



GCL Technology Holdings Limited  
協鑫科技控股有限公司

(Incorporated in Cayman Islands with limited liability)  
(Stock Code: 3800)

2023

Environmental, Social and  
Governance Report

# About this Report

## Report Overview

This report is the 11th Environmental, Social and Governance (ESG) Report of GCL Technology Holdings Limited (the "Group" or "GCL Technology"), formerly known as GCL-Poly Energy Holdings Limited.

The focus of this report is to disclose the environmental, social, and governance management and performance of GCL Technology and its subsidiaries. This annual report covers the period from January 1, 2023, to December 31, 2023 (reporting period), with some contents of the report referencing the Group's development from earlier or subsequent years for ease of understanding.

## Basis for Preparation

The report has been prepared in accordance with the Appendix C2 *Environmental, Social and Governance Reporting Guide (ESG Reporting Guide)* under the Listing Rules by The Stock Exchange of Hong Kong Limited (HKEX). In addition, this report benchmarks against popular ESG indices and ratings including the MSCI ESG Ratings, the S&P Dow Jones Sustainability Indices (S&P DJSI), and the Hang Seng Corporate Sustainability Index (HSSUS) by the Hong Kong Quality Assurance Agency (HKQAA). Through a systematic materiality assessment process that includes internal and external evaluations, the report determines its reporting scope and data collection in line with the principles of significance, relevance, and applicability, and calculates metrics that are specific to the industry and geographic location of the Group's operations.

## Reporting Scope

The policy documents, statements, and data in this report cover the headquarters of the Group, the subsidiaries, and holding companies under actual control (unless otherwise stated), as set out in the tables below. The previous data referred to in this report are final statistics, and the financial information is presented in RMB.

GCL Technology's business scope in 2023 has been updated from the 2022 ESG report, with the following changes:

(1) Inclusion of Kunshan Solar and Ningxia Photovoltaic: Kunshan Solar, previously focused on R&D in 2022, has embarked on gigawatt-scale development from 2023; Ningxia Photovoltaic commenced operations at the end of 2022.

(2) Business Segments: To ensure the intensity data in our report accurately reflects our business sectors, we have updated our business scope in 2023, and shifted Henan GCL and Ningxia GCL Monocrystalline from the polysilicon category to other business segments.

## Access to the Report

Both the simplified Chinese, the traditional Chinese, and the English version of this report can be downloaded from the official website of GCL Technology ([www.gcltech.com](http://www.gcltech.com)). In case of discrepancies between the reports in three languages, the simplified Chinese version shall prevail.

If you have any questions or suggestions regarding the report or the Group's ESG governance, please feel free to contact us through the following channels.

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Website: [www.gcltech.com](http://www.gcltech.com)

## Data Sources

The data in this report include internal statistics from GCL Technology, public reports or coverage, as well as public data from third-party surveys or interviews, government departments, and professional organizations. The Board of Directors of GCL Technology guarantees that this report does not contain any false records, misleading statements, or significant omissions.

Business scope	Full name	Abbreviation
	GCL Technology Holdings Limited	GCL Technology, the Group, or We
	Golden Concord Group Limited	Gloden Concord Group
polysilicon	Jiangsu Zhongneng Polysilicon Technology Development Co., Ltd.	Jiangsu Zhongneng
	Leshan GCL New Energy Technology Co., Ltd	Leshan GCL
	Inner Mongolia Xinyuan Silicon Material Technology Co., Ltd.	Inner Mongolia Xinyuan
	Inner Mongolia Xinhuan Silicon Energy Technology Co., Ltd.	Inner Mongolia Xinhuan
Wafer	Ningxia GCL Photovoltaic Technology Co., Ltd	Ningxia Photovoltaic
	Jiangsu GCL Silicon Material Technology Development Co., Ltd	Xuzhou Photovoltaic
	Suzhou GCL Photovoltaic Technology Co., Ltd	Suzhou GCL
	Funing GCL Photovoltaic Technology Co., Ltd	Funing GCL Photovoltaic Technology Co., Ltd
	Jurong GCL Photovoltaic Technology Co., Ltd	Jurong GCL
	Konca Solar Cell Co., Ltd.	Wuxi Konca
Others	Henan GCL Photovoltaic Technology Co., Ltd.	Henan GCL
	Ningxia GCL Monocrystalline Silicon Technology Development Co., Ltd.	Ningxia GCL Monocrystalline
	Xuzhou GCL Solar Energy Material Co., Ltd.	Xuzhou Solar Energy Material
	GCL High Tech Nano Materials (Xuzhou) Co., Ltd.	Xuzhou High Tech
	Kunshan GCL Optoelectronic Material Co., Ltd	Kunshan Solar

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## Message from the Chairman



China's renewable energy, particularly photovoltaic (PV) technology, is leading the way in meeting carbon peak and carbon neutrality goals. This is not only propelling global energy transformation but also enabling green, low-carbon, and high-quality energy development. In 2023, GCL Technology as the forefront of this movement, seizing clean technology opportunities even in the face of a global economic slowdown and rapidly changing geopolitical dynamics. Our mission of "dedicating to green growth to keep improving the human living environment" has never been more important. We are committed to building a "zero-carbon world" for a better human life.

**Green, low-carbon initiatives facilitate the global energy transformation.** GCL Technology remains committed to environmental protection and green development principles. Our consistent efforts to improve environmental management systems and targets, strengthen environmental risk prevention, and seek for breakthroughs in clean and low-carbon energy solutions have facilitated the global energy transformation. In 2023, we conducted an in-depth analysis of climate-related risks and opportunities, and consistently drove forward carbon auditing and reduction planning. Our efforts to improve resource efficiency by optimizing production processes and carrying out energy-saving projects have borne fruit. We take comprehensive measures to advance pollution prevention and contribute to green development practices.

**Innovation leads the way for sustainable industry growth.** As a global leader in R&D and production of high-efficiency PV materials, GCL Technology is at the forefront of developing cutting-edge technologies. With a focus on the game-changing technology of granular silicon, we are committed to achieving multi-faceted innovative breakthroughs. In 2023, GCL Technology has established an industry-leading position and exceptional reputation through comprehensive quality management work under the concept of "exquisite craftsmanship, conscience quality". Embracing our core value of "collaboration", we focused on the diversified growth and rights protection of our employees, constantly improving remuneration and performance evaluation mechanisms and employee training systems, and working hand in hand with our staff to promote sustainable development of the PV industry.

**Compliance operations herald a new era of ESG.** GCL Technology strictly adheres to governance principles of compliance, independence, professionalism, and diversity to achieve lawful and compliant business operations. In 2023, we further optimized our ESG governance structure by establishing the Sustainability Management Committee and the Sustainable Development Center, continuing to deeply integrate ESG into business operations. We upheld the principle of integrity in business operations by releasing the *GCL Technology Supplier Corporate Social Responsibility Code of Conduct*, while we aimed to create a transparent business environment in partnership with our partners by perfecting our business ethics management system and strengthening training.

As a PV company that has weathered numerous industry cycles, technological revolutions, industrial innovations, and market transformations, GCL Technology conscientiously fulfills its global environmental protection mission and social responsibility. On the road to a new era of low-carbon development, GCL Technology will continue to increase investment in the R&D of green products and align with the global green development trends. We will deeply implement the ESG principles, build a sustainable supply chain, and continue to closely align our ESG efforts with our green business operations to promote sustainable development throughout our operations. At the same time, we will join forces with our partners to develop a sustainable value chain, working together to realize the vision of a greener, low-carbon future for the PV industry and contribute to the national decarbonization goals of reaching peak emissions by 2030 and being carbon neutrality by 2060.

“

Our mission of "dedicating to green growth to keep improving the human living environment" has never been more important. We are committed to building a "zero-carbon world" for a better human life.

”



Chairman of GCL Technology  
Holdings Limited

Zhu Gongshan

# About GCL Technology

## Company Introduction

GCL Technology Holdings Limited (stock code: 03800.HK) was founded in 2006 and went public in Hong Kong in 2007. GCL Technology is recognized as one of the world's largest producers of polysilicon and is a key technology innovator and industrial-scale manufacturer in the global PV materials industry. Headquartered in Hong Kong, and have subsidiaries and R&D centers in Suzhou, Xuzhou, Leshan, Baotou, Hohhot, Zhongwei, and the United States, as well as other locations.



### Our Vision

A world leading R&D and intelligent manufacturer of high-efficiency PV materials



### Core values

Value-Led, Innovation-Driven, Effort-Founded, Unity-focused



### Our Mission

Dedicated to green growth to keep improving the human living environment



### GCL's Dream

Powerful GCL, Employee Wealth, Social Praise

## Business Operations

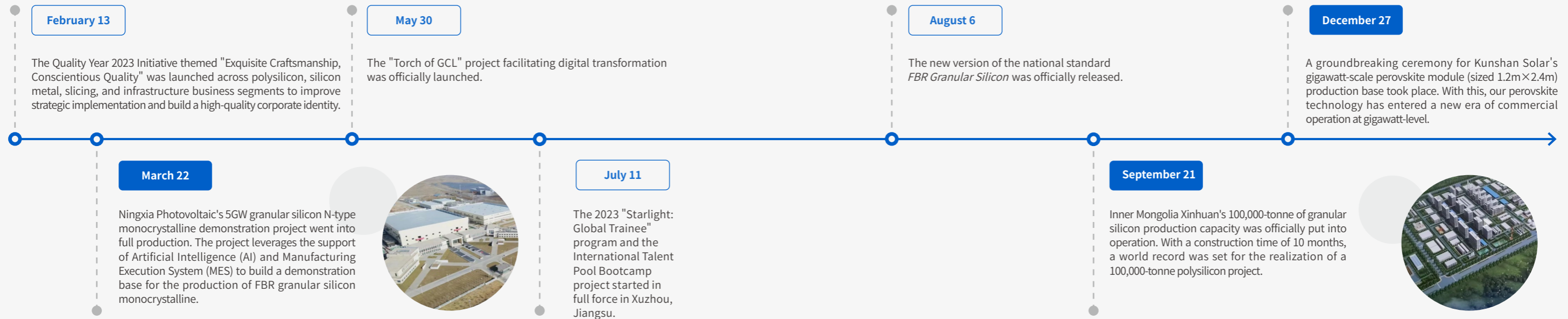
With the mission of "dedicating to green growth to keep improving the human living environment", GCL Technology is a world-leading developer and manufacturer of low-carbon, high-efficiency PV materials. We firmly grasped the direction of technological development of high-efficiency PV materials and consistently steer the course as a technological pioneer in the production of polysilicon products.

Since its establishment, GCL Technology has been committed to market-oriented and specialized approaches, and has significant R&D strength. After a decade of dedicated research, we have developed the silane-based fluidized bed reactor (FBR) technology, a game-changing proprietary core technology that has numerous advantages such as cost-efficiency and a low carbon footprint. This technology, certified with two carbon footprint certificates in both the Chinese and French PV raw materials markets, has set the lowest world's record for Polysilicon. It has become as a green energy source that is driving the reduction of carbon footprint and emissions in the PV industry.

Polysilicon	Wafer	Perovskite module
		
Annual production <b>232,256</b> tonnes	Annual production <b>51,077</b> megawatts (MW)	Achieved 19.04% conversion efficiency for the world's largest 1m×2m perovskite single-junction modules Achieved 26.34% efficiency for laminated modules (0.2m <sup>2</sup> )

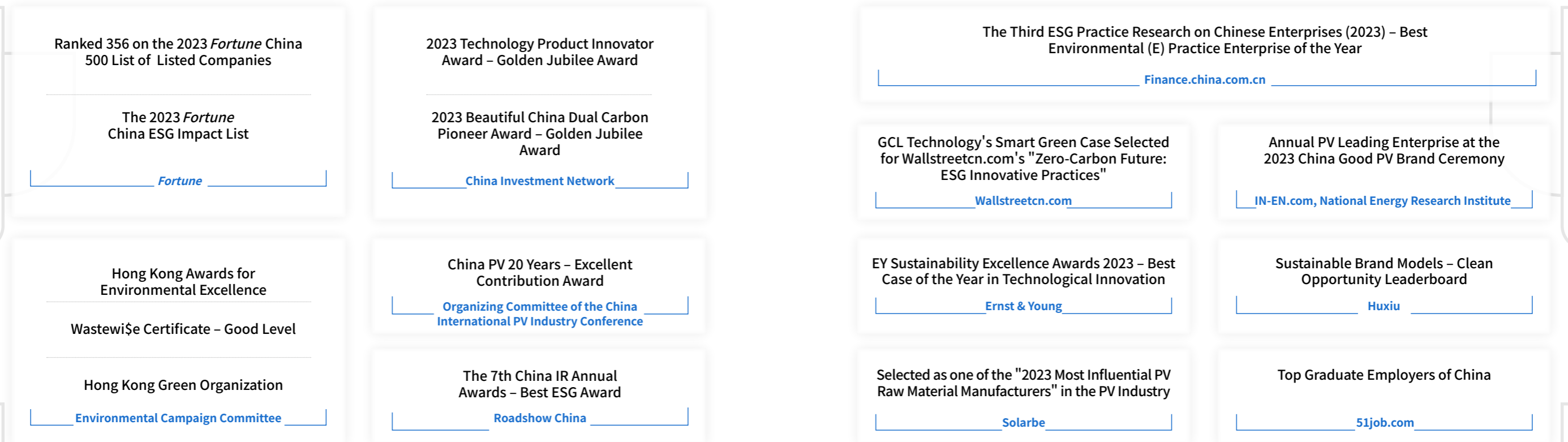


## Annual Highlights



## Awards and recognition

GCL Technology is actively engaged in building its honor matrix. During the reporting period, we received prominent awards that put our achievements in various areas including PV and ESG, in the spotlight.



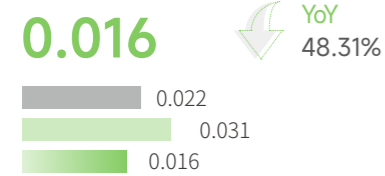
# Key Performance Indicators in 2023

## Environment

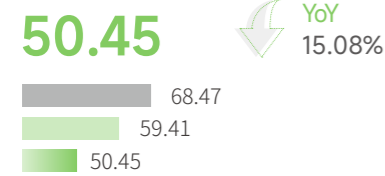
We have been promoting green and low-carbon operations, refining our environmental management, advocating the use of clean energy, and promoting the recycling of resources to facilitate carbon reduction in the PV industry chain.

Legend: 2021 (grey), 2022 (light green), 2023 (dark green)

Total water consumption intensity<sup>1</sup>  
(ten thousand tonnes/MW of wafers)



GHG emission intensity<sup>1</sup>  
(tCO<sub>2</sub>e/MW of wafers)



Total renewable energy consumption  
(Self-built rooftop PV systems)

**30,105** MWh

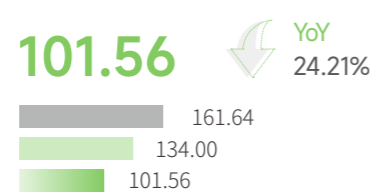


Subsidiaries completed carbon verification by third party

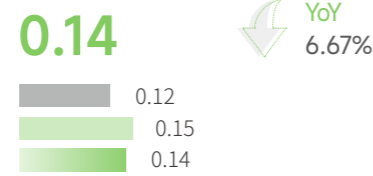
**5**

<sup>1</sup>To ensure that our measurement more accurately reflects the reality and mitigates the impact of product price volatility on environmental data, we have calibrated the company-wide environmental data intensity calculations in this report being consistently measured in wafer units for silicon metal, polysilicon, and wafers. The consumption coefficient for granular silicon is 1.05g/g, while for wafers, it is 2.7g/w in 2021, 2.5g/w in 2022, and 2.3g/w in 2023.

Comprehensive energy consumption intensity<sup>1</sup>  
(MWh/MW of wafers)



Packaging material consumption intensity<sup>1</sup>  
(tonnes/MW of wafers)



Annual capacity of 4 main granular silicon production bases fully expanded to

**420,000** tonnes

With an effective capacity of **340,000** tonnes

If the capacity is fully capitalized, we expect annual electricity savings compared to using the Siemens method

**18.1** billion kWh

Reduction of annual CO<sub>2</sub> emissions by approximately compared to using the Siemens method

**10.35** million tonnes

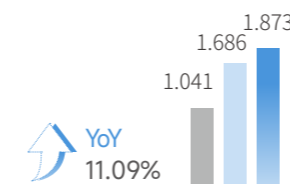
## Social

With product and service quality as our core driving force, we have introduced a quality management system covering the entire product lifecycle. We intensified our R&D efforts, focused on talent development, and together with our partners established a transparent and responsible supply chain from which both sides can benefit.



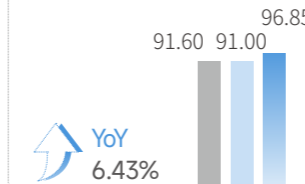
R&D investment

RMB **1.873** billion



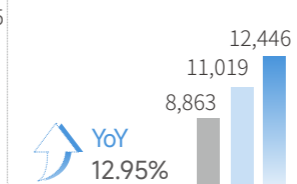
Customer satisfaction rate

**96.85** %



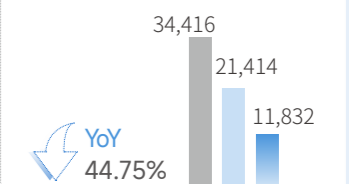
Number of regular employees

**12,446**



Hours lost to work injuries

**11,832** Hours



Released the *GCL Technology Supplier Corporate Social Responsibility Code of Conduct*

Supplier attendance for the anti-corruption training



Total metal impurities in granular silicon met the quality control requirements for 18 elements

Elevated product quality to the semiconductor standard

Percentage of granular silicon 901A products suitable for N-type modules

**90%**

Played a leading role in the development of the new national standard for the *FBR Granular Silicon* in the Chinese and English versions and witnessed the implementation of the standard



## Governance

We have further optimized the governance structure, adhered to business ethics, and continuously improved our ability to mitigate risks throughout the company.



Business ethics training coverage rate



Established the Sustainability Management Committee under the leadership of the Joint Chief Executive Officer, with a task force consisting of members from all subsidiaries

Formulated the *Board Diversity Policy*

Established a risk management mechanism, to detect internal control issues through internal inspection and corrective action

**267**

Achieved a resolution rate of

**92%**

Conducted an information security attack and defense exercise, with an employee coverage rate of



# ESG Governance and Management

## ESG Statement from the Board of Directors

GCL Technology strongly acknowledges the importance of ESG for the sustainable and stable operation of companies. We have improved our organizational structure to create an ESG governance and management system with clear rights and responsibilities. We have effectively integrated ESG-related requirements into the daily work of all departments, and linked our development philosophy and business roadmap with environmental and social harmony to create sustainable corporate values.

GCL Technology has instituted a three-tiered ESG governance structure. The Board of Directors, serving as the Group's highest decision-maker for ESG governance, is responsible for approving ESG management policies, strategic goals, and action plans. The ESG Committee, formed at the Board level, acts as the nerve center for managing ESG operations and making day-to-day decisions. The ESG Committee consistently channels risk mitigation proposals and decision-making support to the Board with its periodic briefings. In 2023, GCL Technology further refined its ESG governance structure by establishing a Sustainability Management Committee under the ESG Committee, composed of head of key functional departments and business segments. Additionally, GCL Technology officially inaugurated the

Sustainable Development Center, enhancing the three-tiered ESG governance structure of governance, management, and execution. All these moves bolstered the deep integration of ESG governance with business operations.

GCL Technology values the opinions of all stakeholders. We have established transparent and open channels of communication and conducted stakeholder surveys to identify significant ESG issues, and therefore developed work plans according to the findings. In 2023, the ESG Committee convened meetings in the first and fourth quarters to review the ESG achievements throughout 2022, identified the direction for work in 2023, and determined special projects for future enhancement.

This report provides a comprehensive and accurate disclosure of GCL Technology's ESG efforts in 2023 and was reviewed and approved by the Board of Directors on April 24, 2024. The Board of Directors and all its members warrant that this report contains no false records, misleading statements, or material omissions and accept personal and joint liability for the truthfulness, accuracy, and completeness of the report.

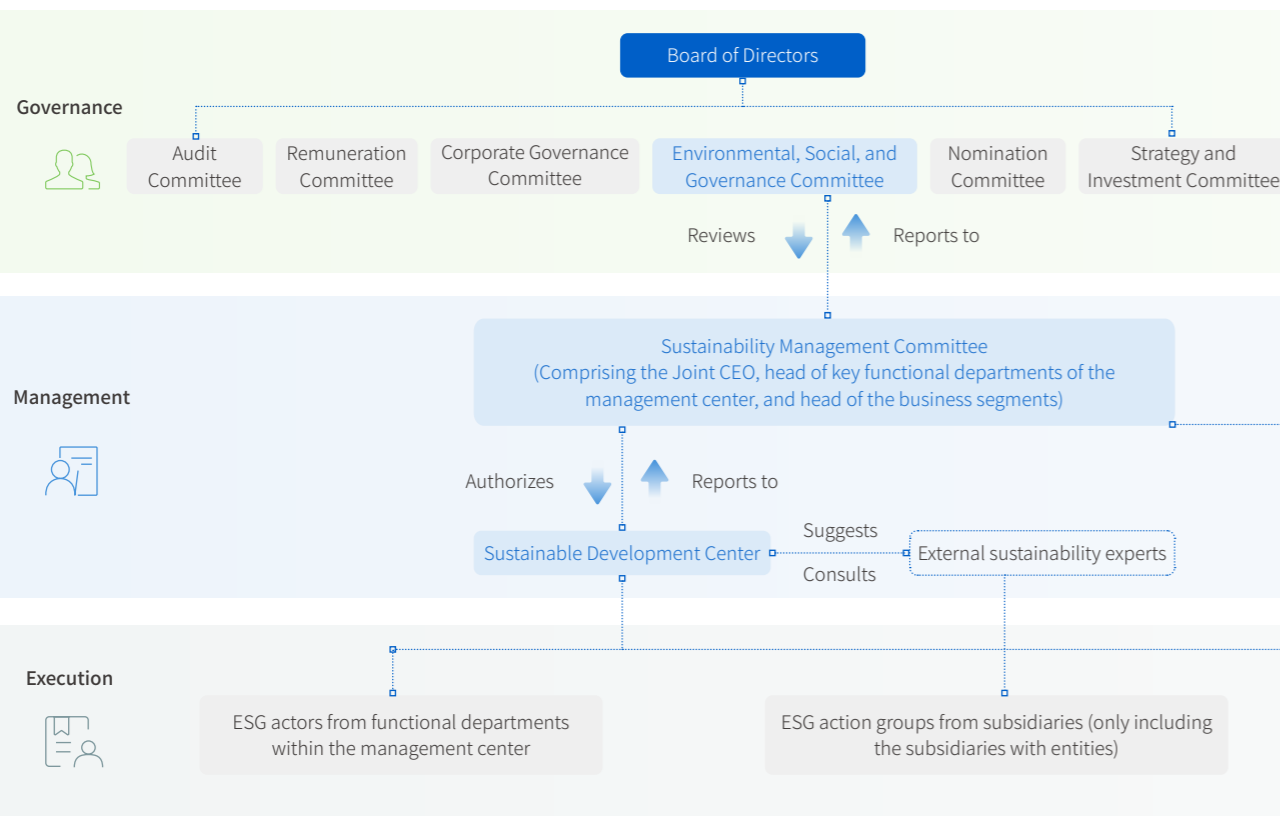
## ESG Governance

Since its IPO, GCL Technology has strictly adhered to the *ESG Reporting Guide* of HKEX, continually refining its ESG management system that centers on quantifiable ESG performance, under the guidance of the Sustainable Development Center, and spanning all vital functional departments of the management centers and bases.

