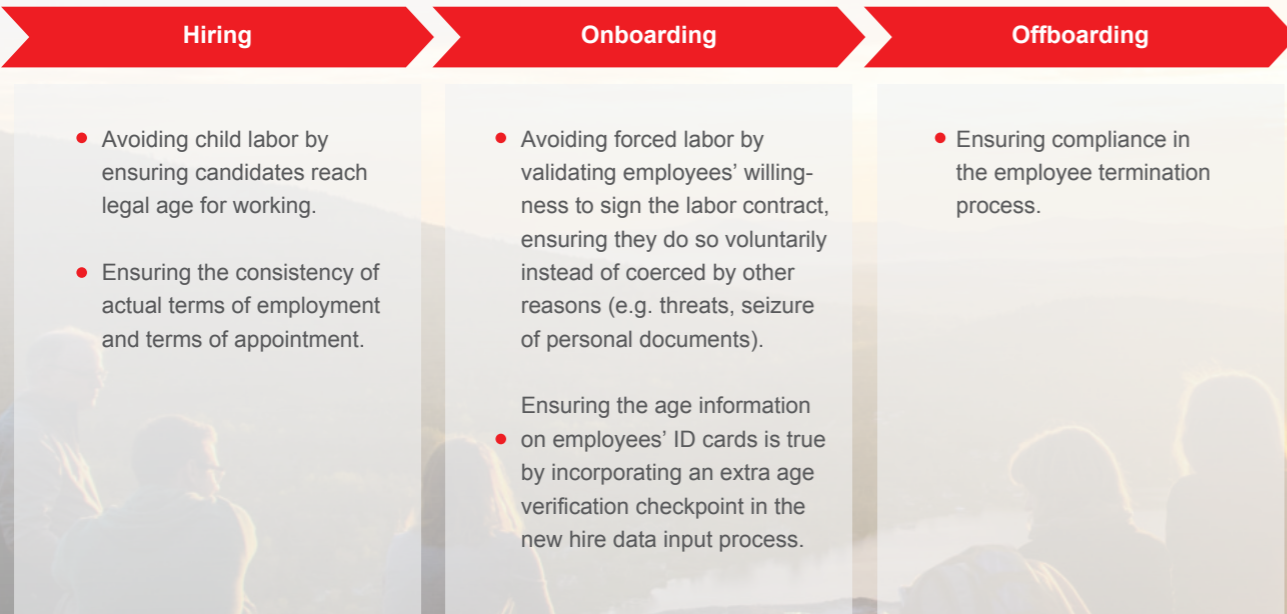
# 4.1

## Labor Rights and Interests

Since 2020, LONGi has been steadfast in embracing the United Nations Global Compact's call to action, championing its principles across human rights, labor, environment, and anti-corruption.

LONGi strictly adheres to labor protection laws and regulations nationally and in the regions it operates. We also comply with labor practice standards including the *United Nations Guiding Principles on Business and Human Rights* (UNGPs) and Fundamental Conventions of the International Labor Organization (ILO) by formulating the *LONGi Human Rights Policy* to respect and protect human rights in our value chain. To proactively identify and assess potential impact and risks regarding human rights protection, we have in place company-wide risk-detection procedures and regular reviews, covering company operations, business activities, supply chains and formation of new business relations (i.e. mergers, acquisitions, and joint ventures), and regular identification and audits of potential human rights violation risks. Together with employees, suppliers, and other business stakeholders, we are dedicated to creating a fair, open, peaceful, and inclusive workplace.

LONGi established the *Recruitment Management Measures*, *Human Resources Management Guidelines*, and the *Guidebook on Employee Onboarding, Regularization, Transfer, and Offboarding* and other internal policies. We have fully implemented the labor contract and collective contract system and ensured fundamental employee rights and interests in compensation, time-off, occupational health and safety, social security and vocational skills training in line with relevant laws and regulations. LONGi stands firmly against any form of discrimination including ethnicity, race, nationality, religious belief, gender, age, sexual orientation disability, or marital status. We prohibit child labor and forced labor, while also respecting employees' legitimate right to freedom of assembly and association. Through these initiatives, we strive to foster a diverse, fair, and inclusive workplace.



LONGi's protection of employee rights and interests



During the reporting period, there was **no** case of child labor and forced labor.

In 2023, to further enhance employee awareness of their legitimate rights and interests, LONGi ran a dedicated training session and conducted internal and external audits to ensure the protection of employee rights and interests at a Group level. During the reporting period, two internal audits have been conducted with a special focus on areas including child labor employment, anti-discrimination, social security payments, working and rest time, and prohibition of forced labor.

### Case | LONGi holding a training session on the UNGPs

On Dec 28 2023, LONGi invited human rights experts to train employees on UNGPs. A total of 90 employees attended the hybrid session, which offered systematic information on human rights, including the basic concepts and practices such as human rights due diligence procedure, contributing to a holistic enhancement of our people's understanding of human rights due diligence.



LONGi's UNGPs Training

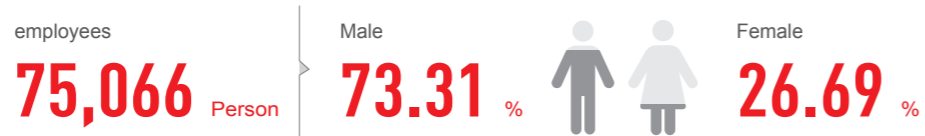
# 4.2

## Employee Development

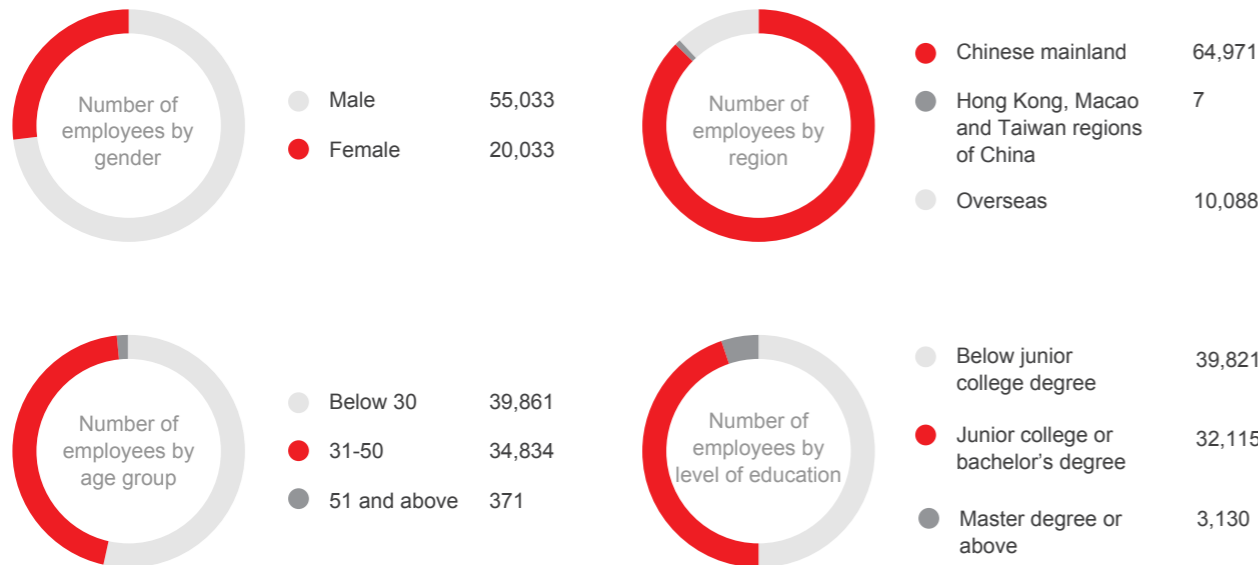
In line with the talent needs of corporate business development, LONGi devised corresponding talent attraction strategies, offering employees with significant career growth opportunities while also securing a robust talent supply for business innovation and upgrades, thereby creating a win-win employee development platform.

### Talent acquisition

We work through various strategies to attract and recruit skilled professional as well as boost internal mobility. Of the 75,066 employees we had as of the end of 2023, 55,033 were male, 20,033 were female, 8,760 were ethnic minorities, 10,088 were foreign employees, 53.10% were aged between 31 to 50.



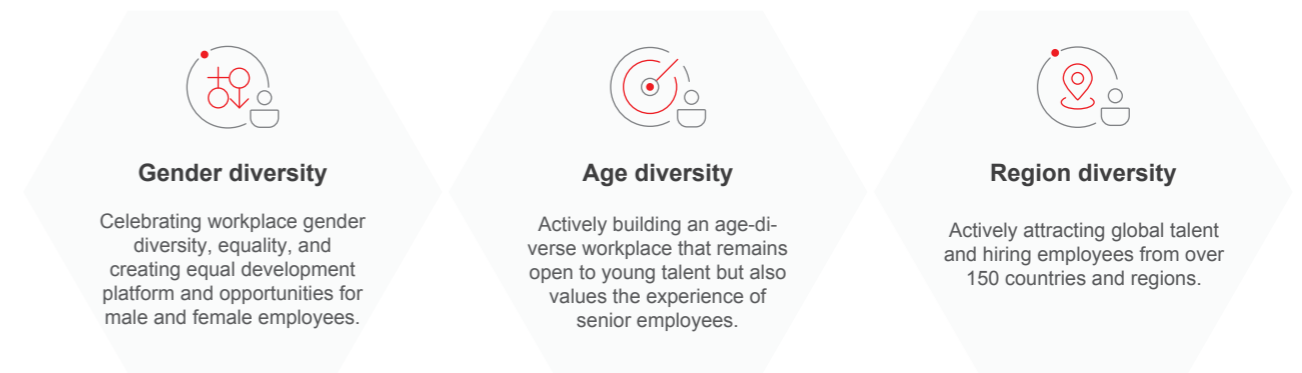
LONGi's employee structure in 2023(Unit: person)