To reinforce ESG management, GCL Technology officially set up the Sustainability Management Committee and the Sustainable Development Center in 2023. By establishing a robust ESG governance structure across governance, management, and execution, we ensure that ESG principles are embedded in the process of decision-making, internal communication, and implementation, creating an end-to-end management system that weaves ESG values throughout the entire business value chain, thus elevating the standard of ESG management.

Moving forward, GCL Technology will keep steering the deep integration of ESG with its business operations. We plan to introduce an ESG performance evaluation mechanism in 2024 and encourage subsidiaries to form their ESG task forces. The Group also intends to apply internal controls to our sustainable development management, set more stringent sustainable development metrics and requirements for operations, and therefore foster sustainable development from within.

GCL Technology's ESG governance structure



GCL Technology's ESG governance structure and responsibilities at each level

**Environmental, Social, and Governance (ESG) Committee**

Board members

- The Committee oversees and approves the ESG strategy, short-, medium-, and long-term ESG roadmaps, policy formulation, and implementation. It reviews key ESG issues of the Group and progress towards ESG goals. It also approves and identifies ESG risks and opportunities related to the Group's development.

**Sustainability Management Committee**

Director: Joint CEO

Members: Leaders from key functional departments of the management center and heads of business segments

- The Committee reviews the ESG strategy, short-, medium-, and long-term ESG roadmaps, goals, and policy systems.
- The Committee leads and supervises the execution and implementation of the Group's ESG efforts.
- The Committee also organizes and coordinates corporate resources and oversees the execution on the ground.

**Sustainable Development Center**

- Top-down approach: The Center is authorized by the Management Committee to oversee and supervise specific execution, advancing the comprehensive work centered around the listed company.
- Bottom-up approach: The Center facilitates the implementation of ESG tasks initiated by subsidiaries and reports to the Management Committee.

**ESG Task Force**

ESG actors from functional departments within the management center and ESG action groups from all bases

- The Task Force collaborates with the Sustainable Development Center to complete information disclosure, project implementation, and other tasks.
- The Task Force focuses on ESG goals to ensure the achievement of ESG performance.








## Stakeholder Engagement

To tap into the needs of our stakeholders and heed the voice of the community, GCL Technology actively creates diverse communication channels, establishing long-term, effective mechanisms for communication and responding to stakeholders with tangible actions.

GCL Technology's stakeholder engagement


Stakeholders	Key issues	How we engage	Frequency in 2023
 <b>Investors</b>	<ul style="list-style-type: none"> <li>Corporate governance</li> <li>Stable compliance operations</li> </ul>	<ul style="list-style-type: none"> <li>Investors' meetings</li> <li>Broker-hosted online conferences</li> <li>Online industry conferences</li> <li>Financial results presentations</li> <li>Press releases/Announcements</li> <li>On-site visits</li> </ul>	<ul style="list-style-type: none"> <li>2 offline presentations on business results</li> <li>495 offline roadshows totaling 5,453 attendees</li> </ul>
 <b>Banks / Financial Institutions</b>	<ul style="list-style-type: none"> <li>Corporate governance</li> <li>Sustainability management</li> <li>Information security and privacy protection</li> </ul>	<ul style="list-style-type: none"> <li>Financial results presentations</li> <li>Press releases/Announcements</li> </ul>	<ul style="list-style-type: none"> <li>Attended 30 renowned securities research institutions' strategy meetings, totaling 82 sessions</li> </ul>
 <b>Partners (including industry associations, universities, and research institutes)</b>	<ul style="list-style-type: none"> <li>Product quality and safety</li> <li>Intellectual property protection</li> <li>R&amp;D and innovation</li> </ul>	<ul style="list-style-type: none"> <li>On-site visits</li> <li>Meetings</li> <li>Suppliers' conferences</li> <li>Industry exhibitions</li> </ul>	<ul style="list-style-type: none"> <li>Irregular</li> </ul>
 <b>Employees</b>	<ul style="list-style-type: none"> <li>Employee rights protection</li> <li>Diversity and equal opportunities</li> <li>Communication and engagement</li> <li>Welfare and care</li> <li>Health and safety management</li> <li>Training and career growth</li> </ul>	<ul style="list-style-type: none"> <li>Regular meetings</li> <li>All-hands meetings</li> <li>Performance review meetings</li> <li>Internal publications</li> </ul>	<ul style="list-style-type: none"> <li>Annual all-hands meetings and performance review meetings</li> <li>Regular release of internal publications</li> </ul>
 <b>Suppliers</b>	<ul style="list-style-type: none"> <li>Supply chain management</li> <li>Green supply chain</li> <li>Labor and social standards in the supply chain</li> </ul>	<ul style="list-style-type: none"> <li>Suppliers' conferences</li> <li>Suppliers' training</li> <li>Supplier visits</li> <li>On-site project communication</li> </ul>	<ul style="list-style-type: none"> <li>Annual suppliers' training sessions</li> </ul>

Stakeholders	Key issues	How we engage	Frequency in 2023
 <b>Contractors</b>	<ul style="list-style-type: none"> <li>Health and safety management</li> <li>Business ethics and anti-corruption</li> </ul>	<ul style="list-style-type: none"> <li>On-site visits</li> <li>Meetings</li> </ul>	<ul style="list-style-type: none"> <li>Irregular</li> </ul>
 <b>Government and regulatory agencies</b>	<ul style="list-style-type: none"> <li>Corporate governance</li> <li>Stable compliance operations</li> <li>Internal control and risk management</li> <li>Business ethics and anti-corruption</li> <li>Sustainability management</li> </ul>	<ul style="list-style-type: none"> <li>On-site visits</li> <li>Meetings</li> <li>Press releases/Public Reports</li> </ul>	<ul style="list-style-type: none"> <li>Irregular</li> </ul>
 <b>Customers</b>	<ul style="list-style-type: none"> <li>Product quality and safety</li> <li>R&amp;D and innovation</li> <li>Customer services</li> </ul>	<ul style="list-style-type: none"> <li>On-site visits</li> <li>Meetings</li> <li>Customer appreciation events</li> </ul>	<ul style="list-style-type: none"> <li>Hosted 19 customer research sessions with a total of 62 in-person exchanges</li> </ul>
 <b>Community representatives (NGOs, local residents, and public welfare projects)</b>	<ul style="list-style-type: none"> <li>Response to climate change</li> <li>Energy management and conservation</li> <li>Water resource management</li> <li>Materials and packaging management</li> <li>Environmental management systems</li> <li>Biodiversity protection</li> <li>Wastewater management</li> <li>Emissions management</li> <li>Growth of the green industry</li> <li>Community investment and philanthropy</li> <li>Industry cooperation and development</li> </ul>	<ul style="list-style-type: none"> <li>On-site visits</li> <li>Meetings</li> <li>Press releases/Public Reports</li> </ul>	<ul style="list-style-type: none"> <li>Irregular</li> </ul>
 <b>Media</b>	<ul style="list-style-type: none"> <li>Corporate governance</li> <li>Growth of the green industry</li> <li>Community investment and philanthropy</li> <li>Industry cooperation and development</li> </ul>	<ul style="list-style-type: none"> <li>Press releases/Announcements</li> <li>Meetings</li> <li>Exhibitions</li> <li>Luncheon meetings</li> <li>Appreciation events</li> <li>Management interviews</li> </ul>	<ul style="list-style-type: none"> <li>Irregular</li> </ul>

## Responses to Reporting Principles


**Materiality:** To gauge the level of interest, expectations, and demands stakeholders have on GCL Technology's ESG, as well as to conduct an internal review of effectiveness, the Group has followed the requirements of the *ESG Reporting Guide* of HKEX and carried out a materiality analysis process. By this means, we identified significant ESG issues of concern to both stakeholders and management, thereby determining the final material issues that serve as the targets and foundation of our sustainable management.

In 2023, the Group conducted annual materiality issue research based on the process of "survey interviews, issue identification, issue evaluation, issue confirmation, and issue review". Through our research, 17 out of 30 issues were collectively identified by internal and external stakeholders as being of significant importance.




**Survey interviews**

Conducting surveys with key stakeholders, including investors, customers, and suppliers, to identify their focal concerns, yielding 218 valid questionnaires.




**Issue identification**

Refining and grouping the existing 30 issues into 3 categories based on the *ESG Reporting Guide* of HKEX, strategic priorities, industry characteristics, capital market analysis, and peer benchmarking.




**Issue evaluation**

Gathering significance rankings and improvement suggestions from both internal and external stakeholders through questionnaires and interview sessions.



**Issue confirmation**

Confirming issues in line with our development strategy, stakeholder attention, and significance to GCL Technology, and creating a materiality matrix.



**Issue review**

The ESG Committee reviewed and approved the ranking of material issues and the materiality matrix.

Issue	Category	Importance to GCL Technology	Importance to Stakeholders
Employee rights protection	Social	High	High
Energy management and conservation	Environmental	High	High
Response to climate change	Environmental	High	High
Health and safety management	Social	High	High
Product quality and safety	Social	High	High
R&D and innovation	Social	High	High
Water resource management	Environmental	Medium	High
Customer services	Social	Low	High
Intellectual property protection	Social	Low	High
Emissions management	Environmental	Low	High
Internal control and risk management	Governance	High	Medium
Wastewater management	Environmental	Medium	Medium
Industry cooperation and development	Social	High	Medium
Employee benefits and care	Social	Medium	Medium
Green supply chain	Social	Low	Medium
Environmental management system	Environmental	Medium	Medium
Business ethics and anti-corruption	Governance	High	Low

GCL Technology Materiality Matrix in 2023

**Quantitative**

GCL Technology has developed an ESG indicator system that covers all bases, regularly compiling key quantifiable disclosure indicators encompassing all "Environmental" and certain "Social" subject areas in the *ESG Reporting Guide*. These figures are compiled annually and constitute the disclosures in the report. For detailed ESG quantitative data, please refer to the respective chapters of this report.

**Balance**

With the review and confirmation by the Board of Directors, GCL Technology pledges that the content of the report is objective and openly disclosed. The information released can be accessed through public media or official disclosure channels of GCL Technology.

**Consistency**

Changes in disclosure statistics relative to previous years' ESG reports are explained in this report. Data comparisons over multiple years of ESG achievements can be found in the respective chapters of this report.

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15

## Our Response to Material ESG Issues in 2023

Ranking	ESG issues	Subject area	SDGs	Our response	Chapters or sections
1	Energy management and conservation	Environmental	7 AFFORDABLE AND CLEAN ENERGY	<ul style="list-style-type: none"> <li>Intelligently adjusted the equipment operations</li> <li>Optimized the cooling system</li> <li>Capitalized on waste heat recovery</li> </ul>	Energy Management
2	R&D and innovation	Social	9 INDUSTRY INNOVATION AND INFRASTRUCTURE	<ul style="list-style-type: none"> <li>Established the Global Silicon-based Materials Research Institute</li> <li>Launched initiatives named "Horse racing" and "Leading the pack"</li> </ul>	R&D Innovation Management
3	Internal control and risk management	Governance	16 PEACE, JUSTICE AND STRONG INSTITUTIONS	<ul style="list-style-type: none"> <li>Formulated the <i>Principles and Systems of Internal Control Management</i></li> <li>Established a monthly risk management reporting mechanism</li> <li>Held internal control and risk management training sessions</li> </ul>	Internal Control and Risk Management
4	Employee rights protection	Social	4 QUALITY EDUCATION	<ul style="list-style-type: none"> <li>Upgraded to a "GCL 5 Journey Program" training system</li> </ul>	Talent Attraction and Development Diversity and Inclusion
			5 GENDER EQUALITY	<ul style="list-style-type: none"> <li>Published the <i>Statutes of Union at GCL Technology</i></li> <li>Carried out a survey for the "Happiness Index"</li> </ul>	
			8 DECENT WORK AND ECONOMIC GROWTH	<ul style="list-style-type: none"> <li>Provided breastfeeding breaks for new mothers, set up dedicated areas including nursery and childcare rooms, and arranged specialized health check-ups for female employees</li> </ul>	
			10 REDUCED INEQUALITIES	<ul style="list-style-type: none"> <li>Ensured the transparency and fairness of the performance review</li> </ul>	
5	Health and safety management	Social	3 GOOD HEALTH AND WELL-BEING	<ul style="list-style-type: none"> <li>Collaborated with Dupont Sustainable Solutions (DSS) to build a safety risk management system</li> <li>Organized various emergency drills and safety training sessions</li> </ul>	Occupational Health and Safety
6	Product quality and safety	Social	12 RESPONSIBLE CONSUMPTION AND PRODUCTION	<ul style="list-style-type: none"> <li>Created user profiles</li> <li>Conducted quality system inspections</li> </ul>	Enhancing Service Quality
7	Water resource management	Environmental	6 CLEAN WATER AND SANITATION	<ul style="list-style-type: none"> <li>Assessed water risks</li> <li>Developed targeted water management strategies</li> <li>Improved the efficiency of water resources</li> </ul>	Water Resource Management

Ranking	ESG issues	Subject area	SDGs	Our response	Chapters or sections
8	Customer services	Social	12 RESPONSIBLE CONSUMPTION AND PRODUCTION	<ul style="list-style-type: none"> <li>Deepened employee training in key skills</li> <li>Adopted a new "E-commerce" customer service model</li> </ul>	Enhancing Service Quality
9	Intellectual property protection	Social	9 INDUSTRY INNOVATION AND INFRASTRUCTURE	<ul style="list-style-type: none"> <li>Put the Wade IPR Management System into practice</li> <li>Formulated the <i>Operation Manual of Wade IPR Management System</i></li> </ul>	Intellectual Property Rights
10	Wastewater management	Environmental	12 RESPONSIBLE CONSUMPTION AND PRODUCTION	<ul style="list-style-type: none"> <li>Strictly managed the wastewater discharge</li> <li>Formulated the <i>Wastewater Pollution Prevention and Control Management System</i> and related operation manuals</li> </ul>	Reducing Waste Generation
11	Industry cooperation and development	Social	17 PARTNERSHIPS FOR THE GOALS	<ul style="list-style-type: none"> <li>Attended the Global Green Energy Leaders Dialogue</li> <li>Attended the COP 28</li> </ul>	Industrial Cooperation
12	Response to climate change	Environmental	13 CLIMATE ACTION	<ul style="list-style-type: none"> <li>Engaged third-party professional institutions to conduct GHG inventory</li> <li>Built intelligent equipment monitoring systems</li> </ul>	Response to Climate Change
13	Employee benefits and care	Social	3 GOOD HEALTH AND WELL-BEING	<ul style="list-style-type: none"> <li>Provided benefits including employee housing compensations, family insurance plans, and family health checks</li> <li>Held activities such as music festival on the International Women's Day to promote work-life balance</li> </ul>	Hiring and Employee Benefits
14	Environmental management system	Environmental	12 RESPONSIBLE CONSUMPTION AND PRODUCTION	<ul style="list-style-type: none"> <li>Incorporated environmental management performance into its performance assessment management system</li> <li>Conducted regular environmental management external and internal audits</li> <li>Formulated the <i>Regulations of Environmental Protection Training Management</i></li> </ul>	Implementing Environmental Management
15	Green supply chain	Social	9 INDUSTRY INNOVATION AND INFRASTRUCTURE	<ul style="list-style-type: none"> <li>Built the GCL Intelligent Chain management platform</li> <li>Established an integrated standardized management process for raw material traceability</li> <li>Formulated the <i>GCL Technology Supplier Corporate Social Responsibility Code of Conduct</i></li> <li>Consistently scouted for innovative collaboration practices</li> </ul>	Building a Responsible Supply Chain
16	Business ethics and anti-corruption	Governance	16 PEACE, JUSTICE AND STRONG INSTITUTIONS	<ul style="list-style-type: none"> <li>Formulated the <i>Anti-Corruption Regulations</i></li> <li>Hosted regular thematic training sessions on integrity</li> </ul>	Commitment to Business Ethics
17	Emissions management	Environmental	12 RESPONSIBLE CONSUMPTION AND PRODUCTION	<ul style="list-style-type: none"> <li>Strictly managed the waste gas emissions</li> <li>Formulated the <i>Waste Gas Pollution Prevention and Control System</i> and related operation manuals</li> </ul>	Reducing Waste Generation

Feature

# Technological Iteration Accelerates the Global Transition to Low-carbon Renewable Energy

Under the global trend towards carbon neutrality, China's photovoltaic sector has emerged as a key driver of the global green transition. This achievement has been underpinned by countless encounters with adversity and challenges, demonstrating the industry's unwavering pursuit of high-quality development.

Despite its central role in today's world, the PV industry's production processes are inherently associated with high carbon emissions. In addition, the industry has faced supply chain constraints due to insufficient polysilicon supply.

According to the Product Environmental Footprint methodology proposed by the European Commission, the carbon footprint of upstream manufacturing processes in the PV sector accounts for 80% to 95% of the total lifecycle of PV products, and the production of high-purity polysilicon contributes to approximately 47% of carbon emissions; the carbon footprint of PV module products is estimated at 500kg/kW<sup>1</sup>. This corresponds to carbon emissions of 235,000 tCO<sub>2</sub>e during polysilicon production for the manufacture of 1GW of PV modules. The International Renewable Energy Agency (IRENA) has predicted that by 2030, the global cumulative installed PV capacity will reach 2.48TW and further increase to 8.5TW by 2050, accounting for about 40%<sup>2</sup> of global installed power capacity, which highlighting the significant environmental impact of PV manufacturing.

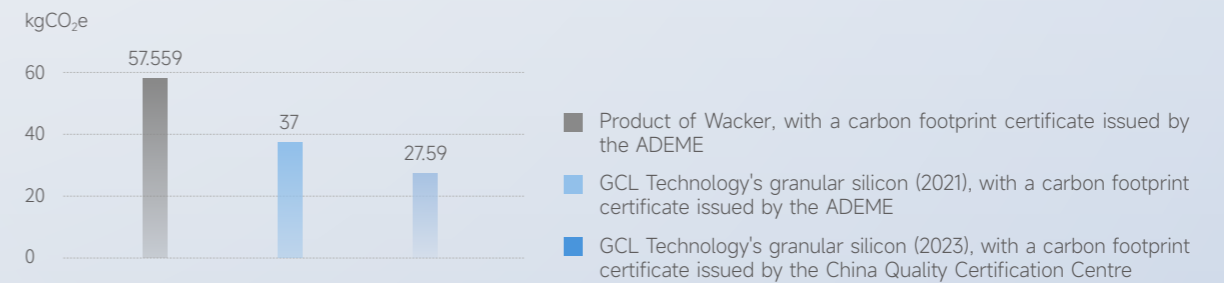
As the EU and other countries raised the bar for overall environmental impact of PV products throughout the whole lifecycle of production, achieving low-carbon development and securing stable integrated supply capabilities have become major challenges for the PV industry.

Based on the global need for green development, GCL Technology is committed to driving the development of PV materials. With the consistent pursuit of the dual goals of "low cost" and "high quality", we have invested over RMB20 billion since 2011 to promote product innovation, and use granular silicon respond to the global demand for low-carbon development.

## Granular silicon: a game-changing technology in the era of "dual carbon goals"

In 2021, our granular silicon products were mass-produced for the first time and received the carbon footprint certificate issued by the French Environment and Energy Management Agency (ADEME). The carbon emissions for each kilogram of granular silicon produced are only 37 kgCO<sub>2</sub>e. This value is not only well below the average for industrial emissions but also breaks the previous world record of 57.559 kgCO<sub>2</sub>e, which was held by Wacker.

In 2023, Leshan GCL granular silicon received the carbon footprint certificate issued by China Quality Certification Centre (CQC), with only 27.59 kgCO<sub>2</sub>e per kilogram of granular silicon.



Carbon footprint comparison between granular silicon and other product<sup>3</sup>



Carbon footprint certificate for granular silicon

The industry has high expectations of our new product with such a great advantage.

We will continue to refine our technology and strengthen communication and learning between our production bases. In 2023, we introduced a "horse race model" to incentivize breakthroughs and increase the speed of updates at our production bases. As a result, the total power consumption of silane-based granular silicon produced using the FBR process fell to 13.8 kWh/kg, resulting in a 27% reduction in average manufacturing costs compared to the end of the previous year. This development has brought significant benefits in terms of cost reduction and lower carbon emissions. In 2023, we produced a total of 203,000 tonnes of granular silicon, which was estimated to reduce carbon emissions by 5 million tCO<sub>2</sub>e<sup>4</sup> compared to the production of rod silicon.

estimated to reduce carbon emissions by

**5** million tCO<sub>2</sub>e

<sup>1</sup> Data source: TÜV Süd China *Thoughts on Green Supply Chain: Emissions and Emission Reduction Contributions in the Photovoltaic Industry*.

<sup>2</sup> Data source: The International Renewable Energy Agency (IRENA); *Future of Solar Photovoltaic*. 1TW=1,000GW.

<sup>3</sup> The carbon footprint certification for Wacker (57.559 kgCO<sub>2</sub>e) and for our granular silicon in 2021 (37 kgCO<sub>2</sub>e) were both certified by the ADEME. Our granular silicon in 2023 (27.59 kgCO<sub>2</sub>e) was certified by the CQC.

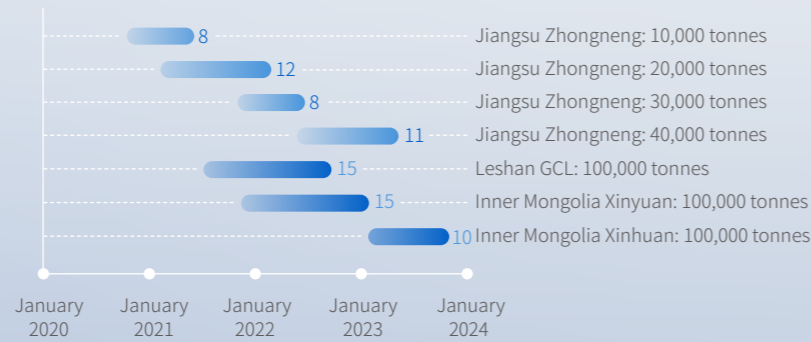
<sup>4</sup> The calculation method for carbon dioxide emission reductions: (Electricity consumption per kilogram of rod silicon production - Electricity consumption per kilogram of granular silicon production) \* Annual output of granular silicon \* National power grid's average emission factor. The average power consumption for rod silicon production is sourced from the *2023-2024 Chinese Photovoltaic Industry Development Roadmap* by the China Photovoltaic Industry Association, which is 57 kWh/kg-Si. The power consumption for granular silicon production is 13.8 kWh/kg-Si. The national power grid's average emission factor is the coefficient recommended by the *Notice on the Management of Greenhouse Gas Emission Reporting of the Power Generation Industry for 2023-2025*, which is 0.5703 tCO<sub>2</sub>/MWh.

## From process innovation to industrialization

Behind achieving the industry's lowest carbon footprint is our deep integration of low-carbon genes into every technological and process innovation.

Since the introduction of the first large-scale modified Siemens cold hydrogenation method in China in 2009, GCL Technology has been dedicated to the R&D of the FBR process and finally achieved a technological breakthrough in 2019.

Granular silicon production cycle (month)



We have been able to replicate production on a "modular basis". Production bases including Xuzhou, Leshan, and Inner Mongolia have put their production line into operation. The Inner Mongolia Xinhuan has broken the record for the rapid construction of a polysilicon project with a capacity of 100,000 tonnes, taking only 10 months from construction to production.

As of December 31, 2023, our granular silicon nominal capacity was 420,000 tonnes, with an effective capacity of 340,000 tonnes, an increase of 200,000 tonnes since the beginning of 2023. Our actual production was 203,000 tonnes, an increase of 346% compared to 2022. Our market share has increased from 1% to 14% today.

Granular silicon nominal capacity

**420,000** tonnes

Effective capacity

**340,000** tonnes

Actual production

**203,000** tonnes

### In 2009

We introduced the first large-scale modified Siemens cold hydrogenation method in China.

### In 2011

We broke the record for the traditional cold hydrogenation process and reduced total power consumption to below 70 kWh/kg-Si.

### In 2013

The third-generation fluidized bed reactor with an improved heating method was adopted.

### In 2016

We stepped up our efforts in the area of R&D and continued to overcome the challenges in the production of granular silicon.

### In 2018

The production line for granular silicon ensured stable operation for over 180 days and achieved its production targets for the first time.

### In 2019

Construction of FBR-based granular silicon production line with a capacity of 20,000 tonnes began, initially using a modular method to refine production processes, strengthen quality control, and improve product quality.

### In 2020

Silane-based granular silicon produced using the FBR process gained customer recognition and entered the mainstream market.

### In 2021

The production of granular silicon reached the capacity of ten thousands tonnes and received the first international carbon footprint certificate.

### In 2022

The effective potential capacity of granular silicon was 185,000 tonnes, with an annual growth rate in production capacity of over 360%.

### In 2023

The granular silicon nominal capacity reached 420,000 tonnes, which combined with our lead in low-carbon technology will unlock more low-carbon potential for the global energy sector.

## Quality wins the market

As our technology evolves, improving product quality has become a priority for GCL Technology. Based on a customer-oriented approach, we uphold the business philosophy of "quality + cost = market" by refining management measures, improving and consolidating management capabilities, and increasing our influence on carbon reduction through our development efforts.

In order to improve customer satisfaction, we introduced the "always adhere to the customer-centric" quality policy and established a comprehensive quality management system in 2023, which has yielded successful results.

### In terms of improving product quality:

The overall proportion of the products with a total metal impurity content of 5 elements of  $\leq 1\text{ppbw}$  has maintained at approximately 90%; At the same time, the overall proportion of the products with a total metal impurities content of 5 elements of  $\leq 0.5\text{ppbw}$  increased to approximately 75%, and some production bases have achieved nearly 90%. Such products can fully benchmark against the quality standards of N-type dense compound feeding materials in the market. In order to provide customers with better product quality and a better product experience, our internal requirements for total metal impurities has raised to 18 element. The proportion of the products with total metal impurities of 18 elements of  $\leq 1\text{ppbw}$  in granular silicon increased to 43%.

### Internal and external customer service:

Improvement in the quality system

79 %

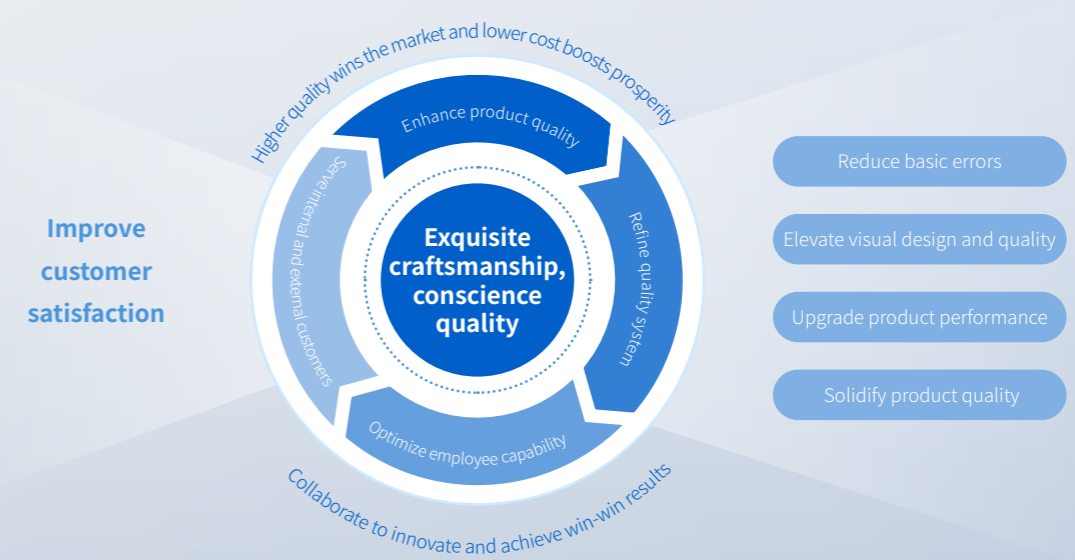


By the end of the reporting period, among the 15 bases, in addition to 2 new bases this year, the remaining 13 bases were all certified by ISO 9001 quality management system certification. In order to obtain the SA8000 (Social Accountability 8000) certification, we have set up a SPT team to collect and improve issues and plan to undergo internal and external audits in 2024 to obtain the certification.

In addition to 2 new bases this year, the ISO 9001 quality management system certification coverage is

100 %

### Quality Management System of GCL Technology



The Chinese PV industry has evolved from the "three reliance" to the global market leader and has become a dominant player on the international stage. This historic breakthrough is due to the continuous innovation, technological accumulation, and unremitting efforts of Chinese photovoltaic companies.

Looking to the future, we will continue to focus on the photovoltaic industry chain and take an innovation and quality-oriented approach to build a low-carbon and even carbon free photovoltaic industry chain. We are committed to contributing to China's "30-60" goals and offer more Chinese wisdom to the development of the global clean energy industry.

# 01

## Environment: Green Development

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### In response to HKEX indicators

- A1 Emissions
- A2 Use of Resources
- A3 The Environment and Natural Resources
- A4 Climate-related Disclosures

### In response to the following SDGs



# Implementing Environmental Management



GCL Technology pursues the concept of environmental protection and green development, and strengthens the prevention and control of environmental risks by improving the environmental management system and implementing the environmental management responsibility system, and endeavours to reduce the impact of its operations on the environment through the proactive implementation of environmental protection and conversation.

## Environmental Management System

GCL Technology strictly complies with environmental protection laws and regulations and proactively improves the environmental protection system. The Group has formulated the guiding document of the *Environmental Protection Regulation* based on laws and regulations such as the *Environmental Protection Law of the People's Republic of China* and the *Circular Economy Promotion Law of the People's Republic of China*. During the reporting period, the Group updated internal policies, such as the *Management System of Safety and Environmental Information Exchange*, the *Management System of Environmental Factor Identification, Evaluation and Adaptation*, and the *Work Log System of Environmental Management*, to clarify the responsibilities for environmental protection at all levels, standardize daily environmental management and establish a procedure for reporting environmental information to achieve standardized daily management.



Learn more about the *Environmental Protection Regulation*

### Performance management

GCL Technology has incorporated environmental management performance into its performance evaluation management system, and formulated annual evaluation targets, such as targets for product energy consumption. In order to effectively achieve the targets, GCL Technology has signed the *Bet-on Agreement of Annual Business Goals* with all subsidiaries and linked the performance evaluation results to the performance-related salary of the subsidiaries' core management teams.

### System certification

Through regular external and internal audits of the environmental management system, the Group focuses on deepening the construction of the environmental management system. At the end of the reporting period, 13 out of 15 subsidiaries were certified in accordance with the ISO 14001 environmental management systems. The remaining 2 companies were only established in 2023 and are currently undergoing the corresponding certification process. Among them, Xuzhou Photovoltaic stood out with its production and operation performance which is characterized by "intensified land use, harmless raw materials, clean production, utilization of waste resources, and low-carbon energy". It has been recognized as the "Jiangsu Green Factory" for three consecutive years.

Except for 2 new companies, the ISO 14001 environmental management system certification coverage rate is

100%

A total of

34,376 people

took part in the environmental protection training courses

Total training

17,922.45 hours



### Capacity building

The Group has formulated the *Regulations of Environmental Protection Training Management*, which stipulates that employees at various levels receive regularly training in environmental management and the promotion of environmental awareness enhancement in order to comprehensively improve their skills and quality.



### Jiangsu Zhongneng organized the 6·5 World Environment Day activities under the theme of "Modernization for the harmonious co-existence of man and nature"

On June 5, 2023, Jiangsu Zhongneng organized a series of environmental protection activities under the theme of "Modernization for the harmonious co-existence of man and nature", such as training for the entire staff, a Q&A session on environmental protection and a signature board at the venue to promote environmental protection and raise employees' environmental awareness. In addition, Jiangsu Zhongneng conducted special inspections of potential environmental hazards during the activities and ensured timely remediation to prevent and control environmental risks.



Employees sign on a signature board as part of the activities for "World Environment Day"

### Organizational structure

GCL Technology monitors the implementation of environmental protection through the Safety and Environmental Protection Committee. As the highest management body, the Committee, under the leadership of the Co-Chief Executive Officer, is responsible for formulating the Group's environmental protection-related rules, regulations and work plans and monitoring the implementation of environmental protection to effectively improve work efficiency.

#### Safety and Environmental Protection Committee

- Defining and reviewing the Group's policy and objectives with regard to safety and environmental protection in production, and monitoring the implementation
- Organizing the assessment of potential major safety hazards and urging the rectification

#### Safety and Environmental Protection Committee Office

- Monitoring and evaluating the environmental management practices of subsidiaries
- Organizing comprehensive safety and environmental protection inspections
- Reporting regularly to the Safety and Environmental Protection Committee

#### Other relevant departments and subsidiaries


- Developing a management system and an annual work plan and implementing daily management
- Formulating environmental pollution emergency plans and organizing related training and drills




## Environmental Risk Management

In order to effectively prevent and respond to environmental emergencies, GCL Technology has formulated systems such as the *Emergency Plan for Environmental Emergencies*, the *Inspection and Management System for Potential Environmental Emergencies*, the *Assessment Report on Environmental Emergency Risks*, and the *Investigation Report on Environmental Emergency Resources* in accordance with relevant laws and regulations and industry technical management standards such as the *Guidelines for Risk Assessment of Enterprise Environmental Emergencies (Trial)*. With these efforts, we have clarified the responsibilities of key positions for the prevention and control of environmental risks and standardized the procedures for environmental risk management. In 2023, the Group did not record any significant incidents involving environmental risks.

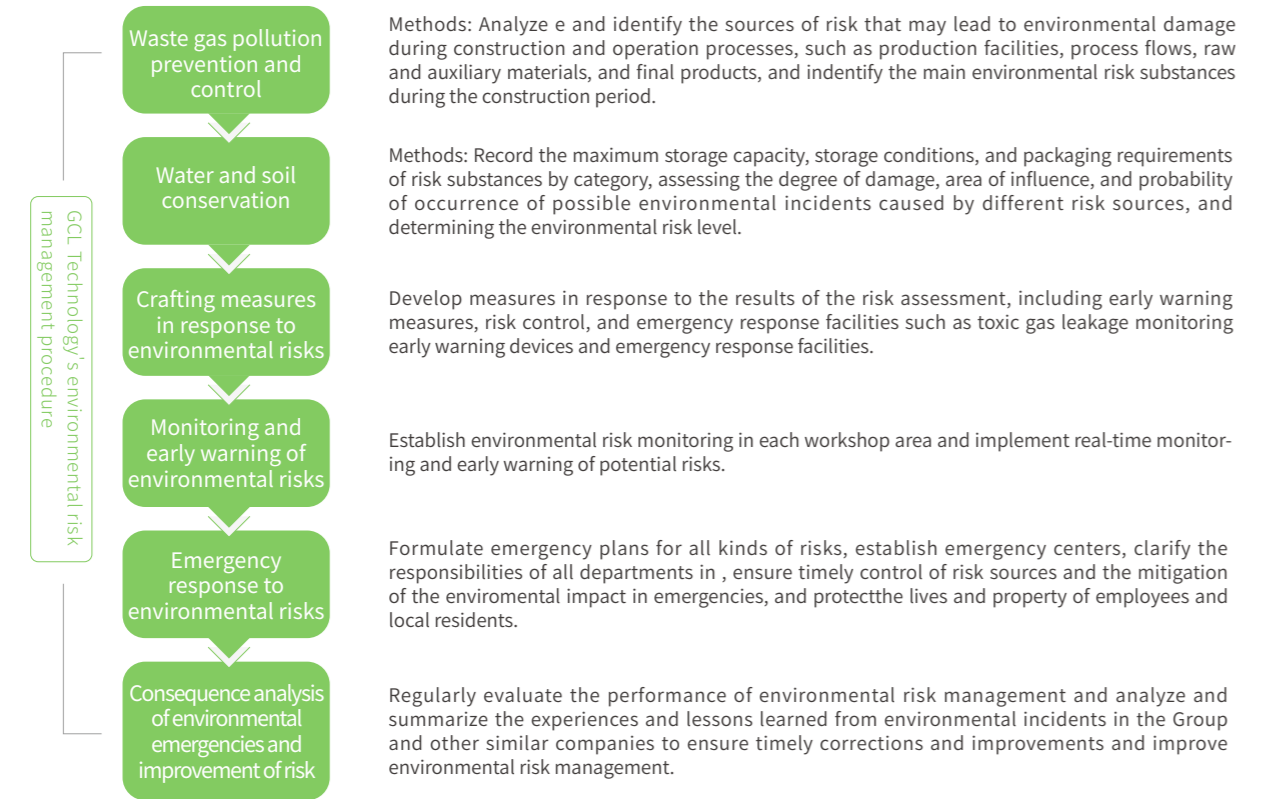
**Environmental risk management targets:**



0 environmental incidents caused by hazardous chemical spills



0 radiological incidents



GCL Technology organizes emergency drill or training on environmental risks at least once every six months to deepen employees' understanding of environmental risks and strengthen their ability to manage environmental risks and emergency response.



Training on the environmental emergency management regulations of Jiangsu Zhongneng in 2023

## Ecological Protection of the Environment

GCL Technology strictly abides by the relevant laws and regulations of the place where it operates and conducts biodiversity conservation and land use assessments at all stages of the entire construction and operation process with reference to the relevant requirements. During the reporting period, the Group's Hong Kong office received a membership certificate from World Wide Fund for Nature or World Wildlife Fund (WWF) in recognition of our contribution and support to local biodiversity in Hong Kong.

In addition, we take the most resource-efficient approach possible when building projects and reduce the negative impact on the surrounding ecological environment. We have established the environmental management standards during the project planning and construction process by formulating documents such as the *Environmental Protection Management System during the Construction Period*, the *Wastewater Management System during the Construction Period*, the *Dust Prevention and Control Management System during the Construction Period*, and the *Noise Prevention and Control Management System during the Construction Period*.



GCL Technology's membership certificate from WWF

### GCL Technology's environmental protection measures during the construction period

Air pollution prevention and control	Noise abatement
<ul style="list-style-type: none"> <li>Take timely measures to prevent and remove dust during construction and transportation, work and interrupt construction work if the wind speed exceeds 3m/s.</li> </ul>	<ul style="list-style-type: none"> <li>Set up noise monitoring points to dynamically monitor the construction environment.</li> <li>Use of low-noise equipment and installation of devices such as sound insulation panels and silencers on equipment with high noise levels.</li> </ul>
Water and soil conservation	Biodiversity conservation
<ul style="list-style-type: none"> <li>Carry out the excavation work for a large building in a small space.</li> <li>Conduct regular soil and groundwater level surveys to assess the effectiveness of water and soil protection.</li> </ul>	<ul style="list-style-type: none"> <li>Avoid the destruction of vegetation and trees and carrying out transplanting and compensatory planting.</li> <li>Prevent and reduce the destruction of animal habitats during construction.</li> </ul>

### The ecological design of the Leshan GCL Plant

The original design of the Leshan GCL Plant retained over 28% of the original mountain area to prioritize the preservation of the original tree and shrub species such as tung tree, eucalyptus grandis, camphor, and bamboo, as well as the original water source.

After construction, Leshan GCL went even further and increased its afforestation efforts by replanting about 47,000 square meters of trees and plants, resulting in 70% more green coverage than the original area. In addition, 4,382 trees of 54 species, about 28,600 bougainvillea plants, and more than 20 species of herbs and shrubs were replanted to cover around 45,000 square meters.

Thanks to the great ecological design concept and practice, the mountain area in the Park boasts a beautiful ecological environment, attracting a variety of animals including ocelots, squirrels, and civets.



The Environment of Leshan GCL Plant

# Reducing Waste Generation



The environmental waste generated by GCL Technology during production and operation includes wastewater, exhaust gas, solid waste, and noise. The main sources of exhaust gas include nitrogen oxides and sulfur oxides generated by boilers, as well as particles, fchlorosilane and hydrochloric acid exhaust gas generated during the production process of silicon tetrachloride cold hydrogenation, silane gas preparation, and slurry treatment. The main sources of wastewater are wastewater generated during the purification process of granular silane gas, slurry treatment, and silicon metal circulating water system. Hazardous waste mainly includes waste mineral oil and its oil drums while non-hazardous waste mainly includes sludge, general industrial waste, and domestic waste.

GCL Technology has strictly managed all the pollutants generated in the production and operation processes in accordance with relevant laws and regulations, such as the *Law of the People's Republic of China on the Prevention and Control of Atmospheric*

*Pollution*, the *Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Waste*, the *Standard for Pollution Control on Hazardous Waste Storage*, the *Law of the People's Republic of China on the Prevention and Control of Water Pollution*, the *Regulations on Urban Drainage and Sewage Treatment*, and the *Law of the People's Republic of China on Prevention and Control of Pollution From Environmental Noise*, the local discharge requirements, and the environmental management system standards of ISO 14001. At the same time, in conjunction with the business characteristics, all subsidiaries have developed corresponding implementation manuals and continue to proactively explore and adopt emission reduction measures in order to reduce waste from the source. During the reporting period, there were 0 excessive waste gas emissions, and 100% of waste was recycled and disposed properly, with no occurrence of environmental incidents.

## Systems and measures

	Examples of management systems	Examples of measures
<b>Exhaust gas</b>	<i>Waste Gas Pollution Prevention and Control System (New Revision)</i>	<ul style="list-style-type: none"> <li>• Selecting production facilities and equipment based on the strict environmental standards, such as the chlorosilane exhaust gas treatment system for Inner Mongolia Xinyuan, which operates at an emission concentration of just 10% of the current national standard.</li> <li>• Reducing exhaust gas emissions through equipment technical upgrading and dust recovery in the operation process.</li> </ul>
<b>Wastewater</b>	<i>Wastewater Pollution Prevention and Control Management System (New Revision)</i> <i>Emergency Pool Management System (New Revision)</i>	<ul style="list-style-type: none"> <li>• Treating all wastewater following the principles of separating wastewater from non-wastewater, treating wastewater by category, reusing wastewater, and discharging non-wastewater.</li> <li>• Reducing wastewater discharge by optimizing the production process, upgrading wastewater treatment equipment, and promoting wastewater reuse. Inner Mongolia Xinyuan, Inner Mongolia Xinhuan achieved zero industrial wastewater discharge.</li> </ul>
<b>Solid waste</b>	<i>Waste and Hazardous Waste Management Control System (New Revision)</i> <i>Emergency Plan for Waste Leakage</i>	<p><b>Hazardous waste</b></p> <ul style="list-style-type: none"> <li>• Standardizing hazardous waste management process and the entire collection process, storage, and transportation.</li> <li>• Entrusting professional third-party units to treat the waste in compliance.</li> <li>• Conducting regular inspections of hazardous waste treatment to ensure compliance.</li> </ul> <p><b>Non-hazardous waste</b></p> <ul style="list-style-type: none"> <li>• Exploring the reuse of non-hazardous waste such as wooden pallets.</li> <li>• Establishing standardized guidelines for temporary waste stacking and storage to prevent environmental pollution.</li> <li>• Entrusting a third party to utilize waste as resources.</li> <li>• Carrying out regular monitoring of non-hazardous waste treatment.</li> </ul>
<b>Noise</b>	<i>Prevention and Control Management System (New Revision)</i>	<ul style="list-style-type: none"> <li>• Implementing silencing devices on pneumatic noise equipment such as fans and air compressors.</li> <li>• Installing anti-vibration mounts to mitigate noise pollution resulting from vibrations.</li> <li>• Utilizing wall materials that possess excellent sound absorption properties to minimize the environmental impact of noise.</li> </ul>



## All GCL Technology production bases have introduced proactive exhaust gas management

In 2023, all of the Group's production bases reduced exhaust gas emissions through technological improvements and equipment upgrades.

In the production of granular silicon, Jiangsu Zhongneng significantly reduced air pollution through the centralized collection and treatment of flue gas and the technical upgrade of exhaust gas treatment equipment. In 2023, Jiangsu Zhongneng removed 9 exhaust gas cylinders, reducing dust emissions by 1.95% year-on-year, NOx emissions by 2.66 tonnes, and SO<sub>2</sub> emissions by 0.24 tonnes.

Leshan GCL has proactively implemented the conversion of hydrolysis tanks to transport the hydrolysis exhaust gas to the

exhaust gas scrubbing tower for treatment. In this way, Leshan GCL effectively eliminate the exhaust gas emissions caused by incomplete hydrolysis in the sludge area. The system has a sludge processing capacity of 0.2 tonnes per hour and up to 4.8 tonnes per day.

In the cutting section, Xuzhou Solar Energy Material has upgraded its VOCs treatment process. The new process involves centralized collection, dry filtration, activated carbon adsorption, and catalytic combustion desorption processes. This has led to the effective removal of VOCs, with the concentration of VOCs in the exhaust gas being reduced to less than 1mg/m<sup>3</sup> which is far below the national emission standard of 60mg/m<sup>3</sup>.



## Upgrading technologies and equipment to promote waste reduction

In the crystal pulling process, the conventional oil pump equipment generates a large amount of mineral oil waste, which not only makes the waste treatment process more difficult and expensive but also contaminates the environment resulting from mineral oil leakage. In order to reduce the environmental impact of the waste oil pollution, Henan GCL replaced all the oil pumps in the crystal pulling workshop in 2023 by new eco-friendly dry pumps to eliminate the production of mineral oil waste from the source.

In order to mitigate sludge pollution, Funing GCL Photovoltaic Technology Co., Ltd upgraded its press filtration technical project to effectively treat biochemical sludge in wastewater. The water content of the biochemical sludge has decreased from 90% to about 70%, achieving solid-liquid separation. The application of this technology enables Funing GCL Photovoltaic Technology Co., Ltd to reduce its biochemical sludge by approximately 20 tonnes per month and 240 tonnes per year.



## Jiangsu Zhongneng optimizes the production process to reduce wastewater discharge

In 2023, Jiangsu Zhongneng further optimized the granular silicon production process and wastewater discharge was effectively reduced through a number of measures such as reducing the slurry neutralization quantity, improving the chlorosilane recovery rate, and boosting the rotating drum

operation efficiency. As a result, total wastewater discharge reduced by more than 503,000 tonnes, while suspended solid discharge decreased by around 57.47 tonnes in 2023 at Jiangsu Zhongneng.

In 2023, we ramped up our polysilicon production to 232,256 tonnes, marking a substantial 122% surge from the 104,723 tonnes in the previous year. Wafer production reached 51,077 MW (including 22,294 MW of OEM), up 9.5% from the prior year's total wafer production of 46,661 MW (including 27,789 MW of OEM). Therefore, the increase of the environmental data within this report is largely driven by this substantial boost in our manufacturing output.

GCL Technology's year-on-year change in wastewater discharge, waste gas emissions and solid waste



## Optimizing Resource Management



We have integrated the concepts of circular economy and resource conservation into the entire production and operation process and formulated the level-one management measures including the *Energy and Water Conservation Management Rules* to define the responsibilities for resource management, which include the formulation of targets and plans, daily operation and management, data reporting and evaluation of indicators. In addition, we have encouraged the bases to optimize their processes and energy-saving technologies to increase the efficiency of resource use.

**Organizational structure:** During the reporting period, the Group further improved its organizational system for energy and water management. Under the leadership of the ESG governance system, the Sustainability Management Committee, chaired by the Joint CEO regularly approved the Group's strategic objectives and action plans and monitored the implementation of the energy and water management system; the Sustainable Development Center took the lead in formulating specific strategies and management guidelines, and the Operations Management Center coordinated with the bases to jointly support energy and water savings.

**Performance management:** Annual performance targets have been set based on each product's historical water and energy consumption and are managed in a quota-based mechanism with implementation of each section assessed on a monthly basis.