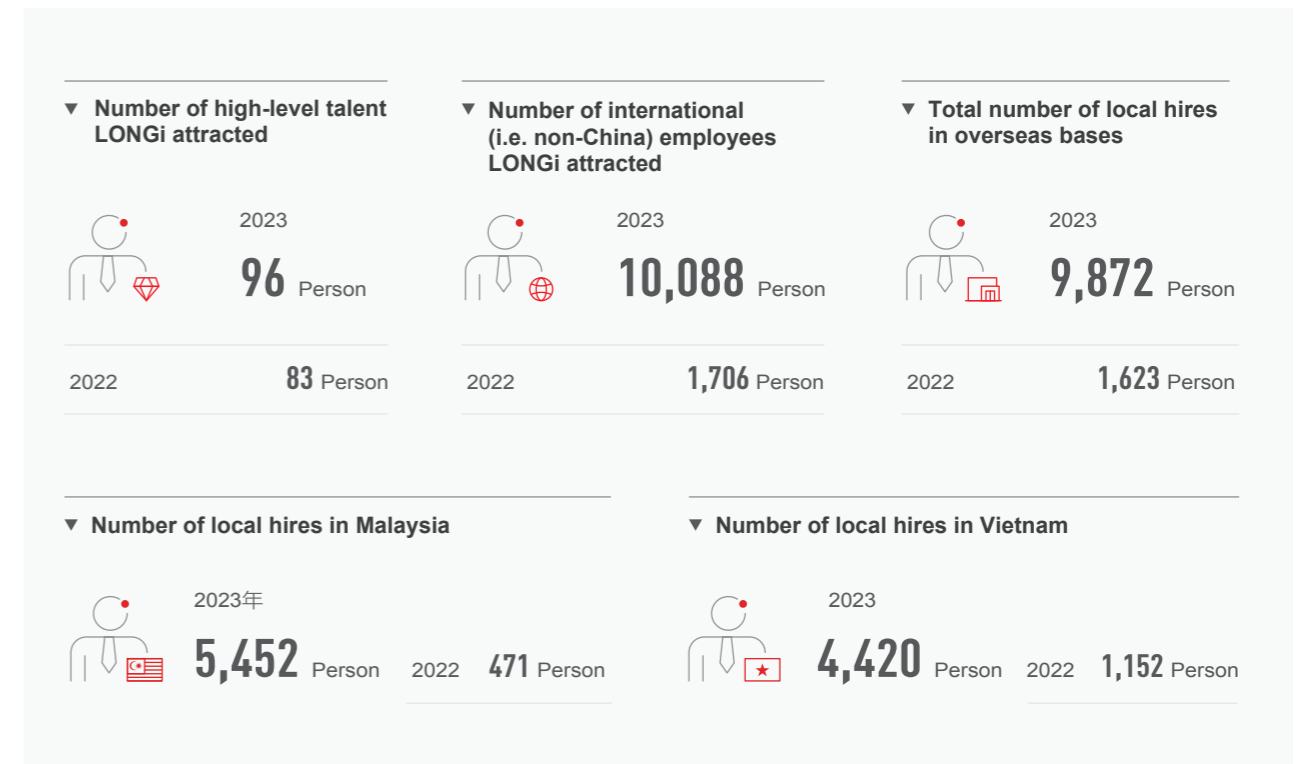
In 2023, to facilitate internal mobility and better deploy human resources, we established the internal talent market mechanism and built "Job Posting", an open and transparent internal transfer platform that allows employee to look up internal job vacancies and seek job transfer or rotation opportunities. Additionally, to better support former employees to rejoin our company, LONGi launched projects such as the Spring Comeback Program and the Revival Project.

## Diversity, equality, and inclusion (DEI)

Championing the philosophy of openness, inclusion, and equality, LONGi strives to foster a workplace culture of diversity that does not treat people differently because of their race, color, gender, religion, age, nationality, social or ethnical background, sexual orientation, gender identity or expression, marital status, pregnancy, disability, or veteran status. We ensure equality throughout the hiring and the entire work process. In 2023, we conducted a six-week training for employees in the human resource department on the code of conduct for HR hiring process to prevent discriminative acts. In the past year, 0 cases of anti-discrimination were reported, and zero costs were incurred in employee discrimination lawsuits.



LONGi's DEI culture



LONGi's performance on employee region diversity (2022-2023)

LONGi is dedicated to providing equal development opportunities for employees of both genders. To support female employees to fulfill their potential, we have established the Female Employee Committee, which organized regular activities to care for female employees, including parental leave, baby care rooms, and support for women during menstruation. As of the end of the reporting period, 1 in every 10 engineers was female. Aside from the engineering team, female representation in the executive management team stood at 20.27%. 20.86% of members in junior management were female, and 25.21% of management members in the profiting departments (e.g. sales) were female.

Case | **LONGi's first international culture exchange meeting**

In May 2023, LONGi held its first international cultural exchange meeting, gathering over a hundred employees from 22 countries. Through games and in-depth discussions, employees developed a deeper understanding of each other's culture. By encouraging people to share insights around "future, culture, and integration", we created a culture of diversity, openness, and inclusion. This initiative enhanced exchanges while injecting new impetus for the globalization endeavors of LONGi.



LONGi's first international culture integration and exchange meeting

Case | **LONGi's round table discussion themed "Accelerating Gender Equality for a Sustainable Future" at COP28**

In December, LONGi held the "Accelerating Gender Equality for a Sustainable Future" discussion at COP28 Solar+Pavillion and invited UN Women. As a global solar technology firm, LONGi witnessed the contribution of a large group of outstanding women to the development of clean energy.



LONGi hosting the round table discussion

**Compensation and benefits**

LONGi formulated the *Compensation Management Measures* to ensure compliance, fairness, and justification of the compensation system, guaranteeing equal pay for equal work. In 2023, recognizing the difference between Chinese and international markets, we iterated our internal policies and compensation system. This included establishing a differentiated incentive policy framework, applying varying operational metrics depending on job functions, and leveraging a differentiated distribution strategy. Our compensation package encompasses fixed pay, allowances and corporate profit-sharing, incentive bonuses, and long-term incentives.

In 2023

**100** %

of our employees in the Chinese mainland enjoyed social security coverage.

In addition to the compensation package, LONGi also offers a range of non-salary benefits. Apart from statutory annual leaves, sick leaves, and unpaid leaves, we offer wedding leave, flexible points-redeemed leave, family visit leave from another place, and time off in lieu. Moreover, employees enjoy free meals (or meal allowances), halal cafeteria, free shuttle bus (or travel allowances), and free accommodation (or accommodation). For some employees, we offer flexible working options such as flexible working time and part-time working. These efforts are intended to enhance employees' sense of fulfillment and happiness.

**Communication with employees**

LONGi strives to create a space for open, transparent, and smooth communication. Employees can raise requests and opinions through symposiums employee congresses, satisfaction surveys, etc. . We have established a two-level employee representatives' meeting system. During the reporting period, we convened one group-level employee representative meeting, which included 4 sessions and gathered 494 employees from 32 of our bases. During the sessions, representatives reviewed the Company's annual operations report, terms in the collective contract system, and discussed 3 policies and 21 proposals concerning the interests of employees. As of the end of the reporting period, 30 of our manufacturing bases held unit-level representatives' meetings and fulfilled their missions.

In 2023

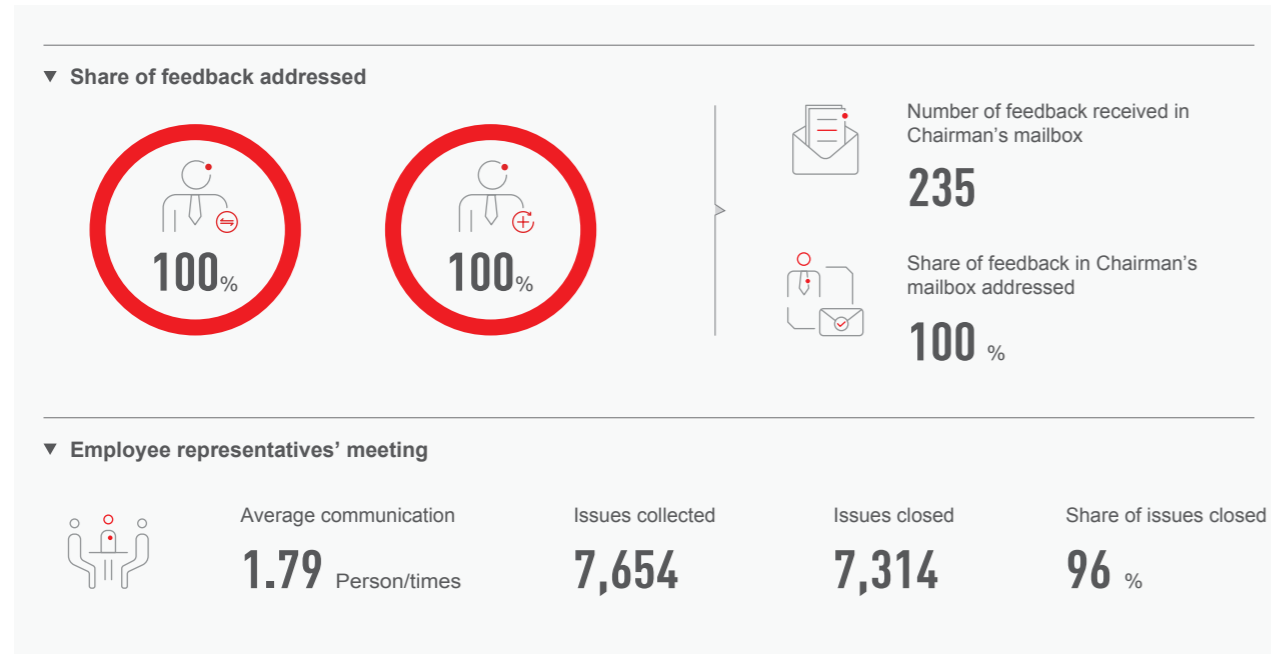
**100** %

of our employees signed the collective bargaining agreement.