### Water consumption targets:

**Polysilicon:**

Decrease in water consumption per kilogram by 2024 compared to 2023

3% ↓

**Wafer:**

Decrease in water consumption per kilogram by 2024 compared to 2023

12% ↓

### Energy consumption target:

**Polysilicon:**

Decrease in electricity consumption per kilogram by 2024 compared to 2023

8% ↓



<sup>1</sup> Our approach to business segmentation was updated in 2023, resulting in a re-calibration of the statistical scope for 2022 to ensure uniformity. For further details, please refer to the "Reporting Scope" section in "About this Report." The data for 2022 should be taken in accordance with the figures disclosed in this current report.

<sup>2</sup> In 2023, due to the suspension of Jiangsu Zhongneng rod silicon, the amount of hazardous waste caused by the treatment of related hydrogenation equipment increased, so the total amount and intensity of hazardous waste of polysilicon increased significantly compared with previous years. This is a one-off treatment and no more hazardous waste will be generated in the future.

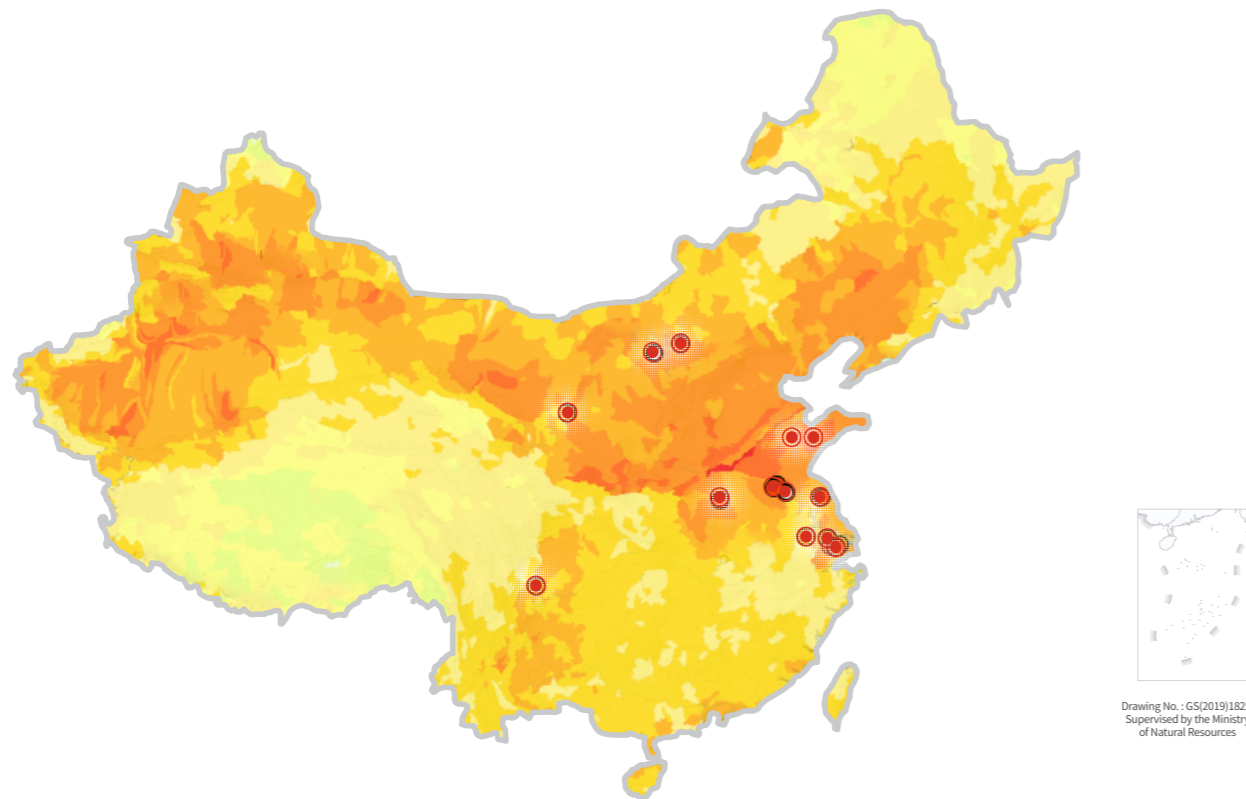
## Water Resources Management

We focus on the water use and water footprint of our products. By combining the results of regular assessments of risks to water resource at each base, we formulated targeted management plans and targets, actively implemented wastewater reuse programs, promoted the comprehensive use of water resources, and reviewed the achievement of targets annually to strengthen water conservation from the beginning.

### Water risk assessment

Leveraging the Water Risk Filter developed by the WWF, we assessed the water resource risks of 16 operating sites, including 15 production sites and 1 administrative center. The types of risks assessed include the physical risk of the basin, regulatory risk of the basin, and reputational risk of the basin.

During the reporting period, GCL Technology scored a 3.2 in the overall water risk assessment, reflecting a moderate risk level. Of all risk categories, reputational risk of the basin was rated the highest. This is largely due to the cultural and biological diversity at the operating sites, where water is integral to both the culture and the environment, which attracts media attention and poses a significant reputational risk if negative water-related incidents occur. In terms of physical risks of the basin, there were 6 locations with moderate risks and 10 with high risks. Of all the risks, the water quality risk of the basin is particularly high. It is largely due to the elevated risk of water pollution and deterioration of water quality at the operating sites, poses a significant threat to downstream areas of the basin. Among the physical risks, water scarcity presents the lowest risk with a score at 2.9.



Drawing No.: GS(2019)1825, Supervised by the Ministry of Natural Resources

GCL Technology's basin physical risk map (Source from: WWF Water Risk Filter)



### Water risk category and the number of operational sites

Risk type	Risk description	Number of high risks	Number of medium risks	Number of low risks
Physical risk of the basin	This type of risk impacts water quantity, quality, and aquatic ecosystems due to natural and human-induced factors of river basins. It comprises the risk categories of water scarcity, flooding, water quality, and ecosystem services status.	10	6	0
Regulatory risk of the basin	This type of risk arises from government regulation of water resources, such as water rights, wastewater discharge pricing, and water quality standards. It comprises the risk categories of enabling environment, institutions & governance, management Instruments, and infrastructure & finance.	0	0	16
Reputational risk of the basin	There are potential risks associated with negative public opinion, primarily related to public awareness of water, the concentration of local cultural resources, and media coverage. It comprises the risk categories of cultural importance (of water to local communities), biodiversity importance, media scrutiny, and conflict in the river basins.	16	0	0

### Measures for managing water risk

We have thoroughly analyzed the water conditions and risks of each operation site and formulated targeted management strategies to mitigate risks and ensure the sustainable use of water.

#### Basin physical risk

- Developing water resource management policies that incorporate management responsibilities at all levels, water-saving measures, and roadmaps for water resource development and utilization. Introducing advanced water treatment equipment to ensure compliant discharge.
- Improving the efficiency of water resources utilization through water-saving technological reforms, increased reuse of wastewater, and enhanced proportion of utilization of alternative water sources.
- Establishing an early warning system for floods, paying close attention to extreme rainfall and other extreme weather, and formulating an emergency plan for floods.

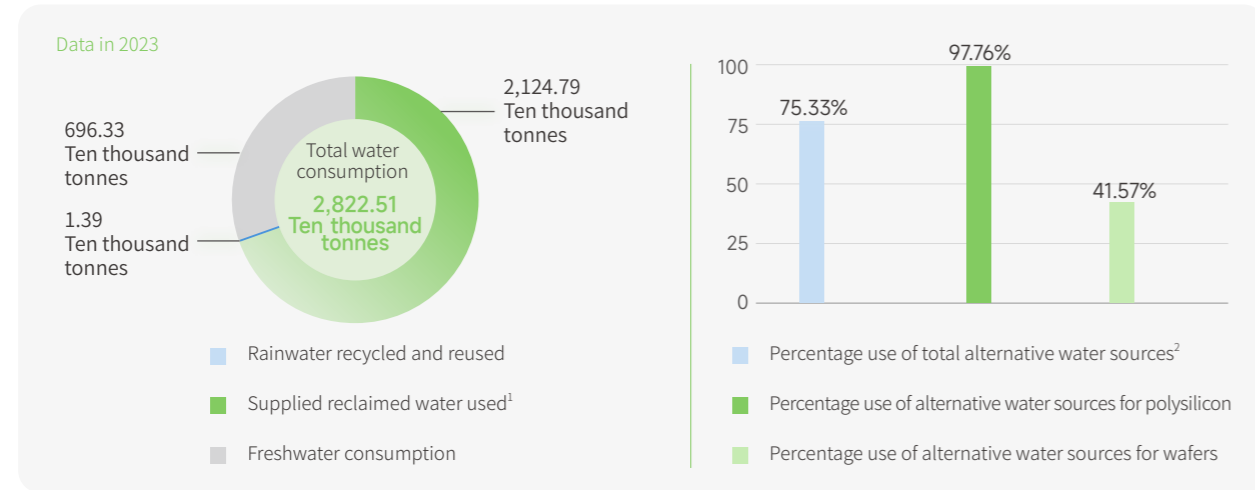
#### Basin regulatory risk

- Ensuring that all operational activities strictly comply with national and local basin protection laws and regulations.
- Monitoring and evaluating key indicators of water usage and drainage regularly to control the impact that production and operation has on the basin.
- Closely communicating and cooperating with local governments and environmental authorities, and actively participating in the meetings between the government of the basin and enterprises.

#### Basin reputational risk

- Disclosing the Group's environmental information in a timely, accurate, and comprehensive manner, including wastewater discharge data and the operation of environmental protection facilities, etc., in case there is any doubt from the public.
- Participating in water protection activities and strengthen cooperation with governments, communities, and environmental organizations.
- Monitoring the Group's public opinion related to water resources and activate the response mechanism in case of negative public opinion.

In order to reduce the impact of GCL Technology's production and operations on water resources and to safeguard water sources in the rivers and groundwater where we operate, the Group has worked hard to improve the efficiency of water use at source. We prioritize the freshwater supply of local ecosystems, continuously improve our water recycling capabilities, use alternative water sources, and minimize pressure on local water consumption.



## Water conservation

We have improved the efficiency of water utilization based on the process flow. Specifically, we have optimized the design of the production process, set up a water recycling network, and increased the use of reclaimed water and other alternative sources of water to protect water resources.

### Highlights of the 2023 GCL Technology's Water Conservation Initiatives

#### Optimization of process

- At the early stage of the granular silicon production of Inner Mongolia Xinyuan, we holistically analyzed the water shortage in the province and adopted air cooling and composite air-cooling technologies in the planning for water-saving. Air cooling is expected to consume only **1/3** of the annual water consumption of water cooling.
- Funing GCL Photovoltaic Technology Co., Ltd has renovated its concentrated water system and increased the total number of water storage tanks to reduce the replacement of tap water due to fluctuations in water consumption. In 2023, the water consumption of Funing GCL Photovoltaic Technology Co., Ltd decreased by approximately **4,964 tonnes** compared to the previous year.

#### Water recycling

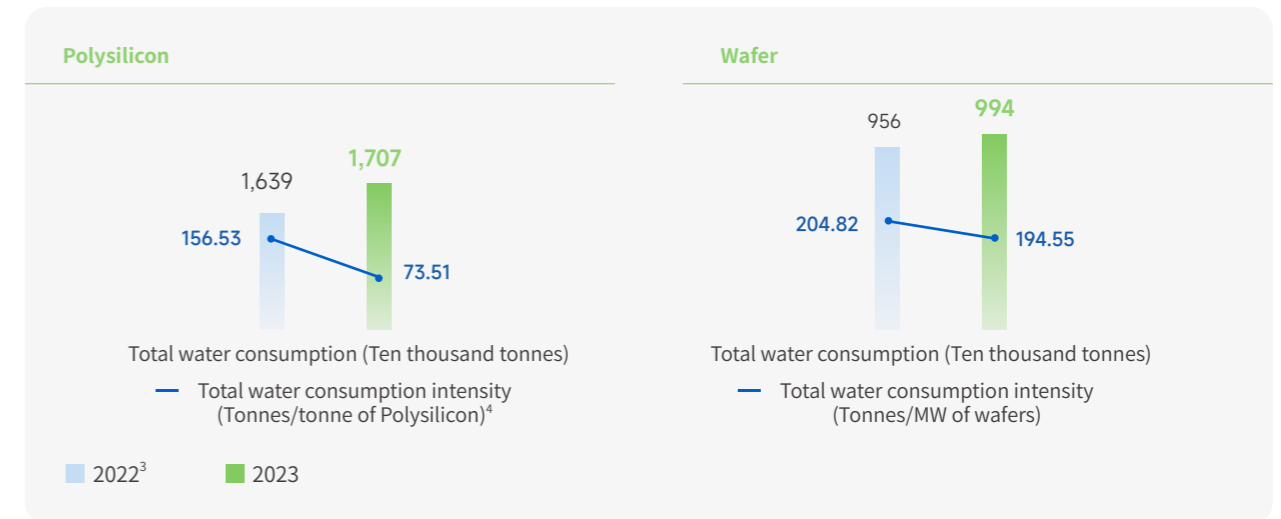
- Leshan GCL installed cooling water pumps, water storage tanks and heat exchangers to recycle the mechanical seal cooling water that flows back into the heat exchanger with an annual recycling capacity of **40,000 tonnes**.
- Kunshan Solar remodeled its water treatment network to recycle the wastewater generated in the pure water preparation process for cooling and flushing. After the renovation, its annual unit water consumption decreased by **30.4% YoY**.

#### Utilize reclaimed water<sup>1</sup>

- Leshan GCL used reclaimed water for sludge treatment, lime water allocation operations in the wastewater treatment station, and other processes. At the end of the reporting period, up to **99.02%** of reclaimed water was used in Leshan GCL's granular silicon production.

<sup>1</sup> Reclaimed water refers to non-potable water that can be reused after domestic wastewater treatment.  
<sup>2</sup> Alternative water sources includes externally supplied reclaimed water and rainwater collected in the plant.

### GCL Technology's year-on-year change in water consumption



## Energy Management

We continue to explore the potential for energy savings in all process and office environment. In 2023, we implemented a wide range of energy-saving technological transformation measures to minimize resource and energy consumption by intelligently adjusting the operating conditions of equipment, optimizing the cooling system, and increasing the use of renewable energy.

During the reporting period, the total consumption of renewable energy was

# 30,105<sup>5</sup> MWh<sup>5</sup>

Leshan GCL's clean energy supply achieved

# 100%

<sup>3</sup> Our approach to business segmentation was updated in 2023, resulting in a re-calibration of the statistical scope for 2022 to ensure uniformity. For further details, please refer to the "Reporting Scope" section in "About this Report." The data for 2022 should be taken in accordance with the figures disclosed in this current report.  
<sup>4</sup> Jiangsu Zhongneng halted its rod silicon production in 2023 and switched to granular silicon, resulting in a significant reduction in water consumption intensity due to different manufacturing processes.  
<sup>5</sup> Total renewable energy consumption from self-built rooftop PV systems.

Highlights of the 2023 GCL Technology's Energy Saving Initiatives

**Intelligent adjustment of equipment operation**

- Xuzhou High Tech installed temperature measurement equipment to monitor the ambient temperature in real time and intelligently adjust the number of pumps delivering water to the equipment accordingly. By applying this method, Xuzhou HighTech was able to reduce monthly electricity consumption in summer by 62 MW compared to winter, significantly improving energy utilization efficiency.

**Optimization of the cooling system**

- Jurong GCL used energy-efficient cooling towers and regularly inspected and replaced cooling tower fins to reduce the power consumption of the refrigeration system.
- Funing GCL Photovoltaic Technology Co., Ltd regularly inspected and replaced the cooling tower fillers to prevent aging, breakage, or blockage of fillers, improve the cooling tower's heat dissipation efficiency, and reduce energy consumption.

**In-house PV**

- Inner Mongolia Xinhuan actively promoted the use of green energy in its granular silicon production. Leveraging its abundant solar energy due to long hours of sunshine, it installed photovoltaic panels on the roof of the plant carport for power generation and carbon emission reduction.

**Green travel**

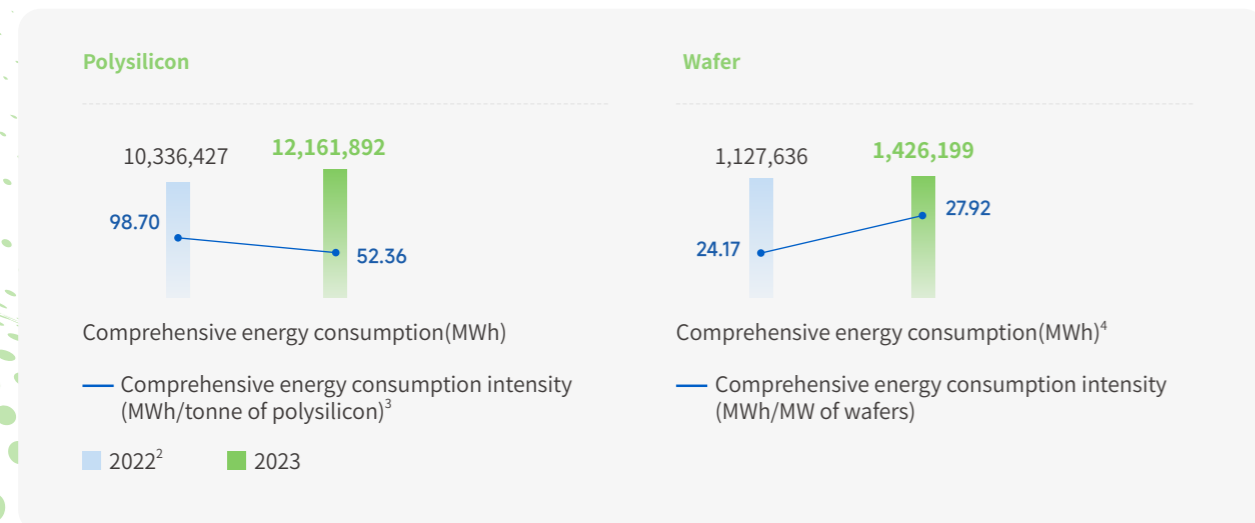
- Leshan GCL launched a green travel plan, prioritizing NEVs as corporate cars and encouraging employees to purchase NEVs. In 2023, Leshan GCL purchased 6 BEV sightseeing buses, saving about RMB60,000 in fuel.

**Two production bases of Inner Mongolia Xinyuan worked together for waste heat recycling**

In 2023, Inner Mongolia Xinyuan started recycling the waste heat of silicon metal smelting. The recycled heat can satisfy the need for production steam and daily office heating.

In the silicon metal smelting stage, we supported and built 10 waste heat boilers using the flue gas of the industrial silicon electric furnace. Waste heat boilers use the high-temperature flue gas produced after smelting to generate a large amount of steam through efficient heat exchange. The nine boilers can produce an average of 268.2 tonnes of steam per hour and can recycle as much as 3.2 MW of heat. The reused waste heat in the two bases helps to reduce our reliance on natural gas and coal, cut energy costs, and effectively reduce the emission of greenhouse gases.

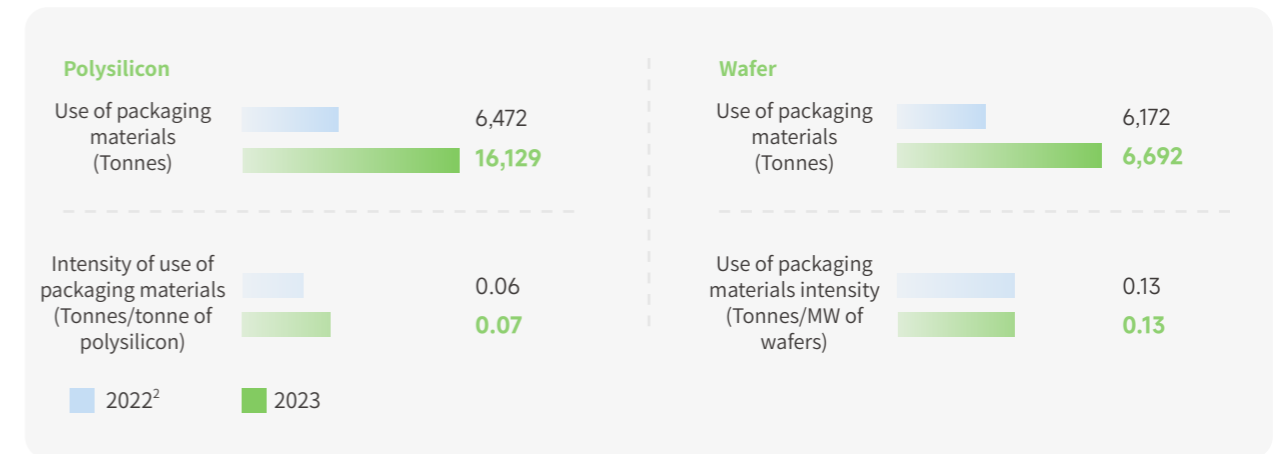
GCL Technology's year-on-year change in energy consumption<sup>1</sup>



Packaging Material Management

GCL Technology adheres to the principle of "green, minimal and circular" usage of resources and is committed to the implementation of green and low-carbon packaging, as well as improving the utilization of packaging materials and reducing their usage. The packaging materials that we use are mainly cartons, wooden pallets, PE products, pearl cotton, and silica dust bags. During the reporting period, we tried to reduce the packaging material usage by optimizing its design and the process of transportation; meanwhile, we enhanced the utilization of materials by internal recycling within the base. For example, we recycled used cartons and wooden pallets from the granular silicon production base monthly to promote the recycling of packaging materials.

GCL Technology's year-on-year change in packaging material consumption



**Optimization of GCL Technology's wafer packaging**

In May, the cutting workshop launched a wafer packaging optimization initiative, where they replaced the cartons traditionally used with one-piece foam boxes and shifted the packaging from "one in one" to "four in one".

Compared to traditional cartons, foam boxes can protect wafers better as they are more stable and reliable. By optimizing their design, we also succeeded in increasing the volume per box, thus reducing the number of boxes needed. In addition, the foam boxes are easy to dispose of, better for the circular economy, and can help reduce the environmental pollution and damage caused by wafer packaging.

Increasing the volume of wafers in each box from 500 to

**2,400**

Before and after optimizing wafer packaging



<sup>1</sup>The comprehensive energy consumption data are calculated in accordance with the *General Rules for Calculation of the Comprehensive Energy Consumption* (GB/T 2589 2020).

<sup>2</sup>Our approach to business segmentation was updated in 2023, resulting in a re-calibration of the statistical scope for 2022 to ensure uniformity. For further details, please refer to the "Reporting Scope" section in "About this Report." The data for 2022 should be taken in accordance with the figures disclosed in this current report.

<sup>3</sup>In 2023, Jiangsu Zhongneng halted its rod silicon production in favor of granular silicon, leading to a significant reduction in energy consumption intensity owing to different manufacturing processes.