We respect employees' rights to freedom of association and collective bargaining. In one of our internal policies, the *Labor Union Management Measures of LONGi*, it is stipulated that employees can join labor unions freely and voluntarily.

	Employee symposium	Employee symposium participation	Number of feedback raised by employees
Senior employees	140 Times	3,599 Person/times	588
Junior employees	125 Times	2,124 Person/times	540





LONGi's performance on communication with employees in 2023

The corporate atmosphere satisfaction rate of junior management team members and scored

**91.97**

Respondents of this survey accounted for

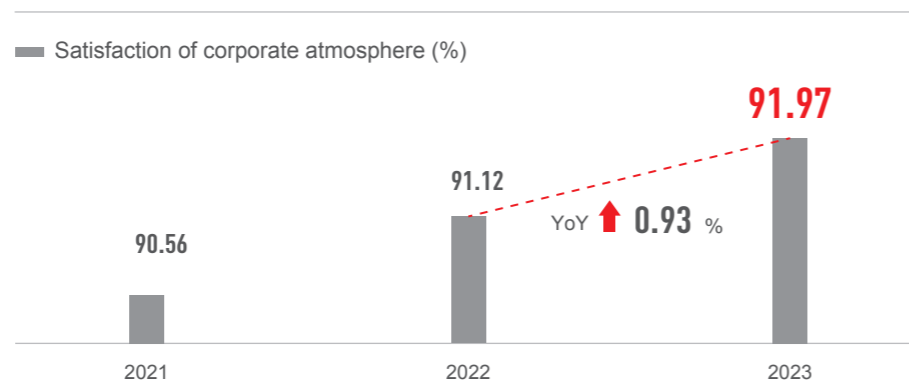
**9.17%**

of all employees

To ensuring proper handling of employee rights violations, LONGi has developed multiple internal policies such as the *Complaints and Reporting Management Measures*, *Accountability Management Measures*, and the *Labor Dispute Management Measures* to stipulate violation handling procedures, appeal procedure, and management mechanism for communication and mediation. Employees can consult and report cases of violation or infringement of their rights.

We conduct Satisfaction of corporate atmosphere survey<sup>1</sup> every year to understand status of team management, motivate employees, and ensure healthy development of our organization. In 2023, we carried out a survey on the corporate atmosphere satisfaction rate of junior management team members and scored 91.97; respondents of this survey accounted for 9.17% of all employees<sup>2</sup>.

**LONGi's Satisfaction of corporate atmosphere survey (2021-2023)**



1. LONGi has been conducting employee engagement survey since 2010, and this survey was upgraded into the Satisfaction of corporate atmosphere survey in 2018.  
2. Only level-8 and above employees were invited to the survey.

**Employee care**

By the end of the reporting period, LONGi had

**156** employee clubs

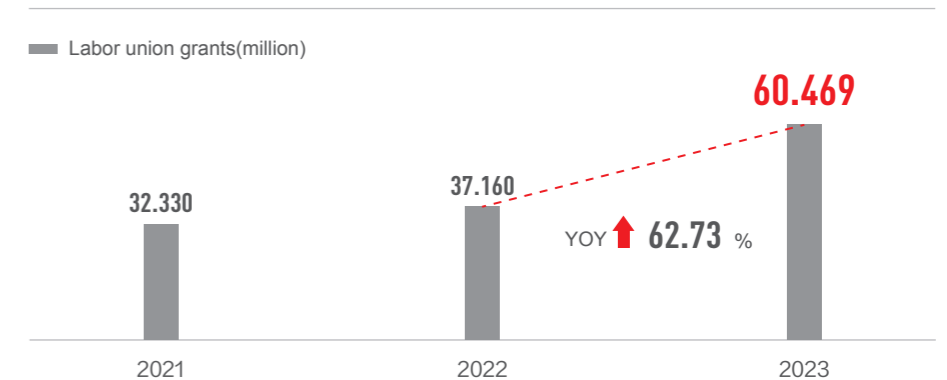
And had granted RMB

**60.469** million

as labor union funds

We have published internal policies including the *Management Measures for Employee Care*, *Management Plan for Employee Cultural and Sports Activities*, *Guide to Building the Standards of Employee Activity Facility*, and the *Management Measures for Employee Clubs*. We built a customized benefit model and a digital platform for benefits data management and provided 100% of employee benefits through centralized purchasing. By the end of the reporting period, LONGi had 156 employee clubs, and had granted RMB60.469 million as labor union funds. LONGi provides all staff with supplementary commercial health insurance that includes insurance for major diseases and group health insurance that combine the compensatory model and the rationed payment model. During the reporting period, LONGi has added 1,069 employees (incl. their family members) to its insurance plan.

**LONGi's performance in employee care (2021-2023)**



**Talent cultivation**

Fully considering the needs and patterns of employee development, LONGi offers two directions for employee development: the professional individual contributor track and the management track. We offer employees the most suitable career development options and training plans, depending on their performances and stages of development. To better motivate employees, we established the performance appraisal mechanism. Before the assessment, we regularly confirm the completion of performance targets with employees to help them discover risk points and deviations in time, and a post-appraisal communication on their performance rating and further action plans.

<p><b>The General Project</b></p> <p>The Human Resources Committee reviews and identifies individuals who have the six key qualities for leaders.</p>	<p><b>The Sergeant Project</b></p> <p>The Human Resources Committee at manufacturing bases reviews and identifies qualified individuals.</p>	<p><b>The Lieutenant Project</b></p> <p>Fully examine qualities of foremen to ensure they are up to par.</p>
<p><b>LONGi Futures</b></p> <p>A program for fresh graduate students. Those who passed the evaluation are offered job positions.</p>	<p><b>LONGi Cultivation</b></p> <p>Evaluate and offer positions to qualified campus hires in the classes of 2022 and 2023.</p>	<p><b>International Talent</b></p> <p>Carefully match talent with business needs, identify international talent with background in manufacturing and marketing, and train them until they are up to par.</p>

LONGi's six talent development programs in 2023






## Training system

LONGi has built a comprehensive talent training mechanism, focusing on the growth and development of employees. Every year, LONGi reviews business needs and holds training budget kickoff meetings to ensure the training meets the needs of corporate strategy, business, and employee development. In 2023, we further refined the training system, introducing dedicated learning programs for employees at different job levels and job category. During the reporting period, RMB18.25 million was invested in employee training.

During the reporting period, RMB

**18.25** million

was invested in employee training.

Program	Content	Annual performance
 <p>Leadership empowerment</p>	<p>Personalized training for leaders at different levels:</p> <ul style="list-style-type: none"> <li>Senior managers: capacity enhancement projects for regional marketing area managers/regional leaders, capacity enhancement projects for manufacturing base general managers, senior executive workshops, etc.</li> <li>Front-line managers: develop qualified talent for front-line management through differentiated enablement programs for business unit foremen.</li> </ul>	<p>We launched over 4 enablement projects for senior managers and front-line managers, meeting <b>100%</b> of our training targets. Target completion rate in foreman enablement reached <b>137%</b>.</p>
 <p>Professional competence empowerment</p>	<p>Organizing skill enhancement projects for employees in certain positions to enhance their professional skills and knowledge. Carrying out course development project around product solutions to enhance product knowledge of marketing employees.</p>	<p>We invested RMB <b>1.6</b> million in the training and certification in special operations and equipment operations. RMB <b>900,000</b> was invested in the certification and training on Six Sigma Green Belt.</p>
 <p>Campus hire training</p>	<p>Providing boot camps, business training, in-position practice, and one-on-one mentorship for campus hires to enhance their professional skills and abilities to adapt.</p>	<p>Coverage rate of LONGi campusenrolled employee reached <b>100%</b></p>
 <p>Training by third parties</p>	<p>Cooperating with third-party institutions to develop training programs for employees in professional sequence/series; for example, working with HR Excellence Center and Huawei Union College to enhance professional capabilities of human resources workers. Buying management courses from Huawei, Dedao, Hundun and other institutions to offer opportunities for managers to learn and grow.</p>	<p>Purchased over <b>3,962</b> member accounts</p>
 <p>Overseas talent empowerment</p>	<p>Develop training programs for overseas employees and global insights training programs for employees relocating abroad to ensure that our overseas manufacturing bases to commence production quickly, thus supporting our international business.</p>	<p>Accumulatively cultivated and exported over <b>500</b> international talents</p>

LONGi's talent training system and empowerment programs

## Further education

LONGi attaches great importance to the continuous learning and personal growth of employees. We organized a series of courses as CA (Chartered Accountant), CPA (Certified Public Accountant), accounting, ACCA (Association of Chartered Certified Accountant), and Certified Constructor for employees at key positions in finance, procurement, and investment. In 2023, LONGi saw 7 of its subsidiaries becoming certified professional skills certifying institutions, and we have reimbursed employees who continued their education with RMB91,000. 82 of our employees received top-up degrees, and 1,079 received professional titles. LONGi also built a comprehensive talent training system from doctoral and post-doctoral education and became the Xian City Talent Exchange Base and the National Scientific Research Workstation, powering the deep integration of talent cultivation, value chain, and innovation.