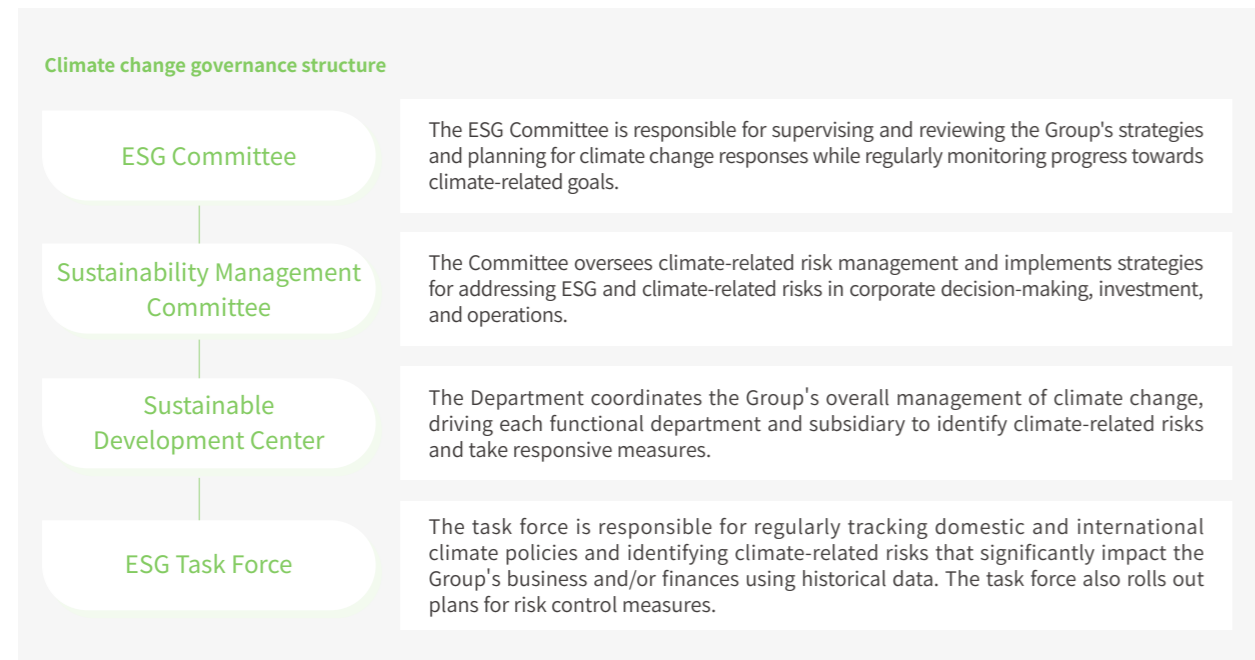
<sup>4</sup>Ningxia Photovoltaic reached full production capacity mid-year in 2023, which led to an increase of overall energy consumption and intensity for wafer production due to the elevated energy demands of the ramp-up phase.

# Responses to Climate Change

GCL Technology profoundly understands the impact of climate change on its strategic planning and business operations. Thus, responses to climate change have been integrated into the Group's overall ESG governance system. Following the framework and recommendations of the Task Force on Climate-related Financial Disclosures (TCFD), we undertake climate-related risk management to enhance our adaptive capacity. To further address climate-related risks and opportunities, the Group managed to establish a climate change governance system, deeply engaging the Board of Directors and all business segments. We strived to strengthen the identification and assessment of climate-related risks, continually promoting carbon footprint verification and reduction planning, and implementing specialized climate change response projects.

## Governance

To adeptly navigate the climate-related risk landscape and capitalize on emerging opportunities, GCL Technology has built a climate-related risk governance structure anchored in our ESG governance and management system, consistently honing our responses to climate-related risks and opportunities.



## Strategy

The Group identifies and analyzes both physical and transition risks, formulating measures to respond to identified risks and enhancing our adaptability to climate change. The Group also recognizes the potential for new business growth opportunities arising from climate change and plans to gradually develop evaluation methods in line with TCFD guidelines, continuously improving our response strategies.

GCL Technology's key climate-related risks and adaptation measures

Risk types	Factors	Description	Impact duration	Adaptation measures
Acute	Meteorological disasters such as heavy rain, floods, and typhoons	Damage to manufacturing facilities and equipment resulting in asset devaluation.	Short- or mid-term	<ul style="list-style-type: none"> <li>Conducted targeted inspections of operational facilities and production equipment based on seasonal meteorological characteristics.</li> <li>Developed emergency plans and regularly practiced emergency drills.</li> </ul>
	Heat waves	Increased load on cooling units may impact productivity. Heat waves increase the risk of power outages, leading to production interruption.	Short-term	<ul style="list-style-type: none"> <li>Optimized the operation strategy of cooling units to avoid long-term high-load operations and increased maintenance of cooling equipment to ensure efficient operations.</li> <li>Established a reliable manufacturing monitoring system to ensure the safe operation of production equipment.</li> <li>Improved power outage emergency plans and strengthened summer power-saving measures at Leshan GCL and other high-risk bases.</li> </ul>
	Cold waves	Freezing of the circulating water system degrades the performance of production equipment. Increased energy consumption (e.g., natural gas) increases production costs.	Short- or mid-term	<ul style="list-style-type: none"> <li>Strengthened winter maintenance and anti-freezing measures for production equipment in Inner Mongolia and other regions.</li> <li>Adopted waste heat recycling and other methods to improve energy efficiency and reduce energy consumption.</li> </ul>
Chronic	Scarcity of water resources	Water scarcity impacts cooling and cleaning stages of production.	Mid- or long-term	<ul style="list-style-type: none"> <li>Assessed water resource risks and developed mitigation measures accordingly.</li> <li>Developed and utilized water-saving equipment and technologies, such as air-cooling technology, which helps to reduce water consumption.</li> <li>Recycled wastewater to achieve zero discharge of wastewater and improve water use efficiency.</li> </ul>
Policy and legal	Tightening carbon policies	National policies raised the bar for corporate low-carbon performance, while HKEX also stepped up disclosure requirements for climate-related information, heightening the compliance risk faced by companies.	Short- or mid-term	<ul style="list-style-type: none"> <li>Reduced carbon emissions to reduce the carbon footprint.</li> <li>Regularly carried out carbon footprint verification and disclosed greenhouse gas (GHG) emission data.</li> </ul>
Technology	Costs to transition to low-carbon equipment and improvement	Low-carbon technology demand leads to increased R&D and investment costs.	Mid- or long-term	<ul style="list-style-type: none"> <li>Innovated and applied low-energy, low-emission technologies such as silane-based FBR-produced granular silicon technology.</li> <li>Introduced equipment with low environmental impact and high energy efficiency.</li> </ul>
Market	Changing market demand	High standards for carbon emission performance in domestic and international markets. A company's failure to promptly adapt strategies may lead to a decline in market share.	Mid- or long-term	<ul style="list-style-type: none"> <li>Kept close communication with customers to respond to environmental performance requirements.</li> <li>Conducted carbon footprint measurement and certification for products.</li> </ul>
	Rising fossil fuel prices	Increases in fossil fuel prices lead to higher production and transportation costs.	Mid- or long-term	<ul style="list-style-type: none"> <li>Capitalized on energy-saving equipment, increased renewable energy use, and opted for clean fuel for transportation to reduce fossil fuel consumption.</li> </ul>
Reputation	Stakeholder engagement	A company's failure to meet stakeholders' climate-related response expectations can undermine the company's reputation.	Mid- or long-term	<ul style="list-style-type: none"> <li>Persistently developed green products including granular silicon.</li> <li>Transparently disclosed climate-related information.</li> </ul>

GCL Technology's key climate opportunities

Opportunity types	Factors	Description
Products and services	Low-carbon products	Under the context of achieving the global carbon peaking and carbon neutrality goals and driving energy transformation, PV power generation, as a key component of clean energy, embraces incredible growth opportunities. GCL Technology's low-carbon granular silicon products meet the low-carbon emission needs of PV production, are favored by the market, and have considerable business potential to unlock.
Market opportunities	Seeking opportunities in new markets	Emerging economies like India and Saudi Arabia have long relied on fossil fuels, leading to rising GHG emissions. Recently, there has been an expanding appetite for clean energy, consequently boosting the demand for low-carbon silicon materials. GCL Technology potentially sees market growth opportunities in countries and regions actively advancing renewable energy projects.
Resource efficiency	Elevated resource efficiency	To enhance resource efficiency and curtail the costs of resource consumption, GCL Technology implemented low-carbon production solutions by investigating and developing energy- and water-efficient processes, along with manufacturing technologies that enable the Rs of waste management.
Energy source	Transition to renewable energy	Given global warming and the potential rising costs of fossil fuels, GCL Technology has been promoting green energy, reducing traditional energy costs while decreasing carbon emissions.

Risk Management

GCL Technology has effectively integrated climate-related risks into the Group's overall risk management process. Based on the Plan-Do-Check-Act (PDCA) cycle, the Group has implemented a full cycle of closed-loop management by identifying, assessing, and managing climate-related risks. This approach strengthens our resilience to climate-related risks and ensures sustainable and stable business operations.

Indicators and Goals

The majority of the Group's GHG emissions under Scope 1 and Scope 2 came from the energy consumption of coal, gasoline, diesel, natural gas, and purchased electricity. In 2023, the Group effectively reduced its GHG emissions by setting up intelligent equipment monitoring systems, optimizing cooling systems, expanding solar installation capacity, and encouraging employees to use low-carbon transportation.

In 2023, the Group carried out Scope 1, 2, and 3 GHG third party verification for five subsidiaries—Jiangsu Zhongneng, Xuzhou Photovoltaic, Leshan GCL, Inner Mongolia Xinyuan, and Inner Mongolia Xinhuan, marking the first time that emissions from transportation and product usage were included in Scope 3 assessments. Going forward, we are set on expanding the Scope 3 reporting scope to precisely map our carbon footprint across the entire value chain and propel comprehensive emission reduction.

<sup>1</sup> In 2023, the inclusion of Inner Mongolia Xinhuan and the significant ramp-up in production at Leshan GCL and Inner. Mongolia Xinyuan led to a significant reduction of GHG emissions intensity.

<sup>2</sup> Ningxia Photovoltaic reached full production capacity mid-year in 2023, which led to an increase in both the total GHG emissions and emission intensity compared to previous years due to the elevated energy consumption of the ramp-up phase.

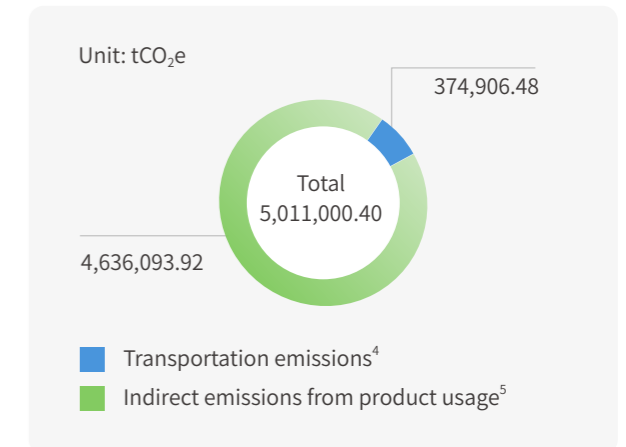
<sup>3</sup> Our approach to business segmentation was updated in 2023, resulting in a re-calibration of the statistical scope for 2022 to ensure uniformity. For further details, please refer to the "Reporting Scope" section in "About this Report." The data for 2022 should be taken in accordance with the figures disclosed in this current report.

GCL Technology's year-on-year change GHG emissions<sup>6</sup>



Additionally, as part of our commitment to crafting a transparent, digital, and green low-carbon supply chain and to building a comprehensive benchmarking certification model for low-carbon footprints across module life cycles, we established a digital carbon matrix platform. This platform covers a whole range of GCL Technology products, drilling down into production operations to pinpoint each product's carbon emissions factor. The blockchain technology we leveraged on enables the real-time measurement, certification, and management of our low-carbon product profiles. We also designed a triple-layered firewall to ensure data accuracy and security, contributing to a green, low-carbon, and sustainable tomorrow.

Scope 3 GHG emissions of Five GCL Technology's carbon verification sites



<sup>4</sup> Transportation emissions include GHG emissions from the transportation of raw materials, products, employee commuting, business travel, and the transport of waste.

<sup>5</sup> Indirect emissions from product use come from the product operations and utilization, such as raw materials production and use of water resources, and also the emissions from waste disposal.

<sup>6</sup> Our approach to accounting for GHG emissions follows the *National Development and Reform Commission's 24 industry-specific GHG emission accounting methods and reporting guidelines, ISO 14064-1:2018*, and the *GHG Protocol*. For emissions from purchased electricity, we complies with the *2011 and 2012 Average CO<sub>2</sub> Emission Factors for China's Regional Power Grids*.



# 02

## Social: Striving for Higher Values



### In response to HKEX indicators

- B1 Employment
- B2 Health and Safety
- B3 Development and Training
- B4 Labor Standards
- B5 Supply Chain Management
- B6 Product Responsibility
- B8 Community Investment

### In response to the following SDGs



# Enhancing Service Quality

Driven by the concept of "exquisite craftsmanship, conscientious quality", GCL Technology has focused on five major quality development directions: standardized work processes, lean management, quality first, continuous improvement, and customer satisfaction. Upholding the spirit of putting customers at the centre, we have developed a quality management system that strengthens both internal and external practices. In 2023, GCL Technology officially established the Quality Management Center, and used the wafer business as a pilot project to develop a quality management system. We expect to expand this system to other divisions such as polysilicon and silicon metal in 2024. Guided by an "always customer-centric" approach and with the aim of "improving customer satisfaction", the system gradually implements measures ranging from problem analysis to market research, and customer profiling to ensure consistent product quality. Customer satisfaction improved significantly during the period.

## GCL Technology quality control system



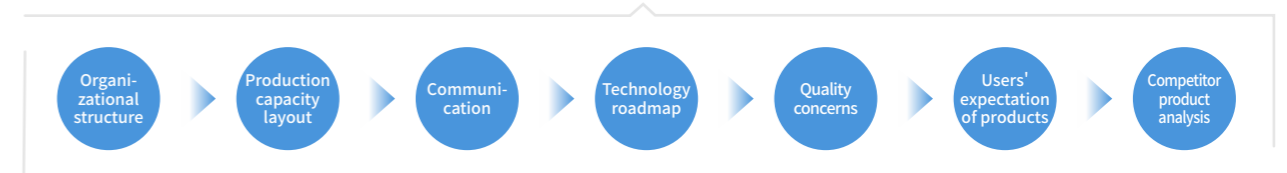
In 2023, our customer satisfaction rate increased to **96.85%** ↑ YoY **6.43%** ↑

# Enhancing product quality

GCL Technology initiated target-oriented management based on the product quality control policy and management objectives. To better assess the external environment, the Group effectively monitored the product shipment and delivery data, collected customer complaints, and analyzed the feedback in the categories of basic errors, appearance, inefficiency, electrical property and others, along with our unflagging work on market surveys to build user profiles.

Based on the results of information gathered and analyzed, GCL Technology has developed appropriate solutions covering three major aspects: product performance, product appearance and control of risks and costs. Our goal is to improve the mechanisms of the Group and establish our own quality standard system for better classification of our products by learning from our previous experiences. In this way, a standard system has been effectively introduced and the quality of the products will continue to improve.

## Seven key factors for customer profiling



In 2023, GCL Technology has pushed the industry boundaries with its granular silicon and other products. Building on this achievement, production capacity is expected to soar in 2024. To ensure consistently high quality and stable output, GCL Technology has focused on customer profiles, set targets for product quality, and effectively strengthened quality management.

**Targets**  
Solving the four major problems of obvious mistakes, product appearance, product efficiency and product reliability.

**Performance in 2023**

Monitor shipment and delivery: nearly **3,000** batches of products  
 Number of basic errors committed: 11 in total, **0** in Q3 and Q4

Solutions for the low efficiency of some wafer products:  
 26 annual customer complaints and other feedback in total; **0** complaints in the last quarter of 2023 after the improvement came into effect in September  
 An increase by **0.03-0.05%** ↑ in the working efficiency of our products

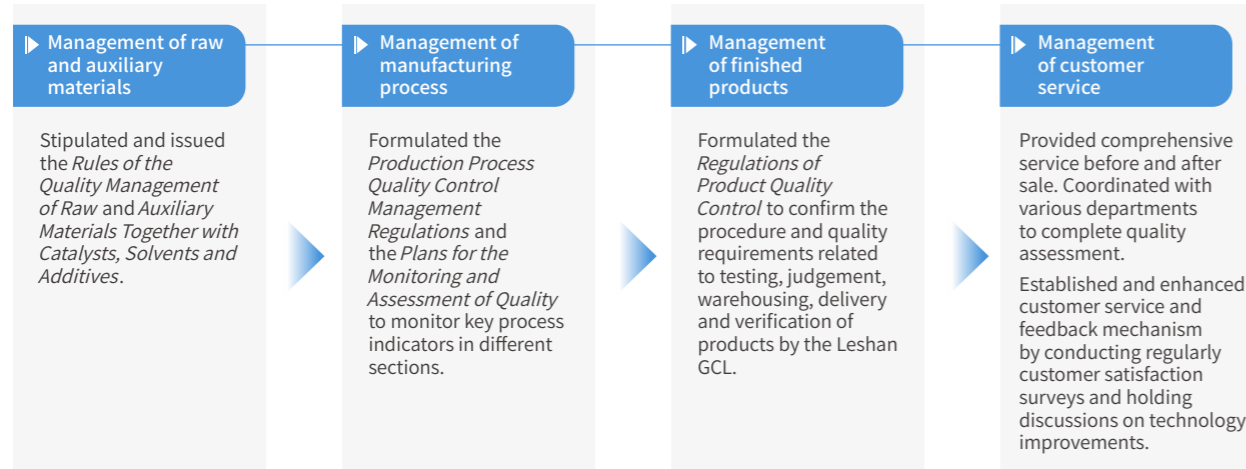
33 problems identified in production and **23** updated guidance files were issued

# Improvement of quality control system

On the one hand, GCL Technology has established a Quality Control Center to take the responsibility for monitoring and guidance. The Center has organized professional teams composed of experts in of silicon metal, polysilicon and wafer who have been sent to each production site to ensure the unification of quality and the standardization of related management.

On the other hand, further improvement of the system framework has been made. The comprehensive standardized quality control of a product, which covers the use of raw and auxiliary materials, the entire manufacturing process and the management of finished products, together with new management guidelines such as the *Quality Control System*, *Administrative Policy of the Prediction of Product Quality Before Manufacturing* and *Evaluation Standards for the Quality Control System* issued this year.

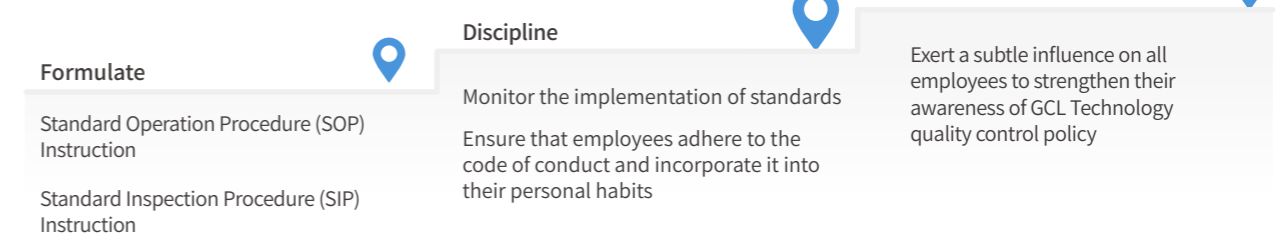
### GCL Technology's requirements for quality control



### Improvement of employee quality

GCL Technology considers employee quality as an essential part of quality improvement. We have retained our employees to further improve their indispensable professional skills based on their outstanding professional knowledge acquired in the past years. The retraining was well aligned with the quality control principles of the Group, shaping our typical concept and practice of quality control.

#### The strategy of GCL Technology to shape its typical concept and practice of quality control



**Target**  
Strengthening every employee's awareness of GCL Technology quality control policy

**Performance in 2023**

- The total duration of lecture on quality control: **3,874** hours
- with **6,931** opportunities for getting relevant training offered for GCL Technology members

**Targets**  
Scaling up issue inspections to increase the issue resolution rate and ensure the healthy operations of the quality control system

**Performance in 2023**

**Wafer (fully implemented):**

- More than **1,700** documents modified
- 1,500** forms were recorded
- 79%** increase in quality control system effectiveness
- 100%** of problem resolution rate

**Polysilicon (launched gradually):**

- More than **1,300** documents modified
- 900** forms recorded
- Among 15 bases, **3** were certified by ISO 9001 quality management system this year
- 100%** certification coverage, except in 2 newly built bases.

### Carried out self-inspection for quality control to drive our future fuelled by digital technology

In 2023, we leveraged on our industrial advantages and invited members of the upstream and downstream industrial chain to conduct self-inspections and mutual inspections mainly related to the crystal cutting process, and the correction of defects in the process. All inspections were used to assess the validity of the standard documents, the correctness of on-site implementation, and the timely rectification of problems.

During the inspection, we reviewed the relevant documents and on-site records while identifying problems and then continuously making targeted improvement, so that these records can better reflect the real situation and make remote control more accurate. Ultimately, the promotion of digital management would run more smoothly. By the end of the reporting period, the mechanism had been extended to all bases of the company, effectively accelerating the process of standardization within the Group.



Members in GCL base practised self-inspection of quality

### Raising the awareness of quality control among employees by publicity

In 2023, we invited all employees to suggest slogans that promote the ethos of quality control, reaffirming our commitment to quality first. We launched the "Find the Problem" initiative to create a sound atmosphere within the Group where everyone is committed to the pursuit of excellence.

- Selection of the best slogan to promote quality control: We helped employees familiarize themselves with the slogans so that quality control is indelibly imprinted in their minds. 1,829 slogans were collected in 2023, and 100 slogans were selected to be used for the publicity among all GCL Technology members, to call on the entire company to pay more attention to quality in all areas of the company.

- The "Find the Problem" initiative: Employees were encouraged to identify weaknesses in the Group's operations and submit their reports anonymously to GCL Technology's online system. This allowed the Group leaders to hear the views of employees through administrator's interface in order to make immediate action to resolve these issues. After the initiative was launched, the Wafer Slicing Department submitted 222 opinions, contributing significantly to the enhancement of GCL Technology quality control.



"Design the best slogan to promote quality control" competition

### Lectures on quality laws and regulations to enhance the ability to recognize violations

In 2023, the Group adhered to the principle of "respect for the national law" to promote quality management by giving lectures on specific laws and regulations.

- A lecture in July was dedicated to introducing quality-related laws and regulations, including product quality law, contract law, tort liability and others, by providing analysis of real cases and practical experience to equip more employees with the necessary legal knowledge and vigilance against violations of laws and regulations.
- In August, a lecture on "Quality Management in the Digital Era" was jointly organized by GCL Technology and the GCL University of Science and Technology, which enabled employees to have more confidence in legal and sustainable development in the future.

By the end of the reporting period, more than 100 employees from departments like sales, quality, legal, production, safety and environmental protection had attended the relevant lectures, effectively lowering the risk of unintentionally violating the relevant rules.

## Providing satisfactory services for internal and external customers

GCL Technology's customer-centric principle has always been integrated not only into the traditional customer service management system and the corresponding feedback measures, but also into the newly-developed ones. In 2023, the Group drew a lesson from the e-commerce industry to develop a new model of customer service management that could meet the needs of internal and external customers. The new approach helped us to receive more praise from our customers and improve the quality of the Group's internal mechanisms.

Targets

Leveling up our ranking among clients with a higher customer satisfaction rate

Performance in 2023

<p>Regular meetings on customer complaints were held</p> <h1 style="color: #0070c0; text-align: center;">20</h1>	<p>Problems have been solved</p> <h1 style="color: #0070c0; text-align: center;">74</h1> <p>of these problems 37 related to improving products, 23 to formulating and changing standards, 4 to improving the work process, and 10 to collecting and analysing customer preference and competitors' information</p>	<p>No. of policies developed and revised</p> <h1 style="color: #0070c0; text-align: center;">4</h1> <p>No. of working process developed</p> <h1 style="color: #0070c0; text-align: center;">6</h1>
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### Information collection

- **Model on the e-commerce industry**  
GCL drew important lessons from e-commerce style of customer service in this year, which was different from our conventional practice and was more compatible with technological advancement. Because it meant that we stopped treading on the beaten path that solely satisfied customer's urgent needs. Instead, we introduced into our customer service system those coping strategies from e-commerce industry that are more familiar and acceptable to customers, as a way to demarcate the boundary between manufacturing and customer service. In doing so, a new procedure to solve customers' problem is set up, involving receiving the customers' complaints, filling documents, sending the notice, confirming parties with liability, analyzing the causes and giving feedback to customers, helping us take initiatives in fulfilling the potential requirement of our customers.
- **Communicate with customers**  
GCL Technology never hesitated to acquire useful suggestions from our customers for the upgrading of products. We developed different customer service plans for different scenarios covering pre-sales stages, transaction and after-sales stages. Professional teams were appointed to departments or bases in need to work as information provider and technical supporter. In addition, regular meetings with customers were held in every two weeks. Those measures ensured the comprehensive and productive discussion between customers and the Group.
- **Survey the customers opinion**  
GCL Technology conducted customer satisfaction rate surveys on a regular basis. The key indicators for assessment covered product quality, product delivery service quality and the like, providing information to guide the subsequent enhancement of customer service.