Additionally, to fight against the challenge brought by global climate change and promote gender equality, LONGi encourages employees to join the UN Global Compact Climate Ambition Accelerator and Target Gender Equality Accelerator and support them to acquire certification in this area in order to enhancing employees' ESG awareness and professional skills. Employees are engaged in the three programs, i.e. the UN Global Compact Climate Ambition Accelerator, Target Gender Equality Accelerator, and SDG Innovation Accelerator for Young Professionals, and have acquired certification on the former two accelerators.



“

Being in the UN Climate Ambition Accelerator training has not only shed light on the severity of Climate Change, but it also makes me realize that individuals can make a difference. As an employee of LONGi, I feel the enormous responsibility to use what I learned in the program to promote the green philosophy and work with my team to contribute to the future of the world.

— Yuxuan

The UN Gender Equality Accelerator training has allowed me to deeply understand the importance of gender equality to the advancement of society. Gender equality is not just about equal rights but a milestone towards a better civilization. To realize gender equality requires the efforts of all. I will actively practice what I have learned and dedicate my insights and efforts to creating a more just and inclusive workplace

”



— Zixuan

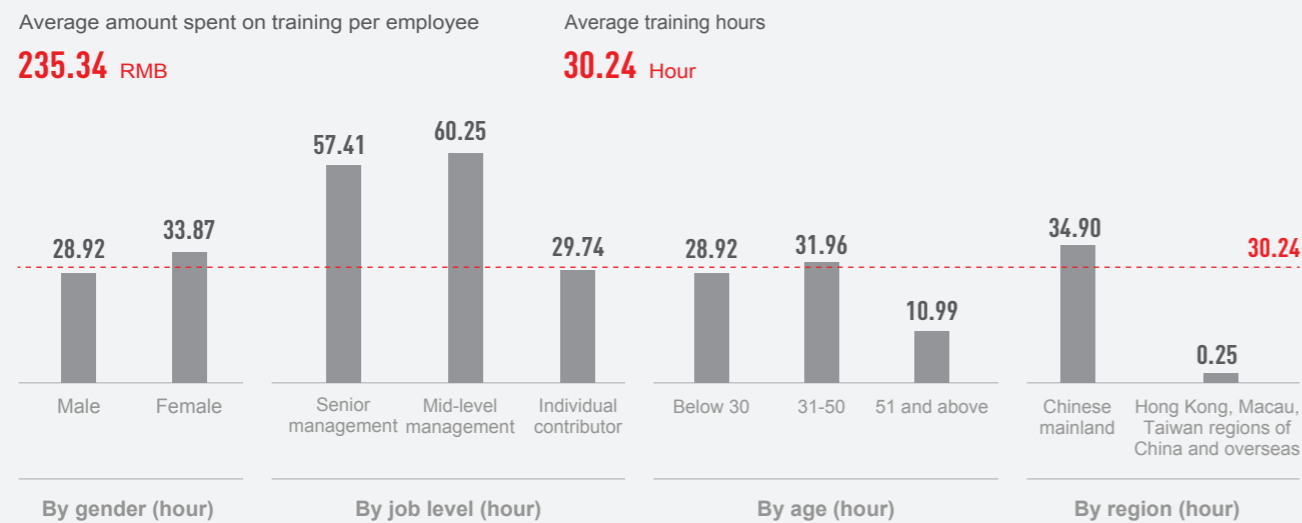
**LONGi's performance in talent cultivation in 2023**



**LONGi's performance in employee training in 2023**



**LONGi's average employee training hours in 2023**



1. All trainings in 2023 were logged to the online system, indicating a more comprehensive statistics and leading to a more drastic change from the previous year of 2022.

## 4.3 Health and Safety

Employee health and safety are of the utmost importance to LONGi's business management process. The Group established a comprehensive occupational health and safety management system to create a safe production environment and culture, effectively safeguarding the occupational health and safety of employees. We have formulated internal administrative guidelines, including the *Management System for Quality, Environmental, Occupational Health, and Safety Accidents, Work Safety System, Environmental Safety and Occupational Health Management Manual, Occupational Health Management System, Laborer Personal Protective Equipment Management System*, and the *Laborer Occupational Health Monitoring, Protection and Files Management System*. Additionally, we have established the EHS Committee, representing all employees, overseeing our corporate work around occupational health and safety, and building a comprehensive and standardized production safety system. In 2023, our occupational health and safety system covered 100% of our employees, and 100% of formally commissioned manufacturing bases of our subsidiaries have been certified to ISO 45001.

In 2023, we further improved our safety management system by publishing 24 more management measures, including 4 Procedures, i.e. the *EHS Incidents and Accidents Control Procedure, Fire Control Procedure, EHS Emergency Preparedness and Response Control Procedure, Control Procedure of Environmental Safety Target Metrics and Management Plan*, and 13 general standards, such as the *EHS Education and Training Management System and Major EHS Hazards Management Measures*, as well as 7 general policies, including *Guidelines on Achieving "Three Simultaneities" in Building Project Safety and Occupational Disease Prevention Facilities, and EHS Risk Identification in Construction Projects*.

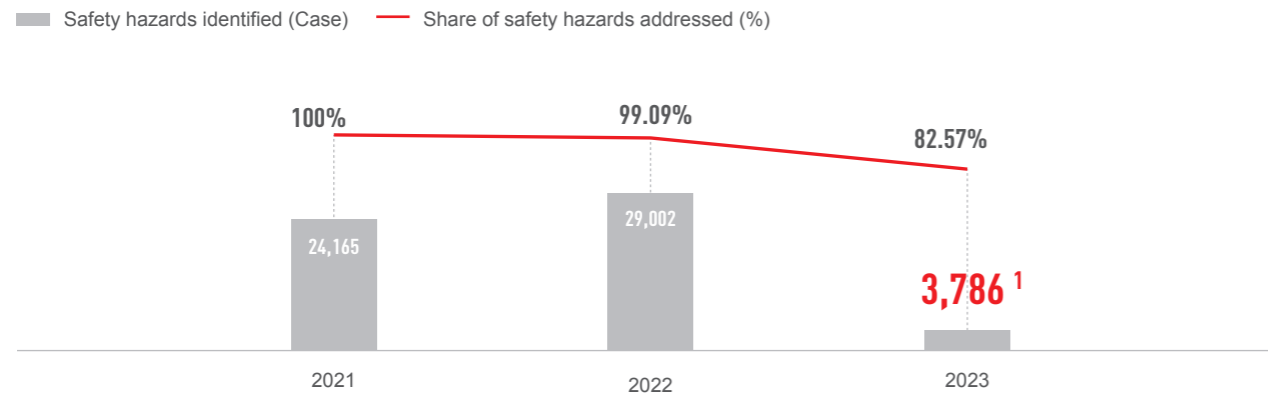
## Production safety

Guided by the production safety management principle of "safety first-comprehensive governance with a main focus on precaution", LONGi has been working nonstop to strengthen safety ownership and responsibility. We set annual occupational health and safety management goals to implement production safety measures and ensure all work is healthy and stable. Under relevant policies, we set goals for occupational health and safety every year and take a goal-oriented approach to implement measures to safeguard production safety.

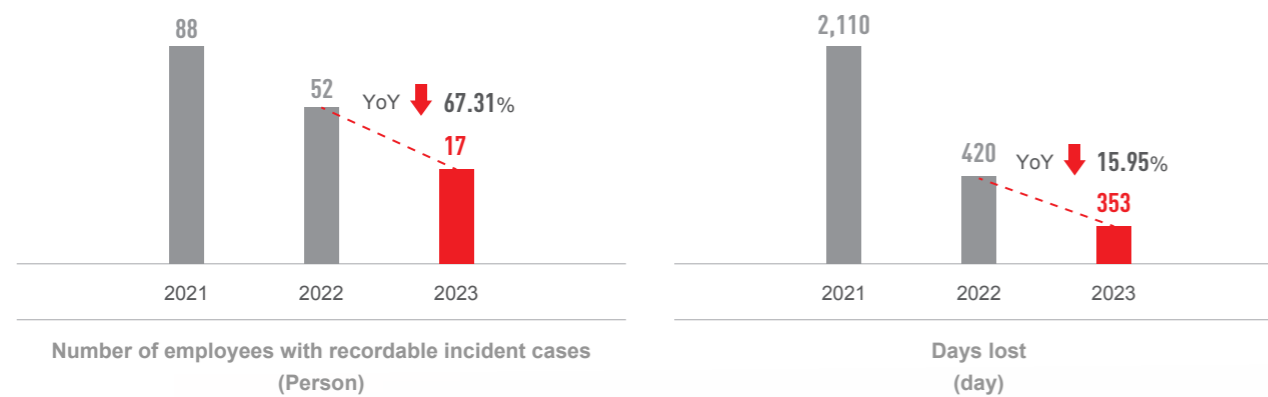
To effectively manage occupational health and safety risks in the production and manufacturing process, we engaged all employees in the identification and assessment of safety hazards, thus ensuring that risks in all steps, including engineering, silicon wafers, batteries, PV modules, and power plants are identified and controlled. Moreover, we instructed frontline teams to carry out risk control, emergency drills, examinations, and training to prevent accidents and incidents from happening.



**LONGi's performance in production safety (2021-2023)**



**LONGi's performance in production safety (2021-2023)**



1. Prior to 2022, numbers of safety hazards were reported by each manufacturing base. In 2023, LONGi introduced a new practice where department heads in the Group inspect manufacturing bases. As a result of the updated approach, numbers in 2023 look quite different from those in 2022.

**Occupational health**

Adhering to ILO *Occupational Safety and Health Convention*<sup>1</sup>, LONGi values occupational health of its employees as well as employees of suppliers. We join hands with all stakeholders to abide by global system of classification and labelling of chemicals including Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

LONGi has set the occupational health management goal of zero occupational diseases. We regularly monitor occupational hazards in the workplace and provide employees with occupational health examinations before, during, and after work. We rolled out comprehensive Employee Assistance Program (EAP) services for all employees together with other activities such as global psychological support to enhance employees' self-protection capabilities. During the reporting period, we pioneered the establishment of health cabins in our headquarters, providing employees with health consultations, routine health diagnosis, and emergency first aid training services. Our Group Environmental and Safety Management Department collaborated with the Shaanxi Red Cross Society and the Shaanxi Boai Red Cross Emergency Rescue Service Center to carry out emergency first aid campaigns and training. Forty employees of ours attended the first-aid volunteer training and obtained the "Heartsaver First Aid/CPR/AED" international first-aid certificate. Our first batch of 20 AED was deployed in the office building compound, exhibition halls, production workshops, etc., further ensuring employees' lives, health, and safety.

We established a three-level management system for occupational health. Regular monthly and bi-weekly occupational health sessions are held to collect employee feedback. Moreover, we've categorized common occupational health problems into 7 topics, and circulation information around them to address pain points in daily occupational health management. We took one step further to include employee occupational health metrics in the performance review of managers to better incentivize them to work more actively on protecting employee health.



LONGi's three-level occupational health management structure

1. ILO Occupational Safety and Health convention, 1981(No.155)

▼ LONGi's occupational health and safety performance (2022-2023)

Total hours of occupational health and safety training	Average EHS training hour	Total number of occupational health and safety training	Number of emergency drills
<b>2,898,914</b> Hours	<b>37.38</b> Hours per person	<b>4,831</b> Sessions	<b>2,005</b> Times
VS 2022 ↑ <b>31</b> %	VS 2022 ↑ <b>2</b> %	VS 2022 ↑ <b>54</b> %	VS 2022 ↑ <b>71</b> %

Case | LONGi's innovative Fire Prevention Month activities

From November to December, to enhance employees' skills in health and safety protection and emergency response, LONGi and the local government held a fight fighting-themed sports meeting. Through the innovative model of advocacy, training, competition, practice, and inspection, we engaged 87,603 individuals in the project, with 97.7% of them passing the review. Also, 67,154 individuals participated in the firefighting skill competition, covering 89.8% of all activity participants. 58 emergency drills were carried out, with a coverage rate of 100%; 110 topic-centered inspections were conducted, with a coverage rate of 100%.



LONGi's fire prevention month activity in 2023

## 4.4

### Community Engagement





One should never forget their origin and should always remember the kindness that they received. In the process of globalization, LONGi always pays attention to its community engagement in the places where it manufactures or runs a business, which can be exemplified by the Company's measures to enhance the communication with those community stakeholders. By means of business innovations, public welfare donations and the employees' voluntary services, the Company also improves community infrastructure, supports the development of rural communities, promotes high-quality education, and facilitates the transition to a low-carbon society. In doing so, the Company effectively assumes its corporate social responsibility.

### Communication with Communities

LONGi always attaches importance to the communication with communities and tries to avoid or minimize the negative impacts of its business on communities. The Company also leverages its industry advantages to provide the community residents with a more convenient and happier life as a way to ensure the Company's harmonious coexistence with communities.

Case | Blended measures by LONGi to reduce negative impacts on communities in Malaysia

Since 2022, LONGi has launched the construction of the Serendah Module Plant at the UMW High Value Manufacturing Park in Selangor, Malaysia. In order to obviate, minimize, or cushion the negative impacts of the construction process on the communities nearby, we have formulated a corresponding policy based on thorough negotiations with the community residents to ensure that the project would be carried out in compliance with both the local regulations in Malaysia and the park requirements for environmental and social responsibilities. Specifically, the policy covered following issues:

 <p><b>Community transportation</b></p> <p>Strictly delineating the parking area of vehicles for construction to reduce traffic congestion caused by the construction project; cooperating with local enterprises to improve the road condition if necessary.</p>	 <p><b>Pavement protection</b></p> <p>Ensuring that heavy-duty trucks work under loading limits; requesting developers/contractors to sign letters of commitment to repair pavements if they are damaged by heavy-duty trucks for the project.</p>	 <p><b>Community health</b></p> <p>Issuing stringent requirements on matters related to the health of residents; mounting monthly lawn mowing in the industrial park and other relevant areas, together with weekly mosquito control and other pest control services in offices and living areas.</p>	 <p><b>The environment in the vicinity</b></p> <p>Controlling waste gas emissions and regularly testing the exhaust of waste gas treatment equipment; inviting monitors to keep air pollution under surveillance; building rainwater filtration ponds in the construction sites to intercept and filter sediment and pollutants; controlling the sediment in the discharged rainwater by sedimentation observation, sampling and testing, etc., as a way to protect the environment in the vicinity.</p>
--	---	--	---

In January 2024, Malaysian government officials in the Selangor state paid a visit to the LONGi solar module plant in Serendah. Local LONGi employees shared their transnational training experiences at the LONGi Jiaxing Base in China, which enhanced the communication between overseas production bases and the local government and communities. A good foundation was thus established for upgrading the cooperation in localized production, talent cultivation and technological R&D.



A picture of LONGi directors in Serendah and officials of Hulu Selangor municipal government

## Community Development

LONGi has a continuous focus on public welfare such as inclusive PV services and education support. LONGi also pays attention to global development while expanding its own business, being helpful in promoting energy equity and low-carbon awareness.

### Inclusive PV services

Rural communities are built on relatively weaker economic and social foundations, but they are also suitable for the development of PV and other green energy industries. Consequently, LONGi gives full play to its advantages in PV technology and PV solutions, exploring measures to deploy PV technologies as a solution for relevant problems in rural communities and to help realize “inclusive PV services” in rural communities in China and beyond.

#### Case | LONGi’s PV project to help build a “zero-carbon village”

In April 2023, LONGi introduced the “LONGi Sunflower” one-stop digital household solutions equipped with PV technology in Yaozhou District, Tongchuan City, Shaanxi Province. A pilot program of inclusive PV service was launched for PV promotion in the whole village. The revenue of the program was distributed to villagers according to the power generation yields and the roof size of a family’s house so as to create a “sunshine bank” in the rural community. At the end of the reporting period, the installation of photovoltaic power stations has covered 108 families in Kefang Village, increasing the income of farmers with an average annual power generation capacity of 3.81 million kWh, which is the evidence of a strong combination of economic growth and social responsibility.



The PV project in Kefang Village, Yaozhou District, Tongchuan City, Shaanxi Province

#### Case | A Thai island illuminated by LONGi off-grid PV system

Koh Jik is an off-grid island in the Gulf of Thailand where the life quality of residents is strikingly impaired because of the chronic insufficiency of power supply. So LONGi launched the project “Lighting up Koh Jik” in 2020 and has finished the development, financing, installation and operation of the project by the end of 2023. As a result, the company completed a cycle that secured the power supply by PV technology in the daytime and by the store of energy at night, realizing the self-sufficiency in electricity across the island. Meanwhile, the project has also facilitated the trade of its life-cycle carbon footprint. By signing a carbon emissions trading agreement, the project has gained an additional 1.6 million baht as a fund to compensate for the cost of electricity tariff so as to reduce the relevant expense of residents.



The roof of a Thai resident’s house equipped with LONGi Hi-MO solar modules

### Donation to public welfare

In 2023, LONGi continued to strengthen the infrastructure of the communities where it operated, and carried on to support education, to optimize public services and to promote green and low-carbon development through donations to public welfare. In doing so, the Company breathed new life into the communities and enhanced the residents’ sense of gain. During the reporting period, the Company implemented 48 projects for education support and public welfare donation, having donated a total of RMB12,759,200 to benefit nearly 36,000 people.

#### Case | Diversified campaigns by LONGi to support communities

- Supporting rural infrastructure development in the Province of Gansu, Shaanxi, Shanxi, Hebei and other places.
- Constructing a 500kWp village-level PV power plant in Lingyun County, Guangxi Province to facilitate the sustainable development of local communities.
- Supporting cultural activities and donating facilities essential for the daily lives of the residents in Yuanjiang and Huaping, Yunnan Province.
- Participating in the matching gift program on the September 9th Public Welfare Day in Taizhou, Jiangsu Province as a way to help the development of local social welfare and charity undertakings.
- Zhejiang LONGi and Shaanxi LONGi Leye convened their employees to visit nursing homes and special education institutions and donated daily necessities.
- Jiaxing LONGi donated 400,000 RMB to support the charity campaigns in Xiuzhou District in Jiaxing City as a way to spread warmth and care in society.

Except for promoting the development of overseas business, the Company takes the initiative to fulfill its overseas social responsibility. After the severe earthquake in Turkey and Morocco in 2023, the overseas subsidiaries of LONGi joined hands with their partners to donate PV modules to the disaster-stricken communities to support the post-disaster reconstruction of the communities’ power facilities.

Case | **The partnership agreement settled between LONGi and the UNHCR at the COP28**

In December 2023, LONGi announced at COP28 that it had settled a partnership with the UNHCR to strengthen the endeavor on climate action, energy equity, green transformation and the like. The two parties will firstly spearhead the construction of a PV power plant at a humanitarian storage center in Uzbekistan, and then will serve Pakistan with PV systems and solutions to equip public facilities in refugee and host communities with safe, reliable and clean energy. The two parties will also offer skill training on PV technology for refugee and host communities in support of the global humanitarian actions of the UNHCR.



LONGi's PV systems and solutions for humanitarian storage center in Uzbekistan

Case | **PV module products donated by LONGi to AL Zaharaa hospital in Lebanon**

In March 2023, LONGi donated 20kW of its highly effective module product, the Hi-MO X6, to Al Zaharaa hospital in Beirut, the capital of Lebanon. As a customized product of LONGi for users of distributed products, the modules offer a reliable clean energy solution to hospitals, relieving the pressure of energy supply for the hospital. The project is the first one completed to deploy Hi-MO X6 in the Middle East, setting a new example for the sustainable development of local communities.