### Internal alignment

- **Regular meetings on customer complaints**  
Compared with previous years, we focused more on the statistics and analysis of customer complaints and then took practical coping strategies, such as convening regular meetings on customer complaints to track the progress of improvement. In 2023, The Group provided feedback with corresponding solutions within one weekday on average after receiving a customer complaint, achieving a 100% complaint resolution rate.

### Implementation and improvement

- **Standardization of central systems**  
GCL Technology has launched in this year the Committee of Standardized Quality Control in the Crystal Cutting Department and stipulated internal policies including the *Customer Relationship Maintenance Management System* after in-depth discussions. We broke down the related tasks from the perspectives of information management, service management, technical quality exchange, pre-sales support, and post-sales support.
- **Responsible marketing**  
GCL strictly abides by the *Advertising Law of the People's Republic of China, Responsible Marketing and Consumer Protection Policies* and other national laws, regulations and internal policies of GCL, as exemplified by the proven record of our prudent advertisement surveillance as well as our standardized review to check the legality of all the materials we posted. In doing so, we always clearly conveyed to the customers the key information on the product's quality, characteristics, price, and the potential risks of use.

### GCL Technology implemented a support system to standardize quality management across all bases

In 2023, we carried out system construction support through coaching and training for sectors within the Gloden Concord Group to align the rules and standards of quality control system of each base. By organizing a support team, we formulated plans for helping production bases like Ningxia GCL Monocrystalline to comprehensively improve their ability of problem-solving and to further upgrade the quality control system. Thanks to the systematic assistance, Ningxia GCL Monocrystalline obtained ISO 9001: 2015 quality management system in January 2024, which was a favorable result for the Company.



A lecture by GCL Technology on the systematic support for training activities

# Leading Technological Innovation

GCL Technology thrives with the development of its technology. Technological innovation is basis for the development of GCL Technology. We constantly explore and innovate management systems, attach importance to the protection of intellectual property, and work with the whole community to promote the high-quality development of the PV industry.

## R&D Innovation Management

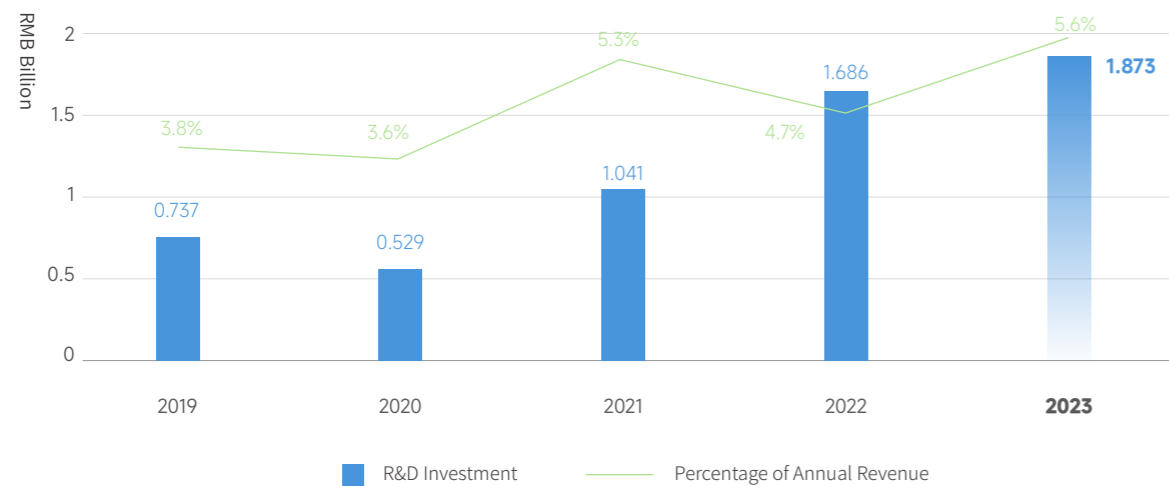
GCL Technology adheres to the R&D and innovation strategy of "reducing product turbidity and metal impurities, improving product quality, continuously lowering costs, increasing efficiency, and enhancing market competitiveness". Through R&D innovation, we are committed to empowering the Group, and creating green and low-carbon products in pursuit of a positive interaction between technological innovation and green development.

## Institutional guarantee

In accordance with national science and technology management regulations, GCL Technology has formulated internal regulations such as the *Management System for Science and Technology* and *Regulation for Science and Technology Projects*. During the reporting period, we revised and released the *R&D Projects Management Standards* and *Technology Transformation Projects Management Standards*. Apart from that, we also encouraged all subsidiaries to formulate relevant systems based on their own conditions, such as the *R&D Project Management Regulation* and *Management and Reward Measures for Science and Technology Achievements*.

## Financial support

GCL Technology invested RMB 1.873 billion in R&D during the reporting period, accounted for 5.56% of the annual revenue.



## Key technological innovations in 2023

### Continuous CZ (CCz) technology

CCz technology has made notable progress in adapting to CCz furnaces for producing large-diameter silicon rods. Being expected to disrupt the crystal-pulling landscape in the future, it will advance automated and smart PV industry and lower the non-silicon cost of crystal-pulling. Based on our CCz technology, the minority carrier lifetime and oxygen content of N-type silicon rod head are close to those of the RCz products, indicating that CCz technology will be commercially used well within reach.

As of the end of the reporting period, the average minority carrier lifetime and oxygen content in the silicon rod head are close to those of the RCz pulling processes of the same period, with a productivity of >185 kg/day, and a narrow uniform resistivity fluctuation range: ±0.05cm, currently have 200 MW pilot production capacity.

## Talent support

With great efforts on R&D personnel cultivation, GCL Technology now has a highly innovative research team consisting of experts from home and abroad, and has established academicians and postdoctoral workstations. In 2023, GCL Technology established the Global Silicon-based Materials Research Institute, including four major R&D branches, and a research center and a design center in the U.S. Aiming at developing more cutting-edge technologies for the Group's further development, the institute focuses on innovative breakthroughs in fields like processes, equipment, and materials, as well as explores new energy technologies and silicon-based materials besides polysilicon.

During the reporting period, we have attracted

**2,424** personnel

## Mechanism support

GCL Technology has established an incentive mechanism for R&D innovation, including projects like scientific research funds, annual excellence awards, and instant rewards. The Group launched two initiatives in 2023, named "Horse racing" and "Leading the pack", to encourage new technologies for cost reduction and R&D innovation. According to the incentive principles and bonus setting of these initiatives, the highest incentive amount reaches RMB20 million. Such initiatives have motivated the enthusiasm for innovation among employees in all subsidiaries, thus improving the management of technological R&D and innovation.

The highest incentive amount reached

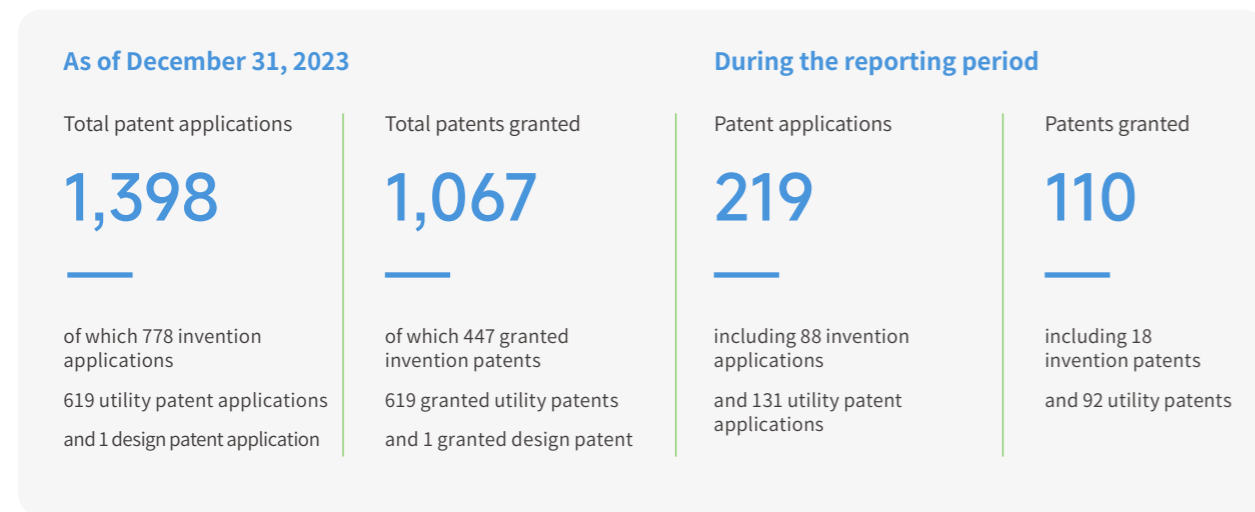
RMB **20** million

Moving forward, GCL Technology will continue to explore new energy technologies in granular silicon, including CCz and perovskite, with low-carbon granular silicon technology as its core. We will set investment goals in clean energy technologies, form low-carbon and zero-carbon PV industrial chains, to drive innovation and technological revolution in global clean energy industry.

## Intellectual Property Rights (IPR)

GCL Technology attaches great importance to the management and protection of independent IPR. We strictly regulate the use and management of IPR, and comply with internal requirements such as the *Intellectual Property Rights Management Measures*, *Trade Secret Management Measures*, and *Patent Drafting and Quality Evaluation Form of GCL*, and thus offer institutional guarantees for IPR protection.

In order to further improve the management of IPR, the Group put the Wade IPR Management System into practise in 2023 and formulated the *Operation Manual of Wade IPR Management System*, covering all functions such as quality control, application review, agent interaction, process monitoring, and cost management. In addition, to deal with infringement issues, the Group established a Document Confidentiality Facilitation Group and built an information security platform to comprehensively and promptly protect the security of IP information to better protect IPR.



To raise employees' awareness of the necessity of IPR protection, GCL Technology has set up an IPR Awareness Week, taking the opportunity of the World Intellectual Property Day. Specialized IPR courses are provided to enhance the awareness and capabilities of our staff in IPR protection. As of the end of the reporting period, GCL Technology has organized 16 training courses, totaling 24 hours, with the attendance reaching 500.

### GCL Technology's IPR training courses

In April 2023, GCL Technology conducted an IPR training program themed "IPR protection guarantees innovation". The training program covered topics such as technical secret infringement, common issues and challenges facing IPR protection, and examples sharing, aiming at enhancing employees' innovation capabilities and competitiveness in all aspects. Meanwhile, Leshan GCL also organized an event focusing on patent information analysis and patent portfolio targeting granular silicon production. With a more thorough understanding of basic concepts, types of patents, and relevant laws and regulations, participants effectively improved their IPR awareness.



GCL Technology's training program themed "IPR protection guarantees innovation"

## Industrial Cooperation

Win-win cooperation is crucial for the growth of the PV industry. Leveraging our own advantages and experience, GCL Technology engages in exchange and cooperation with industrial partners to promote PV's healthy development while providing leading green products. During the reporting period, the Group established strategic partnerships with multiple enterprises to jointly transform and upgrade industrial products and services, working together for mutual benefits.

GCL Technology participated in various collaborations among the industry, universities and research institutions, and contributes to the development of the PV industry by co-setting industrial standards on product quality. **Standards co-set by GCL Technology in 2023 are as follows:**

GCL Technology participated in the formulation of the *PV Electronic Materials High-Purity Crystalline Silicon Process Technology* and *Low-Carbon and Clean Evaluation Standard for High-Purity Polysilicon Production*. It also led the release of the new national standard *GB/T 35307-2023 FBR Granular Silicon*, which adjusted indicators including impurity content, carbon content, hydrogen content and total metal impurity content, and expanded the detection coverage to 11 metal elements. These adjustments raised the quality requirements for granular silicon. The new standard will lead granular silicon producers to adapt to market demands, guide production and sales, and promote the reforms and optimization of manufacturing process, so as to enhance market competitiveness of the products.

Leshan GCL was the leading editor for two industry standards: the *Seed Crystal for FBR Granular Silicon* and *Determination of Surface Metal Content in FBR Granular Silicon by Acid Leaching - Inductively Coupled Plasma Mass Spectrometry*. It also participated in the drafting of four standards, including the *Determination of Hydrogen Content in Silicon Materials by Inert Gas Fusion Heat Conductivity Method* and *Determination of Surface Impurity Content in Graphite Products for Polysilicon Production by Inductively Coupled Plasma Optical Emission Spectrometry*.

### Highlights of GCL Technology's industrial cooperation in 2023

Global Green Energy Leaders Dialogue was held in May 2023, as one of the key events of the 16th SNEC International Photovoltaic Power Generation and Smart Energy Conference & Exhibition opened in Shanghai. During this event, Lan Tianshi, Joint CEO of GCL Technology, emphasized that low-carbon silicon-based materials represented by FBR granular silicon will accelerate the achievement of carbon peak and carbon neutrality goals.



Global Green Energy Leaders Dialogue

In December 2023, GCL Technology was invited to attend the 28th Conference of the Parties COP28 to the United Nations Framework Convention on Climate Change (UNFCCC). Representing China's key new energy providers, GCL Technology showcased its GCL perovskite module, the PV efficiency global record setter, at China's Pavilion, echoing China's voice for green, low-carbon, and sustainable development.



GCL perovskite module showcased at China's Pavilion during the COP28

### PV Industry College was founded jointly by GCL Technology and the Harbin Institute of Petroleum

In May 2023, GCL Technology and Harbin Institute of Petroleum signed a strategic cooperation agreement to jointly establish the "GCL Technology-Harbin Institute of Petroleum International PV Industry College", aiming at training PV professionals serving overseas markets. Both parties will co-develop personnel training programs, engage in cooperation among the industry, universities and research institutions, and create an integrated innovation platform for scientific research, industrial operation, and education. Such collaboration will support GCL Technology's overseas strategic layout, serving as a highland for cultivating PV professionals.

# Building a Responsible Supply Chain

GCL Technology recognizes the pivotal impact of a well-coordinated and resilient supply system for the Group's business growth. We have been endeavoring to build a supply chain that epitomizes health, stability, and excellence. We consistently enhance our supplier management system, empower suppliers, and foster connections along the industrial value chain to spur collaborative industry growth.

## Supplier Management

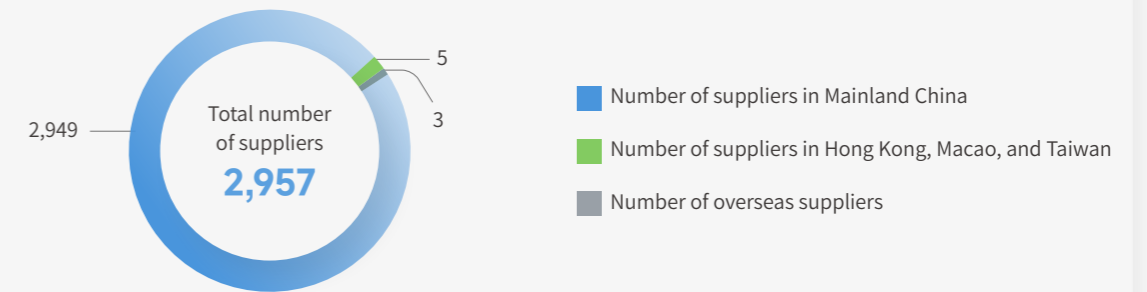
GCL Technology focuses on collaborative supply chain management with a customer-oriented approach. At key processes spanning from supplier access, cooperation to review, we factor in ESG issues including environmental protection, labor protection, and compliance integrity. Additionally, the Group has established the Supply Chain Management Committee and the Strategic Operations Center. Each base has its supply chain management department which, following the authorization principle, handles specific tasks under the guidance of the management system and the leadership of the Group. This tiered approach ensures that policies and actions are cascaded throughout the organization, moving our supply chain progressively toward a more transparent, responsible, and sustainable system.

In 2023, GCL Technology launched the GCL Intelligent Chain management platform and rolled out feature sections including a section dedicated to "collaboration", managing various suppliers through informational means and thus ensuring a quality and stable supply chain.

### GCL Technology's supplier management system



Number of suppliers for GCL Technology



### Suzhou GCL overcame production challenges in collaboration with suppliers through on-site evaluation of potential suppliers

In 2023, Suzhou GCL conducted on-site factory inspections of potential suppliers, primarily reviewing whether production materials such as coolants and diamond wires met the manufacturing requirements for PV products. Additionally, for supplier deliverables that had achieved an A-level rating, Suzhou GCL organized a team of technical experts to visit the suppliers' production sites. The experts tracked and supervised quality improvement efforts and engaged in discussions on production processes and quality control planning, contributing to the enhancement of the quality of supplier deliverables.

As of the end of the reporting period, Suzhou GCL, through on-site inspections, reduced the major proportion of "A-" products from 2.3% to 0.4%, achieving effective supplier management.

## ESG Risk Assessment

GCL Technology regards a sustainable supply chain as an extension of corporate value. To accurately assess and address supply chain risks, GCL Technology focuses on potential and cooperative suppliers, safeguarding against potential ESG risks across all aspects of the supply chain, including business ethics, environmental protection, and health and safety.

### During the inspection and access phases

We factor in and constantly review the suppliers' labor protection and environmental risks. We prioritize cooperation with suppliers holding third-party audit certifications, and, in accordance with internal regulations, prevent, mitigate, terminate, or minimize related risks.

### During routine regulatory process

We develop a supplier financial audit process to provide risk alerts for scenarios including supplier insolvency, thereby guarding against financial risks.

### Full-process tracking

We follow and monitor the operations of suppliers at all stages. Immediate risk alerts are issued upon the discovery of violations, significant disputes, or other operational irregularities, to reduce legal risks.

In 2023, the Group inspected and rated **1,067** suppliers through the GCL Intelligent Chain management platform, effectively reducing supplier risks such as operational qualifications, public sentiment, and quality control. **269** suppliers were inbound during the year, of which **21** were selected based on the *GCL Technology Supplier Corporate Social Responsibility Code of Conduct* (released in November 2023), accounting for **7.81%** of the new suppliers.

## Responsible Procurement

For the raw materials involved in production and operations, GCL Technology begins by ensuring the compliance and quality of material sources, consistently iterating procurement plans aligned with production and business demands to ensure a stable supply of quality materials. The Group has carried out a series of measures to ensure the provision of bulk raw materials, important auxiliary materials, and consumables required for production and operations.

### Highlights in GCL Technology's measures to ensure material supplies

- Pre-purchase**

We conduct trial evaluations, select at least one alternative supplier, and perform periodic inspections of the supplier in collaboration.
- During purchase**

We clearly define the registration and management of information on raw and auxiliary materials. Archives of raw materials will be established for products based on supplier qualifications and other provided documents.
- Post-purchase**

Each base complements the actual production characteristics of key products with additional explorations into raw material traceability practices.

Building upon these supply assurance measures, the Group has compiled practical exploratory experiences, distilled, and promoted scientific and efficient raw material traceability measures, establishing an integrated standardized management process for raw material traceability. During the reporting period, GCL Technology and its bases have focused on the initial attempts to promote the traceability management of raw materials.

### GCL Technology's raw material traceability process and highlight measures from bases

- Information collection**

  - Suzhou GCL conducted regular market research, deeply analyzing the manufacturing process of key auxiliary materials and raw materials to produce analytical reports.
- Marking and tracking**

  - Jiangsu Zhongneng's supply chain department collaborated with the sales department to organize information on bulk material purchases and matched it with supplier profiles, establishing a raw material purchasing catalog.
  - Xuzhou Photovoltaic tracked and recorded key information during the monocrystalline pulling, slicing, packaging, and transportation processes, summarizing the quality advantages and improvement aspects of raw materials.
  - Ningxia Photovoltaic required all suppliers to provide a complete COA (Certificate of Analysis) report upon delivery, which serves as a product quality certificate and is stored in the internal system.
- Inspection and testing**

  - Ningxia Photovoltaic is equipped with professional testing equipment, such as seed crystal tester, to test the turbidity and other properties of the main raw materials of polysilicon, and to develop raw material information files.
- Evaluation and management**

  - Leshan GCL took the lead with its key raw material, silicon metal, to develop the "Leshan GCL Traceability System". By integrating data from procurement contracts, such as supplier profiles and batch numbers, the system captures a detailed log of silicon metal's footprint through all stages of production, from the raw beginnings to the final product.

## Supplier Code of Conduct

In 2023, the Group formulated the *GCL Technology Supplier Corporate Social Responsibility Code of Conduct*, further reinforcing ESG management and requirements for suppliers, stimulating positive changes among supply chain partners, and jointly promoting the sustainable development of the industry.



Learn more about the *GCL Technology Supplier Corporate Social Responsibility Code of Conduct*



GCL Technology has been cultivating an environmental conscience among our suppliers, mandating that supplier facilities operate with the lightest ecological footprint and adhere to stringent global environmental protection standards, laying the foundation for a green supply chain. Under equal conditions, we lean towards suppliers with environmental qualifications, waste discharge qualifications, and certifications including ISO 14001 environmental management system certification and ISO 14067 product carbon footprint certification.



GCL Technology has been elevating the bar for our suppliers' labor protections, carving out clear-cut management directives in the *GCL Technology Supplier Corporate Social Responsibility Code of Conduct* to safeguard employee rights, health, and safety. Under equal conditions, we lean towards suppliers certified with ISO 45001 occupational health and safety management systems and ISO 9001 quality management systems.



GCL Technology believes that integrity and compliance are cornerstones for supply chain's steadfast and sustainable growth. In 2023, we amplified compliance training and inked supplier compliance mandates, thus curtailing social risks in the supply chain fabric and securing mutual rights. By the end of the reporting period, GCL Technology subsidiaries have clocked up a collective **359** hours in anti-corruption training, with a **100%** participation rate among the suppliers.



GCL Technology's Supplier Code of Conduct in 2023



**Environmental protection**

- Proper disposal and storage of hazardous items and waste management, such as harmful substances and wastewater management.
- Avoidance and minimization of impacts on biodiversity during production and operational activities, and prohibition of any actions involving deforestation or destruction of natural ecological reserves.
- Adoption of conservation and substitution measures, such as replacing traditional energy with renewable energy sources.
- Staying informed of national and international environmental protection legislation to mitigate compliance risks.



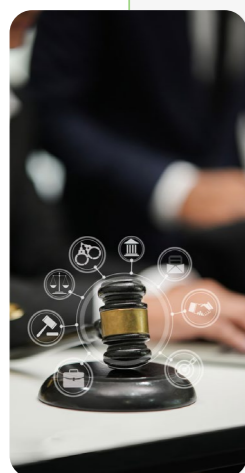
**Labor protection**

**Health and safety:**

- Compliance with legal and contractual safety standards.
- Implementation of a veto system for major safety accidents.
- Controlling hazards and taking steps to prevent accidents and occupational diseases.
- Providing health and safety training to ensure the safety of each employee.

**Human rights:**

- Prohibition of child labor and forced labor, and any form of differential treatment and discrimination.
- Protection of employees' freedom to associate and collective bargaining rights.
- Provision of fair remuneration.
- Prohibition of human trafficking.



**Integrity and compliance**

- Adherence to GCL Technology's transparent procurement principles:
- Potential suppliers participating in procurement tenders must sign the *Suppliers' Anti-Business Bribery and Anti-Fraud Commitment*.
- Suppliers must sign the *Supplier Statement and its Attachments "GCL Technology Supplier Corporate Social Responsibility Code of Conduct"*.
- Prohibition of any form of corruption and bribery by its employees, third parties, or intermediaries.
- Suppliers should establish a mechanism for complaints, reporting, and whistleblower protection.
- Compliance with anti-monopoly and fair competition laws of the country/region of operation, eliminating any unfair competitive practices.

**Supplier Empowerment**

To enrich the dialogue and elevate our partnerships with suppliers, GCL Technology has implemented a range of supplier empowerment initiatives in various ways.

**Supplier training and communications**

GCL Technology hosted regular training sessions for suppliers revolving around cooperation requirements, safety and environmental protection, and business ethics. These sessions are complemented by focused meetings where we dived deeper into production processes, manufacturing technologies, and quality assurance, jointly carving out opportunities for product quality improvement.

In 2023, GCL Technology updated the features of the GCL Intelligent Chain management platform. All bases offered corresponding operational guidance during supplier training, compiled operational manuals, and distributed them to help suppliers adapt to the new features of the online platform.



**Local supplier support**

GCL Technology is committed to growing alongside local suppliers, taking proactive actions such as identifying potential partners and prioritizing their quotations to catalyze collaborative partnerships.

In 2023, the Group focused on localized procurement for production materials like hazardous chemicals that are ill-suited for long hauls. By meeting internal procurement needs and mitigating supply risks, the Group injected its strength into the development of related local industries. Moreover, GCL Technology has explored innovative cooperation models with top-tier suppliers, spreading mantra of mutual success throughout the industry and beyond via the supply chain upstream and downstream.



**Jiangsu Zhongneng established a joint venture with its supplier to achieve win-win through innovative in-depth cooperation**

Jiangsu Zhongneng established a joint venture with an adsorbent supplier, adopting an integrated production approach that synergizes with industry, academia, and research. The partnership has helped the supplier amplify its R&D and production efforts. Through this innovative mode of cooperation, Jiangsu Zhongneng and its supplier have created an industry alliance, embracing the rapid growth of supply chain with mutual success.

In 2023, the joint venture developed a catalyst product tailored to Jiangsu Zhongneng's production needs and the unit procurement cost decreased by 15%.


# Together for the Shared Future of Our People


"Collaboration" is an integral part of GCL Technology's core values. To build a diverse, inclusive, and safe workplace where everyone is equal, we work every day to establish a comprehensive talent development system, protect the legitimate rights and interests of employees, foster a culture of diversity and inclusion, and invest in our people's health and safety.

## Hiring and Employee Benefits

GCL Technology strictly complies with laws and regulations including the *Labor Law of the People's Republic of China* and *Labor Contract Law of the People's Republic of China*. In addition, we have robust internal corporate human resource management policies such as the *Human Resources Strategic Planning Management System* and *Hiring Process Standards*. We hire talent in line with the recruitment plans formulated to support corporate strategies and business needs. In 2023, we launched the "Starlight: Global Trainee" Program and the "North Star: R&D PhD Hiring" Program to secure an ample talent supply to power the global endeavors of the Group. By the end of the reporting period, GCL Technology had 15,002 employees, among which 12,446 were full-time regular employees, and 2,556 were non-regular.

### Award and recognition

 *Top Graduate Employers of China in 2023* jointly presented by 51job.com and YingJieSheng.com

 *Best Employer in China in 2023* presented by Zhaopin Ltd.

### The "Starlight: Global Trainee" Program

To develop a team with young, professional, and international talent, GCL Technology initiated the "Starlight: Global Trainee" Program, aiming to attract professionals in areas including R&D, investment and financing, marketing, and supply chain management.

In 2023, a group of talent with both global vision and professional skills emerged through our four-stage trainee program, encompassing business scenario planning, industrial knowledge learning, job rotation, and final designation.

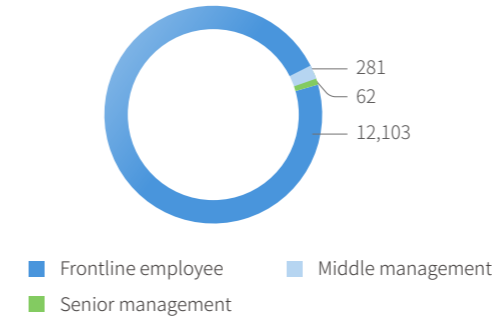


Conclusion of GCL Technology's "Starlight: Global Trainee" Program

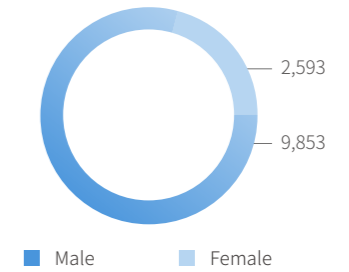


## GCL Technology's workforce and employee turnover rate in 2023

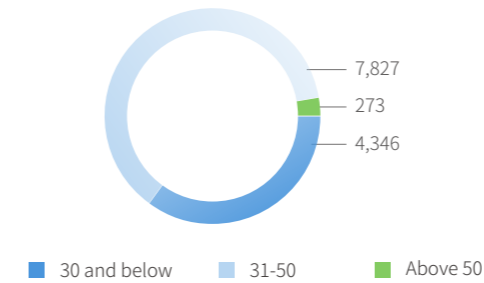
By position



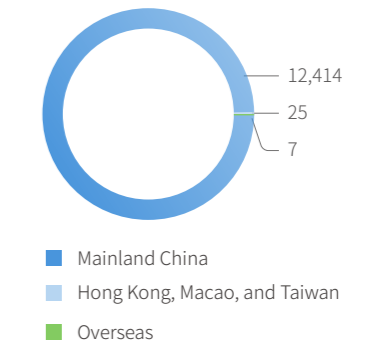
By gender



By age



By region



Turnover metrics	2023	
Overall turnover rate	22.9%	
Turnover rate by gender	Male	23.2%
	Female	22.0%
Turnover rate by age	30 and below	32.4%
	31-50	17.9%
	Above 50	16.5%
Turnover rate by region	Mainland China	23.0%
	Hong Kong, Macao, and Taiwan	0.0%
	Overseas	0.0%

## Employee communication

In our effort to uphold our people's freedom of association and collective bargaining, GCL Technology published the *Statutes of Union at GCL Technology*, thereby actively involving employees in democratic decision-making, governance, and oversight of the Group. In 2023, GCL Technology held a staff representative assembly, where representatives of the staff group were elected and the *Contract of Collective Bargaining* was signed by 100% of the participants.

We have offered diversified and enhanced transparency of channels of communications through policies such as the *Guidelines on Employee Relations Management*, outlining ways that employees and the Group can communicate with each other while ensuring the confidentiality of all complaints and reports. Additionally, the policies protect whistleblowers from retaliation by any individuals or organizations. This fosters an environment where employees feel empowered to communicate openly and honestly with the Group.

### Communication channels available to employees at GCL Technology

- Making complaints**

Employees can report complaints via the GM mailbox at office buildings, email to HR department, or call the employee hotline.
- Daily communication**

Employees can talk to management representatives in person and bring their problems to the Group in regular staff meetings.
- Reasonable suggestions**

All employees are encouraged to make reasonable suggestions to the Group. All suggestions will be properly addressed and acted upon and measures will be taken to respond to the changing needs of our employees.
- Satisfaction survey**

Every year, we conduct the employee satisfaction survey, allowing all staff members to provide feedback anonymously on the management practices of the Group.

### GCL Technology developed the "Happiness Index"

In 2023, GCL Technology conducted a survey for the "Happiness Index" which is based on three dimensions: organization, strategy, and employees. The aim was to identify success experience and areas of improvement in the corporate strategy, organizational capabilities, the employee competency model, and employee mental well-being, thereby enhancing happiness in the workplace.

The survey was conducted anonymously, 84% of employees took part and 76.2% were satisfied with their work at GCL Technology. The Group convened meetings to discuss the issues and coping strategies that emerged from the survey results and to develop action plans to improve organizational management.

84%

Employees took part

76.2%

Satisfaction rate achieved

### GCL Technology's culture activity "Sending Letters Home across 1,138 km" for employees of Jiangsu Zhongneng

In June 2023, over 70 staff members in Jiangsu Zhongneng traveled to Hohhot, Inner Mongolia to support a project of Inner Mongolia Xinhuan. Being far away, many of them missed home. It was against this background that GCL Technology initiated the *Letters from Home* campaign, sending words of love and best wishes to those stationed in Inner Mongolia. Meanwhile, groups of volunteers joined to provide help to the family members of the employees who were away. Additionally, GCL Technology created a WeChat group chat to offer voluntary services for the elders and children of those employees, and held heart-to-heart meetings to address issues the employees faced upon landing, so they could dedicate themselves to the construction tasks with reassurance.



GCL Technology held a cultural activity to support employees of Jiangsu Zhongneng in Inner Mongolia

## Employee benefits

GCL Technology has formulated the *Benefits Management Policy*, stipulating that aside from statutory benefits, all employees also enjoy cash gift on special occasions and holidays, free shuttle bus service, meal allowance, and employee accommodation, along with a host of other benefits. Additionally, we have built sports facilities and organized entertainment activities to enrich our employee's life outside work. On top of that, we introduced more benefits during the reporting period, including housing for high-performing individuals, family insurance plans, and family health checks to further retain talent.

GCL Technology places great emphasis on providing both financial and mental support to team members who are financially challenged. In 2023, GCL Technology identified 86 employees with financial constraints, built profiles of them, and offered them financial support through our charity foundation and other means.

## Employee activities

At GCL Technology, we value work-life balance, and employees are encouraged to organize or participate in a variety of leisure activities. During the reporting period, we held a range of activities on the International Women's Day, the Dragon Boat Festival, and other festivals, uniting employees in festivity and enhancing their sense of belonging at work.



Music festival on International Women's Day at GCL Technology



The Dragon Boat Festival gathering at GCL Technology



Birthday party at GCL Technology



Basketball game at GCL Technology

## Summer field trip to GCL Technology

In a summer field trip hosted by GCL Technology, 30 children of our employees visited the production base in Xuzhou and learned about local culture and history through theatrical performances and sightseeing tours. This cultural journey was complemented by visits to the Jiangsu Zhongneng factory facility as well as the PV-fish farm, where the children developed a better understanding of their parents' work and fostered tighter bonds.



Summer field trip to GCL Technology

## GCL Technology Cultural City Walk

In November, employees at Jiangsu Zhongneng took on a city walk to learn the ancient history of Xuzhou. They explored the wonder of the ancient city wall and the Mansion of the Cui's in the Hubu Mountain. Professional guides were invited to give the employees deeper insights. Following the journey, employees created video content on the city memories and cultures they discovered, fostering an atmosphere of general appreciation of culture and local customs.



Employees at GCL Technology walking around the city

## Diversity and Inclusion

GCL Technology stands firmly in our commitment to uphold the universal human rights of employees. In line with international treaties and initiatives including the *Universal Declaration of Human Rights*, we published the *Human Rights Policy of GCL Technology*, *Employee Rights Protection Policy of GCL Technology*, and *Labor Practice Policy of GCL Technology*, clearly stating zero tolerance towards acts violating human rights, including child labor, forced labor, workplace discrimination, harassment, and invasion of employee privacy, and demonstrating our commitment to create a fair workplace.

### Learn more



Human Rights Policy of GCL Technology



Employee Rights Protection Policy of GCL Technology



Labor Practice Policy of GCL Technology

## Human rights protection

GCL Technology refuses child labor and forced labor. Prior to signing labor contracts and onboarding new employees, we conduct thorough background checks. Additionally, routine audits are carried out to examine our internal labor practices. If any form of forced labor is discovered within the Group, managers involved will be required to cooperate with internal investigations and disciplinary actions will be taken under relevant regulations. During the reporting period, no incidents of forced labor and child labor were identified in GCL Technology.

We have put in place a comprehensive system to guard against risks of human rights violations, covering hiring, workforce management, and offboarding, among other crucial areas. Additionally, we established a robust human rights complaints procedure and built a labor dispute resolution committee to address disputes arising in the labor-management process. What's more, we carry out human rights due diligence to proactively prevent, identify, and address the actual or potential impact of human rights violations. Following findings and recommendations in research and monitoring of international and national human rights groups, we work non-stop to promote human rights protection by helping vulnerable groups increase their awareness of rights.

## Diversity and inclusion

We attach great importance to cultivating a diverse workforce. We respect and value our female employees and those with disabilities, and we do our best to ensure they realize their full potential and self-value within our organization.

### Our efforts to achieve diversity

#### Gender diversity

We provide female and male employees with equal opportunity to grow and create a workplace of equality, inclusion, and immense development opportunities to empower female employees to realize their full potential.

#### Age diversity

To build a talent team across the age spectrum, we keep expanding talent sourcing channels to attract fresh talent while valuing senior staff and their experience.

#### Geographic diversity

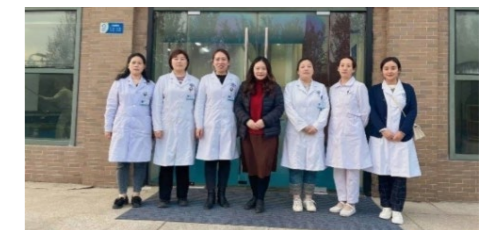
We highly value talent localization, recognizing the job opportunities it creates in the countries and regions we operate in. Additionally, we emphasize the importance of respecting local culture and religious beliefs.

We strictly adhere to the provisions in the *Law of the People's Republic of China on the Protection of Women's Rights and Interests* and local regulations in ethnic minority regions protecting the right to equal employment opportunities of women and ethnic minorities. We are dedicated to safeguarding the rights of female employees in cases of pregnancy, maternal leave, and health checks. We introduced a host of supportive measures to fulfill this commitment. These include taking new mothers out from night shift rosters, providing them with a one-hour breastfeeding break each day, and offering breastfeeding and childcare spaces.



### Cancer screening for Jiangsu Zhongneng female employees

In 2023, Jiangsu Zhongneng initiated a free medical clinic event themed "Caring for Women's Health", offering female employees and their family members complimentary screenings for breast and cervical cancers. The event included one-on-one consultations to raise awareness about self-care among women and to ensure that female employees feel the warmth and care of the Group.



GCL Technology provided free cancer screenings for female employees

## Talent Attraction and Development

GCL Technology values the contributions that talent brings to business growth, enacting policies including the *Guidelines on Workforce Mobility Management* and *Guidelines on Talent Development Management*, outlining processes of internal promotion and offering transparent and equal career growth opportunities. Annually, the Group conducts a talent review and scouts potential successors for managerial positions so that high-performing individuals with both integrity and competence are identified and prepared as future leaders.

### Talent development system at GCL Technology

<b>Career ladder</b>	Positions are categorized into various job families. Employees can move laterally across these job families, for example, from an independent contributor (IC) to a managerial role.	<b>Competency</b>	Employees are evaluated based on their values, knowledge and skills, key qualities, and contribution, the result of which affects results of their compensation adjustment and performance review.
<b>Transparency</b>	Establishing clear evaluation criteria and promotion procedures to ensure that promotion evaluation standards are scientific and reasonable and that the promotion process is fair and just.	<b>Resource</b>	Encouraging all employees, including part-time employees and contracted employees, to obtain professional qualifications and providing financial support and working hours support to undergraduate and postgraduate on-the-job degrees.

## Performance and compensation

Under the principle of determining job levels based on positions, hiring talent based on competency, and giving bonuses based on performance, GCL Technology formulated the *Compensation Management Standards*, outlining the overall pay structure of all employees. To retain and motivate key team members and implement the shared interests mechanism, we have been enhancing our long-term incentive mechanism. We rolled out a stock incentive plan in 2022, granting 290 million shares to 233 employees as a form of motivation. In 2023, 4 additional individuals were selected for mid-to long-term stock incentives, amounting to a total of 4.296 million new awarded shares.

Additionally, we have a comprehensive system of bi-directional performance reviews. As outlined in the *Performance Metrics Incentive Guide*, we use OKRs and KPIs as means to measure employees' progress in fulfilling their targets on a monthly and annual basis. The results directly influence adjustments in the employees' job levels and compensations. Furthermore, to ensure the transparency and fairness of the performance review process, we require managers to have performance talks with employees, helping them develop growth plans. For underperforming individuals, steps should be taken to identify gaps and devise improvement plans.

## Employee training

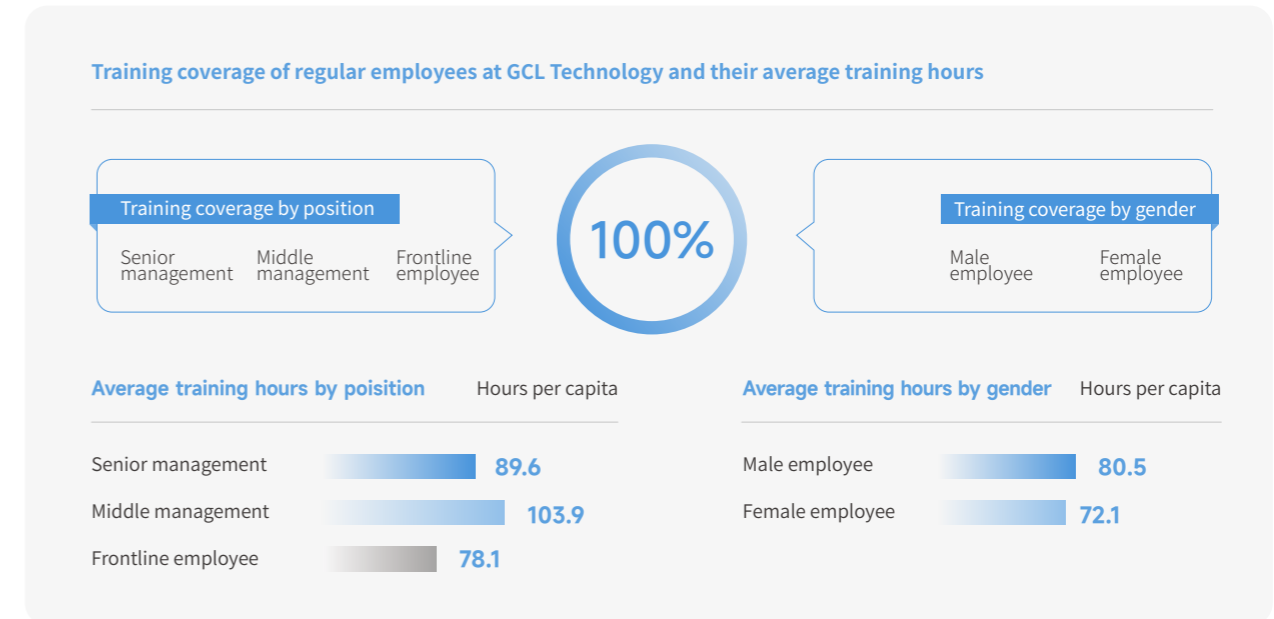
We developed a "4 Journey Program" training system around areas such as strategy implementation, culture cultivation, knowledge sharing, and skill enhancement. In 2023, the training system was upgraded to "GCL 5 Journey Program", a step closer to a standardized and layered talent cultivation structure.

### GCL Technology's "GCL 5 Journey Program" training system

	Participants	Subjects	Content	Number of participants
GCL Leading (Journey-1)	Management	PV Industry Trend Updates	<ul style="list-style-type: none"> <li>✓ Digital life cycle applications in the green energy industry</li> <li>✓ Quality management in the digital era</li> <li>✓ Leadership and culture in safety</li> </ul>	1,352
GCL Sailing (Journey-2)	New hires (fresh graduates and others)	Campus hire training camp Campus hire on-site learning at new bases New hire orientation	<ul style="list-style-type: none"> <li>✓ Organizational culture of GCL Technology</li> <li>✓ Workplace etiquette 101</li> <li>✓ Ethics and good conduct</li> <li>✓ Granular silicon at GCL Technology</li> <li>✓ EHS management at GCL Technology</li> </ul>	Over 300
GCL Navigation (Journey-3)	Professionals – entry level	R&D training camp Digital thinking bootcamp Entry-level QA	<ul style="list-style-type: none"> <li>✓ Latest technologies and applications; market-oriented R&amp;D management; product design and development</li> <li>✓ Certification: Beginner BASTC; basic business understanding; professional skills</li> <li>✓ Lean Six Sigma Beginner</li> </ul>	275
GCL Safety (Journey-4)	Professionals – mid level and key members	IP boot camp Intermediate QA boot camp TL/GL leadership	<ul style="list-style-type: none"> <li>✓ Corporate IP strategy and IP system; patent filing management (business and procedure); mapping high-value patents</li> <li>✓ Lean Six Sigma Green Belt</li> <li>✓ TL/GL training</li> </ul>	Nearly 300
GCL Voyage (Journey-5)	Management	Middle-to-senior manager innovation camp Middle-to-senior manager innovation workshop Data-empowered management practices	<ul style="list-style-type: none"> <li>✓ Innovation theories (the Second Curve of innovation; First principles thinking)</li> <li>✓ Hands-on innovation practice</li> <li>✓ Certification: Intermediate BASTC, expert lectures, workshops on leadership in the digital era, etc</li> </ul>	Nearly 260

In pursuit of more standardized and coherent training management, GCL Technology crafted training governance policies including the *Training Management System*, *Internal Instructor Management System*, and *Mentorship Management Standards*. In 2023, we refined our approaches to assessing training outcomes, motivating instructors, and managing employee learning credits. We rolled out extensive training sessions on quality management, operational safety, and business ethics for employees at all levels, sharpening their competitive edge in professional expertise and business proficiency.

GCL Technology offers employees support for degree programs and certifications. Diplomas and certifications can be converted into training credits under the training system and be factored into their job-level adjustment. In 2023, the Group developed further education plans for employees, assisting them in acquiring credentials in MBA programs and more. This strategy effectively maintains the creativity and efficacy of our talent to keep pace with the rapid growth of the corporation.



### GCL Technology organized the GCL Voyage (Journey-5) "Innovation Workshop"

In May 2023, the first "Innovation Workshop" by GCL Technology took place in Xuzhou, Jiangsu. The workshop was designed to concentrate on corporate development strategies, employing innovative models to provide a structured approach to innovation at GCL Technology. It aimed to dismantle cognitive barriers among the management, expand cognitive horizons to influence organizational cognition, and reconstruct value networks, contributing to the sustainability of GCL Technology in a carbon-free era.



GCL Technology's Innovation Workshop for middle and senior management

## Occupational Health and Safety

GCL Technology strictly abides by production safety laws and regulations such as the *Production Safety Law of the People's Republic of China* and the *Fire Protection Law of the People's Republic of China*. We have formulated a host of internal policies, including the *Safety Activity Management System*, the *Occupational Disease Prevention and Control System*, and the *Regulations on Contractor Operations*. By actively implementing our annual health and safety management goal and action plan, we are effectively protecting the health and safety of our employees and contract workers.

### Health and safety management structure

GCL Technology established the Safety Environment Committee to lead the formulation of safety management policies, goals, and action plans, to oversee the implementation of relevant policies. A standing office has been set up to fulfill our responsibilities in safe production. In 2023, the Group worked with Dupont Sustainable Solutions (DSS) to build a safety risk management system, which involved setting up a DSS leadership group at each base, sharing safety knowledge, and leading safety supervision over equipment. As of the end of the reporting period, totaling 13 out of 15 production bases have been certified to ISO 45001 occupational health and safety management systems, with a coverage rate of 86.67%.

Coverage rate of ISO 45001

**86.67%**

### Occupational health and safety

GCL Technology places equal emphasis on the occupational health of both employees and contractors. We regularly assess occupational disease hazards and distribute occupational hazard notification cards. To improve workplace occupational health conditions and effectively raise awareness among employees for the prevention and treatment of occupational diseases, we maintained the safe production equipment and occupational disease prevention facilities, provided protective labor insurance supplies, and conducted pre-employment, on-the-job, and post-employment occupational health examinations.