LONGi's donation of its highly effective module product, the Hi-MO X6, to Al Zaharaa hospital in Beirut, Lebanon

**Support for education**

In terms of supporting education and talent cultivation, LONGi carries out a number of school-enterprise cooperation and education support. The Company supports Lijiang City, Yunnan Province in the preparation for the establishment of the Lijiang Vocational and Technical College, and carries out school-enterprise co-construction and talent cultivation, and provides financial support to rural teachers and students in Yulin City's Yuyang District, Hengshan Mountain District, and Jingbian County, so as to improve the teaching conditions of the local schools.; Baoshan LONGi donated funds and surplus facilities of dormitories through Baoshan City Red Cross to the service center for educational development in Baoshan City, being steadily supportive for local education. Qujing LONGi set up "reserved classes" (classes of selected students who are guaranteed to work in LONGi after graduation) and scholarships in three vocational colleges in Yunnan. Ordos LONGi and Zhejiang LONGi also established partnerships with local vocational colleges to offer various financial support. Additionally, LONGi Malaysia sponsored the "Future ICT Coder Competition" of Swinburne University of Technology in 2023.

Case | **The cooperation between LONGi and the Dubai Campus of Heriot-Watt University to explore ways of education**

On December 4, 2023, LONGi joined hands with the Dubai campus of Heriot-Watt University, an established British research university with a proud history of more than 200 years. LONGi was formally invited to become a knowledge partner of the University's Climate Center, as well as a co-host of the STEAM camp to provide training for courses related to solar energy technology. In doing so, LONGi was able to make new contributions to the education of local youth and the research on solar energy.

**Promotion of "low-carbon" concept**

The exhibition hall of smart energy built by LONGi has realized zero-carbon operation and continues to carry out colorful educational activities to spread green and low-carbon concept, which are free for the public to visit by appointment. Since the opening of the hall, it has received tens of thousands of domestic and foreign visitors, including dignitaries, customers and students, raising the awareness of "clean energy" among the public through real-life experiences combined with the introduction of scientific theories. In 2023, the hall was formally recognized as a member of the "first batch of model bases of science and technology popularization in Xi'an City".

Case | **LONGi Partners with ATP for Zero Carbon Race Program**

In 2023, LONGi, the exclusive global solar energy partner of tennis' ATP Tour, stayed committed to the idea of "making a green world with light" and cooperated with the ATP Tour to hold the event in a zero-carbon way. In the reporting period, LONGi and the ATP Tour organized tournaments in 11 regions, including Madrid, Halle, Shanghai, Tokyo and Turin, where a global energy initiative "PLAN GET" was launched to blaze a new trail of sustainable development of green sports and spearheading the promotion of "low-carbon" concept in communities.



Global energy initiative "PLAN GET" →



The zero-carbon PV cabin for the Rolex Shanghai Masters →

▼ **"Breathing New Life into Old Items"**

At the tournaments in Madrid, Halle, Shanghai, Turin and other regions, LONGi set up green energy zones for exhibition and interaction, where recycling stations were placed so that the audience of the tournaments could deposit used balls and other PVC/PET products in exchange for beautiful and exclusive gifts. Those recycled old items will then be processed into environment-friendly products for those in need.

▼ **The zero-carbon PV cabin**

LONGi set up a zero-carbon PV cabin near the arena of the Rolex Shanghai Masters. The cabin was featured by a variety of photovoltaic products for its energy supply, offering the audience an experience of a green carbon life. LONGi also prepared an area for rest and charging outside the arena, which was equipped with PV power generation technology to satisfy the fans' need for cell phone charging.

## Appendix 1

### Sustainability Performance Indicators

Indicator	Unit	2023	2022	2021
<b>Corporate governance</b>				
Operating revenue	billion RMB	129.498	128.998	80.608
Net profit attributable to shareholders of the listed company	billion RMB	10.751	14.812	9.086
Basic earnings per share	RMB/share	1.42	1.95	1.21
Total assets	billion RMB	163.969	139.556	97.735
Return on weighted average equity	%	16.20	26.95	21.45
Independent directors on the board	/	3	3	3
Number of female board members	/	2	2	3
Integrity compliance training and advocacy	session	1,205	578	91
Anti-corruption training employee coverage rate	%	100	100	100
Privacy breach incidents	/	0	0	/
<b>Product and service performance</b>				
R&D expenditure	billion RMB	7.721	7.141	4.394
R&D revenue ratio	%	5.96	5.54	5.43
Number of patents granted this year	/	767	762	378
Total patents granted <sup>1</sup>	/	2,879	2,132	1,387
Marketing service outlets in Asia-Pacific, Europe, Americas, Middle East, and Africa	/	36	16	10+
Technical services provided to customers for large-scale projects	time	301	173	Nearly 300

1. The total number of granted patents includes the valid patents granted both domestically and internationally.

Indicator	Unit	2023	2022	2021
On-site installation and maintenance training	time	188	120	60+
Customer plant visits	time	145	29	20+
Response rate for customer technical issue	%	100	100	/
Acceptance rate for customer technical issue requests	%	100	100	/
<b>Environmental performance</b>				
Total GHG emissions	tCO <sub>2</sub> e	42,069,242.89	32,511,062.57	25,521,319.12
—Scope 1 GHG emissions	tCO <sub>2</sub> e	135,747.14	158,202.15	94,750.24
—Scope 2 GHG emissions	tCO <sub>2</sub> e	4,943,454.12	2,605,034.42	2,743,436.88
—Scope 3 GHG emissions (partial <sup>1</sup> )	tCO <sub>2</sub> e	36,990,041.63	29,747,826.84	22,683,132
GHG emissions within operational scope	tCO <sub>2</sub> e	5,079,201.26	2,763,236.57	2,838,187.12
Total water withdrawal	kt	52,644.61	36,435.43	35,087.62
Total water consumption	kt	10,922.80	/	/
Total water withdrawal density	kt/million RMB revenue	0.4065	0.2824	0.4335
Ultrapure water usage	kt	28,728.10	16,142.00	14,491.00
Reclaimed water reuse rate	%	53.82	63.67	58.75
Water saving	kt	5,529	9,593	5,897
Annual water saving for monocrystalline	kt	1,091	302.88	/
Annual water saving for slicing	kt	2,667	407.58	/
Annual water saving for batteries	kt	1,760	217.40	/
Annual water saving for modules	kt	11.50	31.44	/
Comprehensive energy consumption	10,000 tce	151.49	113.14	95.31
Comprehensive energy consumption intensity	10,000 tce/hundred million RMB	0.1170	0.0877	0.1182
Renewable energy usage	billion kWh	38.15	42.79	30.96

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



Indicator	Unit	2023	2022	2021
Renewable energy usage proportion	%	31.10	47.18	40.19
Power savings	GWh	1,064	607	/
Annual power saving for monocrystalline	10,000 kWh	59,489.50	31,063.96	/
Annual power saving for slicing	10,000 kWh	24,252.89	4,508.22	/
Annual power saving for batteries	10,000 kWh	14,257.50	14,053.65	/
Annual power saving for modules	10,000 kWh	8,438.86	11,123.19	/
Total emissions of waste gas	100 million m <sup>3</sup>	858.12	298.55	349.91
Emissions of nitrogen oxides	t	149.92	557.04	/
Emissions of sulfur oxides	t	59.44	360.67	/
Emissions of particulate matter (PM)	t	278.43	175.19	251.90
Fluoride emissions	t	33.81	21.42	54.88
Chlorine emissions	t	19.71	2.03	19.58
Ammonia emissions	t	15.73	77.75	66.70
Other emissions <sup>1</sup>	t	136.00	52.23	/
Wastewater discharge	kt	42,351	25,843	21,431
Municipal wastewater discharge	kt	39,329	/	/
Surface water discharge	kt	3,022	/	/
COD discharge <sup>2</sup>	t	3,648	1,691	965
Ammoniacal nitrogen discharge	kg	72,252	43,089	53,072
Total phosphorus discharge	kg	12,018	6,750	/
Suspended solid discharge <sup>3</sup>	kg	580,921	601,040	408,986
Total hazardous waste	t	41,919.69	17,385	32,586
Hazardous waste transferred for disposal	t	41,224.88	17,365	/
Transfer and disposal (landfill)	t	28,576.54	/	/

1. Other waste gas emissions mainly include non-methane total hydrocarbons, sulfuric acid mist, hydrochloric acid mist, etc.  
 2. Increased production capacity has led to higher COD.  
 3. In 2023, the module production bases in the Xi'an and East China regions revamped their septic tanks and oil separators, effectively controlling the emissions of suspended solids. At the end of 2022, the Xi'an Leye base maintained its membrane bioreactor (MBR) system, enhancing its purification efficiency in 2023.

Indicator	Unit	2023	2022	2021
Transfer and disposal (incineration and energy recycling)	t	12,648.34	/	/
Hazardous waste disposed of in-house	t	0	0	/
Hazardous waste recycled	t	694.81	20	/
Total non-hazardous waste	t	441,654.12	277,134	196,255
Recyclable non-hazardous waste	t	323,803.54	21,890	/
Non-recyclable non-hazardous waste	t	117,850.58	255,244	/
Non-recyclable (landfill)	t	93,260.47	/	/
Non-recyclable (incineration and energy recycling)	t	24,590.11	/	/
Non-hazardous waste recycling rate	%	73.3 <sup>1</sup>	7.9	/
<b>Supply chain performance</b>				
Number of suppliers (Chinese mainland)	/	3,999	3,473	4,633
Number of suppliers (Hong Kong, Macau, and Taiwan regions)	/	21	14	22
Number of suppliers (overseas)	/	747	374	448
Amount covered by supplier CSR due diligence audits	%	83	/	/
Number of suppliers certified with ISO 45001	/	2,014	3,030	/
Number of suppliers certified with ISO 14001	/	2,271	2,767	/
Number of suppliers certified with ISO 9001	/	3,519	3,711	/
New suppliers screened by ESG criteria (social criteria)	%	100	83	50

1. The 2023 statistical method has been updated to include the non-hazardous waste recycled and repurposed, resulting in a considerable YoY increase in the data.

Indicator	Unit	2023	2022	2021	
New suppliers screened by ESG criteria (environmental criteria)	%	100	100	96	
Total hours of supplier training	hour	608	230	/	
Person-times of supplier participating in training	person-time	5,993	397	/	
Total number of supplier training sessions	session	258	108	/	
Total number of "regular supplier revisits"	time	203	18	/	
Total number of suppliers participating in "regular supplier revisits"	person-time	590	187	/	
Total number of supplier communication	session	398	108	/	
Number of suppliers participated in supplier communication	person-time	1,701	264	/	
Total number of high-level communication	time	235	96	/	
Number of suppliers participated in high-level communication	person-time	142	252	/	
Total number of "logistics supplier communication"	time	56	12	/	
Number of suppliers participating in logistics supplier communication	person-time	56	12	/	
<b>Employee and community performance</b>					
Satisfaction of corporate atmosphere	rate	91.97	91.12	90.56	
Total full-time employees	Person	75,066	60,601	49,967	
Number of employees by gender	Male	Person	55,033	48,774	36,105
	Female	Person	20,033	11,827	13,862

Indicator	Unit	2023	2022	2021	
Number of employees by region	Chinese mainland	Person	64,971	48,236	/
	Hong Kong, Macau, and Taiwan regions	Person	7	4	/
	Overseas	Person	10,088	12,361	/
Number of employees by age	Below 30	Person	39,861	35,087	25,638
	30-50	Person	34,834	25,162	24,064
	51 and above	Person	371	352	265
Number of employees by education	Below junior college degree	Person	39,821	35,083	32,224
	Junior college or bachelor's degree	Person	32,115	23,772	16,642
	Master degree and above	Person	3,130	1,746	1,101
Proportion of female employees in executive management	%	20.27	20	25	
Proportion of female employees in junior management	%	20.86	/	/	
Proportion of female employees in revenue-generating functions (e.g., sales) management	%	25.21	/	/	
Number of high-end talent attracted	Person	96	83	/	
Total overseas employees attracted (non-Chinese nationals)	Person	10,088	1,706	/	
Total local employees attracted to overseas bases	Person	9,872	1,623	/	
Number of local employees attracted in Malaysia	Person	5,452	471	/	
Number of local employees attracted in Vietnam	Person	4,420	1,152	/	
Number of ethnic minority employees	Person	8,790	/	/	
Total number of employees trained	Person	75,066	60,601	/	
Total training participations	person-time	1,278,230	479,046	243,504	

Indicator	Unit	2023	2022	2021
Total number of training sessions throughout the year	/	14,070	3,005	/
Total training hours throughout the year	10,000 hours	226.99	174.74	21.11
Average training hours per employee for the year	hour	30.24	28.83	/
Coverage rate for leadership training across all management levels	%	100	100	/
Labor union membership rate	%	100	100	100
Amount of labor union welfare disbursed	million RMB	60.469	37.16	32.33
Total hours of occupational health and safety training	hour	2,898,914	2,217,208	1,981,902
Average EHS training duration per employee	hour	37.38	36.59	39.66
Number of occupational health and safety training sessions	hour	4,831	3,145	/
Number of emergency exercise activities	/	2,005	1,175	874
Total number of safety hazards identified	/	3,786	29,002	24,165
Annual safety hazard rectification rate	%	82.57	99.09	100
Number of recordable work injuries	/	17	52	88
Lost days due to work-related injuries	day	353	420	2,110
Charitable donations and educational support projects	/	48	30+	/
Value of charitable donations	million RMB	12.7592	10.7601	/
Number of beneficiaries from donations	/	36,000	200,000	/

## Appendix 2

### GRI Content Index

- ◆ Statement of use: LONGi has reported in accordance with the GRI Standards for the period from January 1, 2023, to December 31, 2023.
- ◆ GRI 1 used: GRI 1: Foundation 2021

Disclosure issue/item	Disclosure	In this report
GRI 2: General Disclosures 2021		P1-2
<b>Organization and its reporting practices</b>		
2-1	Organizational details	P5-8
2-2	Entities included in the organization's sustainability reporting	P1-2
2-3	Reporting period, frequency and contact point	P1-2
2-4	Restatements of information	P1-2
2-5	External assurance	P122-124
<b>Activities and workers</b>		
2-6	Activities, value chain and other business relationships	P11-18
2-7	Employees	P87-101
2-8	Workers who are not employees	P71-84
<b>Governance</b>		
2-9	Governance structure and composition	P19-20
2-10	Nomination and selection of the highest governance body	P19-20
2-11	Chair of the highest governance body	P19-20
2-12	Role of the highest governance body in overseeing the management of impacts	P19-20
2-13	Delegation of responsibility for managing impacts	P19-20
2-14	Role of the highest governance body in sustainability reporting	P11-18

Disclosure issue/item	Disclosure	In this report
2-15	Conflicts of interest	P19-20
2-16	Communication of critical concerns	P11-18
2-17	Collective knowledge of the highest governance body	P11-18
2-18	Evaluation of the performance of the highest governance body	P19-20
2-19	Remuneration policies	P19-20
2-20	Process to determine remuneration	P19-20
<b>Strategy, policies and practices</b>		
2-22	Statement on sustainable development strategy	P11-13
2-23	Policy commitments	P11-13
2-24	Embedding policy commitments	P11-13
2-26	Mechanisms for seeking advice and raising concerns	P19-20
2-27	Compliance with laws and regulations	P11-13
2-28	Membership associations	P15-16
2-29	Approach to stakeholder engagement	P13-18
2-30	Collective bargaining agreements	P92
<b>GRI 3: Material Topics 2021</b>		
3-1	Process to determine material topics	P17-18
3-2	List of material topics	P17-18
3-3	Management of material topics	P17-18
<b>Economic</b>		
<b>GRI 201: Economic Performance</b>		
201-2	Financial implications and other risks and opportunities due to climate change	P49-52
201-3	Defined benefit plan obligations and other retirement plans	P92-93
<b>GRI 203: Indirect Economic Impacts</b>		
203-1	Infrastructure investments and services supported	P102-106
203-2	Significant indirect economic impacts	P33-38

Disclosure issue/item	Disclosure	In this report
<b>GRI 204: Procurement Practices</b>		
3-3	Management of material topics	P76-77
<b>GRI 205: Anti-corruption</b>		
3-3	Management of material topics	P22-23
205-1	Operations assessed for risks related to corruption	P22-23
205-2	Communication and training about anti-corruption policies and procedures	P22-23
205-3	Confirmed incidents of corruption and actions taken	P22-23
<b>GRI 206: Anti-competitive Behavior</b>		
3-3	Management of material topics	P22-23
206-1	Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	P22-23
<b>Environmental</b>		
<b>GRI 301: Materials</b>		
3-3	Management of material topics	P63-66
301-1	Materials used by weight or volume	Not involved
301-2	Recycled input materials used	P63-66
301-3	Reclaimed products and their packaging materials	P63-66
<b>GRI 302: Energy</b>		
3-3	Management of material topics	P53-54
302-1	Energy consumption within the organization	P53-54
302-3	Energy intensity	P53-54
302-4	Reduction of energy consumption	P53-54
302-5	Reductions in energy requirements of products and services	P53-54
<b>GRI 303: Water Resources</b>		
3-3	Management of material topics	P55-58
303-1	Interactions with water as a shared resource	P55-56

Disclosure issue/item	Disclosure	In this report
303-2	Management of water discharge-related impacts	P55-56
303-3	Water withdrawal	P55-58
303-4	Water discharge	P55-58
303-5	Water consumption	P55-58
<b>GRI 304: Biodiversity</b>		
3-3	Management of material topics	P67-68
304-1	Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	P67-68
304-2	Significant impacts of activities, products and services on biodiversity	P67-68
304-3	Habitats protected or restored	P67-68
<b>GRI 305: Emissions</b>		
3-3	Management of material topics	P49-54
305-1	Direct (Scope 1) GHG emissions	P54
305-2	Energy indirect (Scope 2) GHG emissions	P54
305-5	Reduction of GHG emissions	P54
305-7	Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions	P60
<b>GRI 306: Effluents and Waste</b>		
3-3	Management of material topics	P61-62
306-1	Water discharge by quality and destination	P61
306-2	Waste by type and disposal method	P62
<b>GRI 308: Supplier Environmental Assessment 2016</b>		
3-3	Management of material topics	P71-84
308-1	New suppliers that were screened using environmental criteria	P74-76

Disclosure issue/item	Disclosure	In this report
308-2	Negative environmental impacts in the supply chain and actions taken	P74-76
<b>Social</b>		
<b>GRI 401: Employment</b>		
3-3	Management of material topics	P89-101
401-1	New employee hires and employee turnover	P87
401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees	P92-93
401-3	Parental leave	P92-93
<b>GRI 402: Labor/Management Relations 2016</b>		
3-3	Management of material topics	P87-88
<b>GRI 403: Occupational Health and Safety 2018</b>		
3-3	Management of material topics	P98-101
403-1	Occupational health and safety management system	P98-100
403-2	Hazard identification, risk assessment, and incident investigation	P98-100
403-3	Occupational health services	P98-100
403-4	Worker participation, consultation, and communication on occupational health and safety	P98-100
403-5	Worker training on occupational health and safety	P101
403-6	Promotion of worker health	P98-100
403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	P98-100
403-8	Workers covered by an occupational health and safety management system	P98-100

Disclosure issue/item	Disclosure	In this report
403-9	Work-related injuries	P98-100
403-10	Work-related ill health	P98-100
<b>GRI 404: Training and Education</b>		
3-3	Management of material topics	P95-97
404-1	Average hours of training per year per employee	P97
404-2	Programs for upgrading employee skills and transition assistance programs	P95-96
404-3	Percentage of employees receiving regular performance and career development reviews	P95-96
<b>GRI 405: Diversity and Equal Opportunity</b>		
3-3	Management of material topics	P90-91
405-1	Diversity of governance bodies and employees	P90-91
405-2	Ratio of basic salary and remuneration of women to men	P92
<b>GRI 406: Non-discrimination</b>		
3-3	Management of material topics	P87-88
406-1	Incidents of discrimination and corrective actions taken	P90
<b>GRI 407: Freedom of Association and Collective Bargaining</b>		
3-3	Management of material topics	P92-93
407-1	Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk	P76-77
<b>GRI 408: Child Labor</b>		
3-3	Management of material topics	P87-88
408-1	Operations and suppliers at significant risk for incidents of child labor	P87-88
<b>GRI 409: Forced or Compulsory Labor</b>		

Disclosure issue/item	Disclosure	In this report
3-3	Management of material topics	P87-88
409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labor	P87-88
<b>GRI 413: Local Communities</b>		
3-3	Management of material topics	P102-106
413-1	Operations with local community engagement, impact assessments, and development programs	P102-106
<b>GRI 414: Supplier Social Assessment</b>		
3-3	Management of material topics	P74-77
414-1	New suppliers that were screened using social criteria	P75
414-2	Negative social impacts in the supply chain and actions taken	P74-77
<b>GRI 416: Customer Health and Safety</b>		
3-3	Management of material topics	P44-46
416-1	Assessment of the health and safety impacts of product and service categories	P45-46
416-2	Incidents of non-compliance concerning the health and safety impacts of products and services	P45-46
<b>GRI 418: Customer Privacy</b>		
3-3	Management of material topics	P24
418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	P24

## Appendix 3


### References in the Report

Short name	Full name	Relation
LONGi Green Energy	LONGi Green Energy Technology Co., Ltd.	The Group/Headquarters
LONGi Solar	LONGi Solar Technology Co., Ltd.	Wholly-owned subsidiary of the Company
LONGi Silicon (Lijiang)	Lijiang LONGi Silicon Materials Co., Ltd.	Wholly-owned subsidiary of the Company
LONGi Silicon (Huaping)	Huaping LONGi Silicon Materials Co., Ltd.	Wholly-owned subsidiary of the Company
LONGi Malaysia	LONGI MALAYSIA SDN.BHD.	Wholly-owned subsidiary of the Company
Ordos LONGi	Ordos LONGi Silicon Materials Co., Ltd.	Wholly-owned subsidiary of the Company
LONGi Silicon (Baoshan)	Baoshan LONGi Silicon Materials Co., Ltd.	Wholly-owned subsidiary of the Company
LONGi Solar (Taizhou)	LONGi Solar Technology (Taizhou) Co., Ltd	Wholly-owned subsidiary of solar PV
LONGi Solar (Jiaying)	LONGi Solar Technology (Jiaying) Co., Ltd.	Wholly-owned subsidiary of solar PV
LONGi Solar (Xi'an)	LONGi Solar Technology (Xi'an) Co., Ltd.	Wholly-owned subsidiary of solar PV
LONGi Photovoltaic Technology (Jiaying)	LONGi Photovoltaic Technology (Jiaying) Co., Ltd.	Wholly-owned subsidiary of solar PV
LONGi Solar (Shaanxi)	LONGi Solar Technology (Shaanxi ) Co., Ltd.	Wholly-owned subsidiary of solar PV
LONGi Photovoltaic Technology (Ordos)	LONGi Photovoltaic Technology (Ordos) Co., Ltd.	Wholly-owned subsidiary of solar PV
LONGi Solar (Zhejiang)	LONGi Solar Technology (Zhejiang) Co., Ltd.	Subsidiary of LONGi solar
LONGi Solar (Jiangsu)	LONGi Solar Technology (Jiangsu) Co., Ltd.	Subsidiary of LONGi solar
LONGi CENTER	LONGi CENTER New Energy Co., Ltd.	Joint venture of LONGi Green Energy
Xi'an LONGi Hydrogen	Xi'an LONGi Hydrogen Energy Technology Co., Ltd.	Subsidiary controlled by Green Energy Investment
NWestern Vietnam	NWestern Solar VIETNAM COMPANY LIMITED	Wholly-owned subsidiary of Hainan LONGi

Note: This table only includes company names that appear in the report.

## Appendix 4

### Third Party Assurance Statement



## ASSURANCE STATEMENT

**SGS-CSTC'S REPORT ON SUSTAINABILITY ACTIVITIES IN THE SUSTAINABILITY ACTIVITIES REPORT OF LONGI GREEN ENERGY TECHNOLOGY CO., LTD. FOR 2023**

**NATURE AND SCOPE OF THE ASSURANCE/VERIFICATION**

SGS-CSTC (hereinafter referred to as SGS) was commissioned by LONGi Green Energy Technology Co. Ltd. (hereinafter referred to as "LONGI") to conduct an independent assurance of the Chinese version of LONGi's < Sustainability Activities Report> for 2023 (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. SGS is not liable for any direct or indirect losses arising from the use of the information in this report.

**RESPONSIBILITIES**

The information in the Report and its presentation are the responsibility of the governing body and the management of LONGI. SGS has not been involved in the preparation of any of the material included in the Report.

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 and ISAE3000.

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

- SGS ESG & SRA Assurance Protocols (based on GRI Principles and guidance in AA1000).

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 head-office of LONGI and LONGi Investment Holdings Company Limited, which is located at No. 388, HangtianZhonglu, Chang'an District, Xi'an City, Shaanxi Province, P.R. China.

**LIMITATIONS AND MITIGATION**

The data drawn directly from independently audited financial accounts and carbon emissions report has not been checked back to source as part of this assurance process.

The on-site verification was only at the head-office of LONGi, relevant data and information traceability were only focused on the group level.

This verification only conducted interviews with the staffs of LONGi and access to relevant materials, the external stakeholders were not involved.

**STATEMENT OF INDEPENDENCE AND COMPETENCE**

The SGS Group of companies is the world leader in inspection, testing and verification, operating in multiple countries and providing services including management systems and service certification; quality, environmental, social and ethical auditing and training; environmental, social and sustainability report assurance. SGS affirm our independence from LONGi, being free from bias and conflicts of interest with the organisation, its subsidiaries 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 ISO37001 and CSR/ESG lead auditor.

**VERIFICATION OPINION**

On the basis of the methodology described and the verification work performed, the specified performance information in the Report, including the scope of assurance is accurate, reliable, and has been fairly stated.

**THE CONCLUSIONS, FINDINGS AND RECOMMENDATIONS**

In our opinion, The Report of LONGi for 2023 was prepared reference to GRI Standards 2021.

**REPORT PRICIPLES**

**ACCURANCY**

LONGi's information in the report was accurate, enable to release some multiple qualitative and quantitative information with indicators for stakeholders.

**BALANCE**

The Report basically followed up the balance principle and truthfully disclosed some of the positive and non-positive information.

**CLARITY**

The Report was presented different ways with words, charts, graphics and pictures, also described with actual cases to ensure the stakeholders understanding easily.

**COMPARABILITY**

LONGi had disclosed performance indicators in 2023, previous data of partial indicators were disclosed, which could help stakeholders to understand and compare the improved performance year by year.

**COMPLETENESS**

The Report included coverage of material aspects and boundaries, to reflect significant economic, environmental and social impacts and enable stakeholders to assess the organization's performance in the reporting period.

**SUSTAINABILITY CONTEXT**

LONGi had presented the efforts on some sustainability development related to economic, environmental and social aspects and combined the performance in the wide context as well.

**TIMELINESS**

Verification showed that the reported data and information was timely and effective.

**VERIFIABILITY**

The data and information can be traced and verified.

**MANAGEMENT APPROACH**

The Report had disclosed the management approach of the selected material topics.

**GENERAL DISCLOSURES**

Some of the general disclosures were presented in accordance with GRI 2: general disclosures 2021.

**TOPIC-SPECIFIC DISCLOSURES**

Some of the LONGi's topic-specific disclosures related to the material topics in economic, environmental, and social areas were in accordance with GRI Standards 2021.

**FINDINGS AND RECOMMENDATIONS**

Detailed report of the good practices, findings and recommendations for continuous improvement were presented in the SGS internal management report and submitted to LONGi.

Signed:



For and on behalf of SGS-CSTC

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

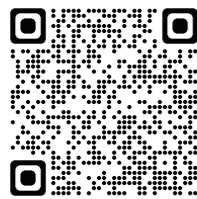
Apr. 18<sup>th</sup>, 2024  
WWW.SGS.COM



## Your Feedback

Dear readers,

Thank you for reading the *LONGi Green Energy 2023 Sustainability Report*. In our continuous efforts to elevate LONGi's sustainability practices and the quality of our report preparation, we invite you to scan the QR code to fill out a feedback form. If you have any questions or suggestions about the report, please don't hesitate to reach out and contact us.



E-mail: [ESG@longi.com](mailto:ESG@longi.com)

Telephone: +86 400 8601012

Website: <https://www.longi.com/cn/sustainable-development>



LONGi Solar



LONGi Solar



LONGi Solar



LONGi Solar



LONGi Solar