In terms of contractor management, the Group has outlined processes relevant to contractor qualification reviews, training and education, routine assessments, and annual audits in our policies. We organize monthly safety meetings for contractors where we check their progress on carrying out fire emergency drills and regularly align with them on the latest safety requirements and information.

#### GCL Technology's health and safety targets in 2023

Occupational disease recognized by the statutory bodies

**0**

chronic occupational diseases

Employee health examination rate

**100%**

Pass rate for occupational disease detection in workplace

**≥ 90%**

Achieved

**100%** of pass rate after testing and improvement

## Production safety

GCL Technology prioritizes production safety by detailing the responsibilities and objectives that need to be fulfilled through signing the *Safe Production Pledge*. We attach the utmost importance to spotting, controlling, and eliminating safety hazards through a host of measures. These include: identifying and removing safety hazards, and a comprehensive control system of hazardous chemicals throughout their lifecycle from raw material procurement, transportation, storage, production, and waste disposal to ensure safety in production processes involving hazardous chemicals.

#### GCL Technology's performance on production safety

Number of work-related injuries (Cases)

2022 **29**  
2023 **38**

Hours lost to work-related injuries (Hours)

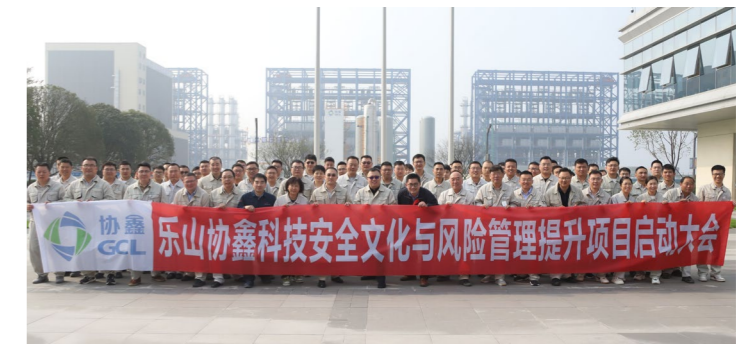
2022 **21,414**  
2023 **11,832**

Work-related fatalities in past 3 years

**0**

### Building a culture of safety

GCL Technology takes the safety skills of our workforce seriously. We have improved the emergency response management system and relevant policies such as the *Emergency Relief Policy*, and carried out emergency drills to bolster employee awareness of safety precautions. Additionally, the Group has formulated the *Production Safety Training Management System* and required members of the management team to participate in training on safety leadership and safety risk control. We also established a three-level safety training system, requiring all workers to pass the safety skill test before entering work areas. During the reporting period, the "Safety Production Month" featured engaging activities such as safety trivia to educate our employees on safety practices and underscore the vital importance of safe production.



Safety training in Leshan GCL



Emergency drill in Inner Mongolia Xinhuan



Safety training in Henan GCL

# Assuming Social Responsibility

GCL Technology recognizes that our development relies on the support from all sectors of society. Therefore, the Group has formulated the *Labor Practice Policy of GCL Technology*, which outlines the Group's commitment to supporting vulnerable communities. The Group also engaged in diverse public welfare and volunteer activities, assuming its responsibility as a responsible corporate citizen. In 2023, GCL Technology invested around RMB 2.4 million in social welfare and community investments.

## Charitable donations

GCL Technology takes on corporate social responsibility by engaging in various public welfare activities such as rural revitalization, charitable donations, and compassionate visits. We care about left-behind children and impoverished college students, and provide donations and care for special education schools, spreading the love of GCL Technology. Moreover, the Group directs its subsidiary companies to advocate for the legitimate rights and interests of various vulnerable populations, including women, children, indigenous peoples, immigrants, the elderly, individuals with disabilities, homeless individuals, economically disadvantaged populations, individuals with limited literacy or education, as well as ethnic minorities and religious communities within their respective regions. We strive to provide them with care and assistance, demonstrating our commitment to social welfare and inclusivity.

### Leshan GCL launched "Living Water Plan" to support rural revitalization

In support of the national rural revitalization strategy and vulnerable groups, Leshan GCL, in collaboration with Tencent Charity, launched the "Living Water Plan - Joining hands with Leshan GCL to carry forward love" and "Making donations in Wutongqiao District for love" in 2023. These initiatives aimed to focus on vulnerable groups, and help empty nesters and disadvantaged women and children overcome challenges in life.



Leshan GCL's posters of charitable donation campaign for rural revitalization

## Voluntary activities

GCL Technology emphasizes "corporate-led, all-staff involved" in social service. We actively collaborate with employees, charitable organizations, and other stakeholders to conduct diverse volunteer activities, promoting the spirit of dedication. In 2023, GCL Technology engaged in 395 volunteer assignments, with the duration reaching 583 hours in total.

### Investigation of marine waste and beach clean-up by the Hong Kong office

According to WWF-Hong Kong, at least 11 million tonnes of plastic waste flows into the oceans every year, equating to the disposal of a truckload of garbage into the sea every minute. This alarming volume of waste presents substantial threats to marine ecosystems and human well-being.

On November 24, 2023, GCL Technology organized a volunteer team to participate in beach clean-up and marine waste assessment at the WWF Island House Conservation Studies Center in Tai Po, Hong Kong. The aim of this activity was to better understand marine waste in Hong Kong waters and encourage employees to protect the marine environment.



Employees of the Hong Kong office participated in marine waste investigation and beach clean-up

### Jurong GCL's voluntary blood donation

In May 2023, Jurong GCL organized a blood donation under the theme of "Fueling life with love". 27 employees participated and donated a total of 9,200 milliliters of blood. Employees from all departments responded to the call actively, carrying hope forward to patients in need of blood transfusion. During the donation, detailed guidelines and prepared supplies have been provided before and after blood donation to ensure the safety of participating employees.



Jurong GCL's voluntary blood donation

### Suzhou GCL's environmental-themed volunteer activity



Suzhou GCL's environmental-themed volunteer activity

In April 2023, volunteers from Suzhou GCL conducted a public welfare volunteer activity under the theme of "A beautiful new Suzhou" in the Pear Blossom Forest at the Shushan Mountain. The activity aimed to encourage citizens to protect the ecological environment from small behaviors, and work together to build, govern, and share a beautiful home. Volunteers explained low-carbon knowledge and environmental protection tips, providing a comprehensive understanding of waste sorting to everyone involved.



# 03

## Governance: Sound Business Operations



In response to HKEX indicators

- B7 Anti-corruption

In response to the following SDGs

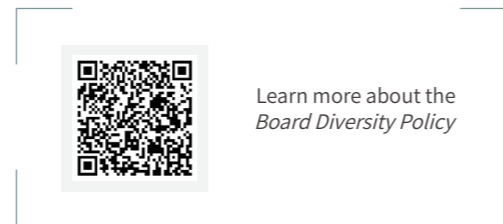


# Governance Capacity

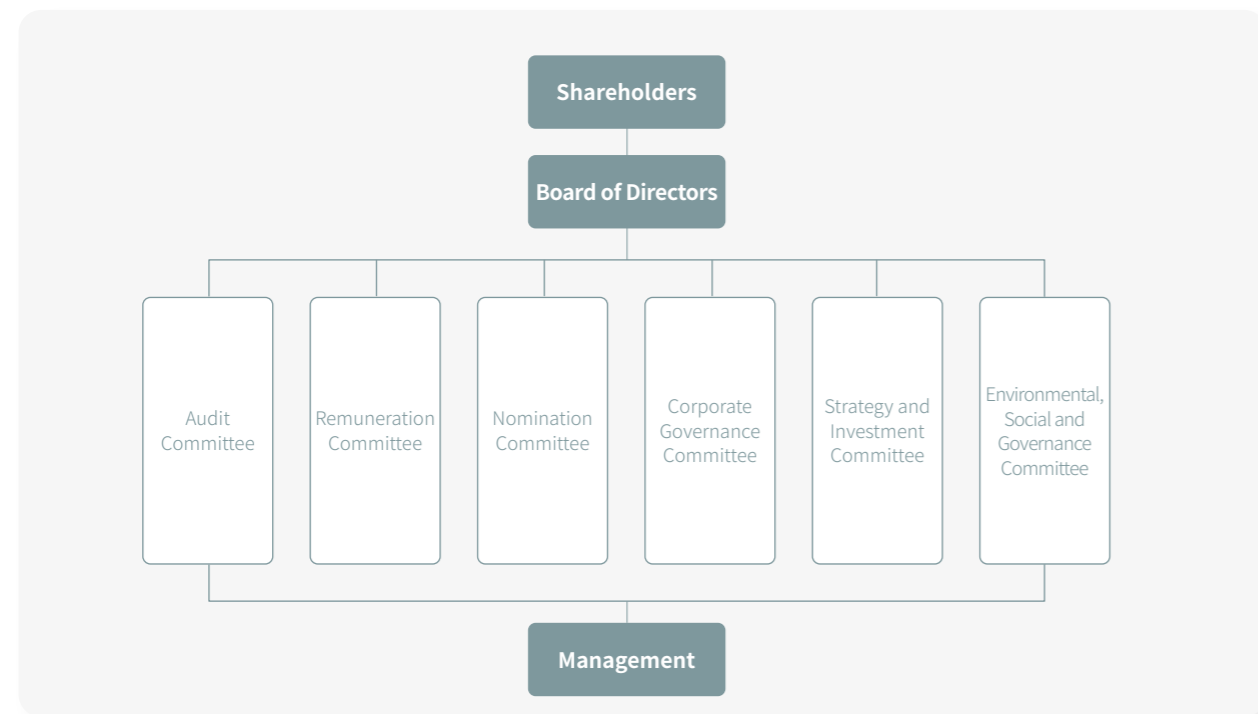
GCL Technology has always been enhancing its governance system. We provide solid guarantee for long-term development by emphasizing investor relations management and building a governance structure.

## Corporate Governance

We comply with the *Company Law of the People's Republic of China*, *Enterprise Income Tax Law of the People's Republic of China*, *Appendix C1 of the Rules Governing the Listing of Securities on The Stock Exchange of Hong Kong Limited*, *Corporate Governance Code*, and other laws, regulations, and regulatory documents. We have built a governance structure consisting of the shareholders, the Board of Directors, and the management. The Group has formulated the *Board Diversity Policy* that considers various factors such as expertise, academic background, gender, and age in the selection and appointment of board members to ensure diversity and independence within the Board of Directors. In 2023, GCL Technology held in total 28 board meetings and 1 Annual General Meeting (AGM). Among them, the Board (including the ESG Committee) held 3 meetings specifically related to ESG matters and reviewed the Group's 2022 ESG report.



GCL Technology's governance structure



GCL Technology Board of Directors member information

Name	Gender	Financial expert	Industry expert	Risk management expert
Zhu Gongshan (Chairman)	Male		✓	
Zhu Yufeng (Vice Chairman)	Male		✓	
Zhu Zhanjun (Vice Chairman and Joint CEO)	Male		✓	
Lan Tianshi (Joint CEO)	Male		✓	
Sun Wei (Executive Director)	Female	✓	✓	
Yeung Man Chung, Charles (Chief Financial Officer and Company Secretary)	Male	✓	✓	✓
Ho Chung Tai, Raymond (Independent Non-executive Director)	Male		✓	✓
Yip Tai Him (Independent Non-executive Director)	Male	✓		✓
Shen Wenzhong (Independent Non-executive Director)	Male		✓	

## Investor Relations

In compliance with the *Investor Relations Management Policy* and other related policies, GCL Technology has strengthened communication and engagement with investors. Our active involvement in both on-site investor summits and online teleconferences has contributed to improving investors' comprehension and awareness of the organization. During the reporting period, we held two large-scale on-site result announcement presentations, and hosted several on-site visits to our domestic production bases for investors to do their research.

### The "100· Investors | Discovering GCL Tech" event at the Suzhou GCL Energy Center

On July 14, 2023, GCL Technology and Cailian Press jointly organized the "Insights into GCL Technology: Hundred-Investor Dialogue" at Suzhou GCL Energy Center. Renowned investors, chief analysts, high-profile financial commentators, and company executives convened to share insights on technological innovation breakthroughs and investment strategies within the photovoltaic industry. Discussions centered around corporate strategic plans, product competitive strengths, and other pertinent topics of interest to investors.

# Lines of Defense in Compliance

GCL Technology deems the optimization of internal management procedures an ongoing endeavor. We have enhanced our capabilities in compliance operations and risk management, ensuring that our business activities are efficient and adhere to standards, thereby establishing a strong corporate image and reputation.

## Internal Control and Risk Management

GCL Technology is committed to constructing a robust and comprehensive internal control and risk management framework. Systems such as the *Principles and Systems of Internal Control Management* and *Comprehensive Risk Management System* have been developed to standardize the internal control and risk management processes, thereby establishing a solid management mechanism. The three lines of defense against risks have been established by the Internal Control Department, Risk Management Department, and Business Department.

We have been continuously optimizing the quantitative indicator system of risks, spanning 6 major categories (strategy, operation, compliance, finance, market, capital, and resources) and 25 level-one risks. With these indicators for risk monitoring as benchmarks, a closed feedback loop is completed from goal setting to ongoing monitoring. We identify deficiencies in internal controls and significant risks during monthly reviews, promptly implementing necessary adjustments to ensure compliance and accountability. In 2023, GCL Technology underwent external assessments of its risk management and internal controls, with no specific issues identified.

Internal control related problems

267

Medium-to-high risks

60

Rectification completion rate

92%

GCL Technology's risk management mechanism



Conducting semi-annual or annual risk assessment

Producing a risk assessment report outlining the 10 major risks

Collaborating with business departments to devise coping strategies and maintain continuous oversight

Establishing a system for monthly risk control reports to summarize deficiencies

The Group made internal control and compliance requirements clear to employees through training. Basic knowledge of internal control was explained to enhance employees' awareness of risk prevention and control. In total, we held 24 training sessions themed under risk and internal control in 2023, with more than 1,192 attendances from our employees.

## Compliance Management

GCL Technology adheres to the principle of operation in compliance with laws and regulations and has made persistent efforts to improve its compliance management system. We put in place a compliance management framework composed of risk control, legal affairs, and supervision departments, conducting regular compliance management and audits to prevent potential compliance loopholes in business operation. During the reporting period, we conducted multiple self-examinations related to compliance, focusing on fund payments, external guarantees, related-party transactions, and traceability management. These examinations did not uncover any significant loopholes or violations.



### Basic legal training for employees of Inner Mongolia Xinyuan

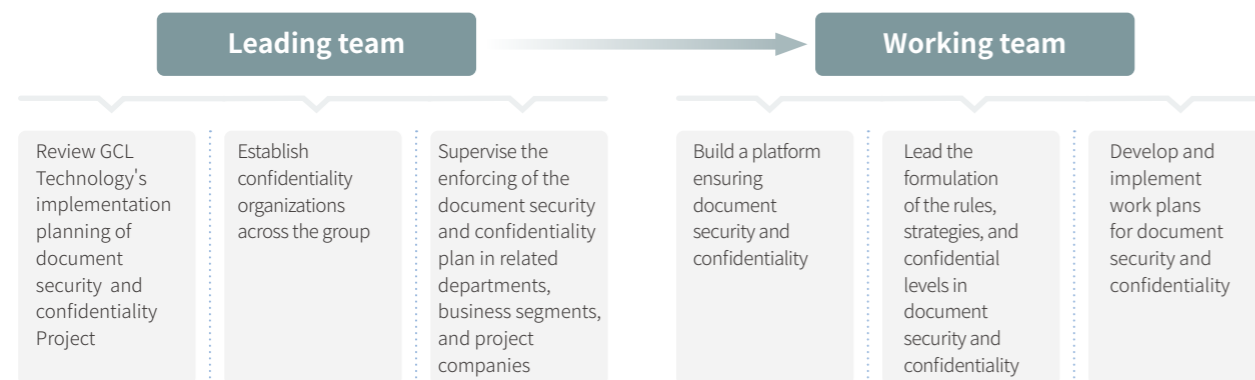
In 2023, Inner Mongolia Xinyuan conducted a training session for employees on fundamental legal topics such as "contract essentials and legal risk prevention" and "employee confidentiality and non-compete obligations." The training session was participated and well-received by over 100 employees with positive feedback.



## Data and Information Security

In compliance with the requirements of laws and regulations related to data security and personal information, GCL Technology has formulated regulations such as the *Information System Security and Media Confidentiality Management Standards* and added the *Big Data Security Management Guidance* in 2023, constantly improving its data security management system concerning customer information and privacy security. Meanwhile, we actively implemented the strategy of "Digital GCL". A task force for information security and confidentiality has been established to ensure tight security over internal corporate data and external customer information.

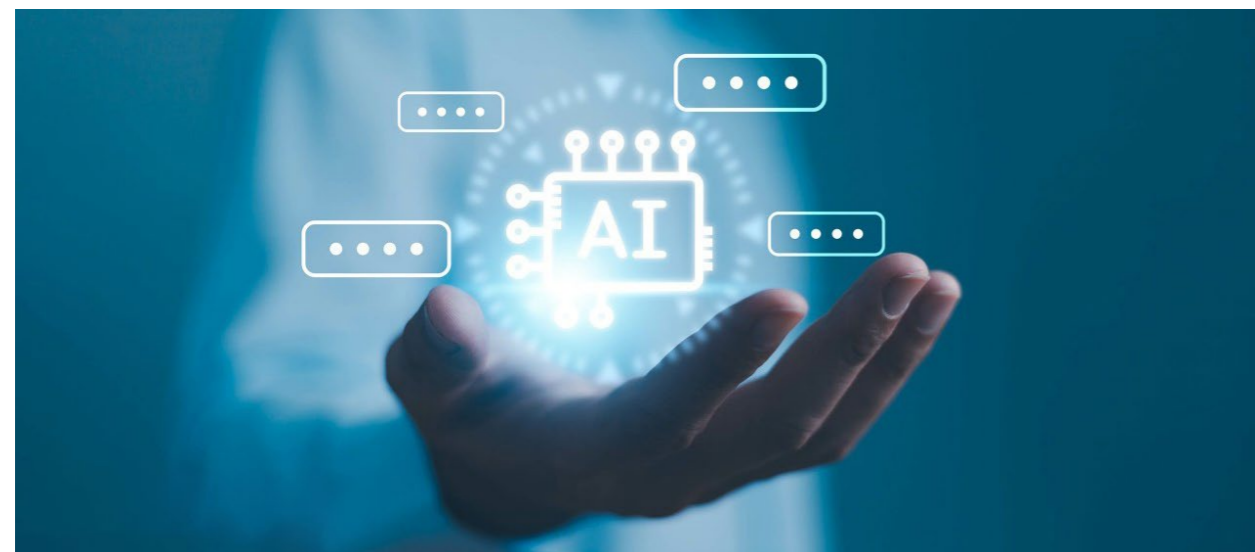
Structure of the information security and confidentiality task force of GCL Technology



No incidents of customer information or privacy breach occurred in GCL Technology during the reporting period.

**Regulating the use of information:** GCL Technology's collection and use of customer information is in accordance with the principle of "clear purposes", "customers' consent", "minimum data collection", and "guaranteed data security". We are committed to safeguarding customers' rights to the use of their information and data. Collected customer information and data are managed through clear classification and grading, with differentiated and targeted security measures.

**Privacy protection:** In order to consolidate the security of customer information and data, all employees of the Group have been mandated to sign confidentiality agreements, and training sessions and red teaming for information security were organized on a regular basis, with a view to improving our employees' competitiveness in information security. In 2023, we held 2 information security red teamings, achieving 100% employee coverage.



## Commitment to Business Ethics

GCL Technology is committed to fostering an ecosystem of integrity within the industry by continuously enhancing its business ethics policies, strengthening relevant management systems, and intensifying advocacy and training efforts. Together with our partners, we strive to create a transparent and ethical business environment.

**System development:** We strictly comply with the *Law of the People's Republic of China Against Unfair Competition*, *Anti-Monopoly Law of the People's Republic of China*, and other relevant laws and regulations. We have formulated internal management systems defined by policies and regulations such as *Anti-Corruption Regulations*, *Anti-Fraud (including Anti-Corruption)* and *Whistleblowing Management Standards and Shareholder Communication Policies*. Therefore, we have established a comprehensive governance framework encompassing business ethics standards, prevention and control measures, inspection mechanisms, whistleblowing protocols, and procedures for handling reported incidents.

**Management system:** The Audit Committee of the Group, as the highest responsible body for business ethics, takes on the task of reviewing the Group's business ethics management procedures and control measures. Our audit departments are responsible for daily supervision and investigation into concerning incidents. And the management at all levels is responsible for the implementation of relevant management methods to minimize the probability of business ethics violations. In addition, the Group conducts an audit of business ethics policies and implementation across the Group at least once every three years.

**Supplier integrity management:** To further substantiate anti-corruption requirements for its suppliers, GCL Technology has signed the *Anti-Commercial Bribery Agreement* with its suppliers and business partners involved in transactions. Furthermore, the Group has required all suppliers participating in bidding projects to sign the *Commitment of Integrity in Bidding*, as an effort to eliminate any incidents of bribery or corruption during the cooperation.

**Integrity education:** GCL Technology has made solid progress in penetrating integrity into its corporate culture. We hosted regular thematic training sessions such as "Integrity in Compliance" and "Integrity Culture & GCL's Ten Commandments", and proceeded in on-site promotion against embezzlement, bribery of non-public personnel, etc. In 2023, we held in total 18 business integrity-related training sessions for board members, company management, and professional employees.

### GCL Technology's business ethics training



### Whistleblower protection

GCL Technology established detailed procedures of report in *Anti-Fraud (including Anti-Corruption)* and *Whistleblowing Management Standards and Shareholder Communication Policies* for the effective management of business ethics supervision and whistleblowing. The rights and responsibilities, as well as the procedures for complaint and whistleblowing, are clearly defined in our policy, ensuring timely and effective handling. At the same time, we strictly adhere to the principle of confidentiality and protect whistleblowers' personal information and reported content from disclosure in accordance with the law. We oppose any form of retaliation or reprisal against whistleblowers.

In 2023, GCL Technology received allegations of corruption or

bribery through its channels, totaling 2 cases, 1 of which was closed following an investigation. Following the reports and incidents, we stepped up efforts on supervision and assessment with a specific emphasis. Involved project companies were penalized with points deduction in the Group's annual management assessment. Additionally, we strengthened integrity management and implemented in earnest the "GCL's Ten Commandments". We firmly oppose any unethical practices, and are committed to a culture of integrity.

**Whistleblowing channels**  
Hotline: 0512-68538110  
Email: jvbao@gcl-power.com

## Sustainability KPIs

KPIs	Criteria	Unit	2023	2022	2021
<b>Environmental<sup>1</sup></b>					
<b>Emissions<sup>2</sup></b>					
Emissions of waste gas	Nitrogen oxides (NO <sub>x</sub> )	Tonnes	499.65	21.68	26.04
	Sulfur oxides (SO <sub>x</sub> )	Tonnes	344.36	0.59	1.50
	Particulate matter (PM)	Tonnes	203.38	16.25	14.31
Discharge of wastewater	Total wastewater discharge	Ten thousand tonnes	933	837	459
	Wastewater discharge intensity	Ten thousand tonnes/ MW of wafers	0.005	0.009	0.008
Disposal of hazardous waste	Hazardous waste <sup>3</sup>	Tonnes	2,218	1,233	1,310
	Hazardous waste discharge intensity	Tonnes/MW of wafers	0.013	0.014	0.023
Disposal of non-hazardous waste	Non-hazardous waste	Tonnes	116,539	79,679	37,456
	Non-hazardous waste discharge intensity	Tonnes/MW of wafers	0.658	0.900	0.672
<b>Use of resources</b>					
Energy Consumption	Coal	Tonnes	1,129,944	1,033,122	917,673
	Gasoline	Tonnes	115	80	N/A
	Diesel	Tonnes	1,064	264	144
	Natural gas	Ten thousand m <sup>3</sup>	16,238	5,634	2,641
	Purchased electricity	MWh	7,863,177	4,060,148	2,208,064
	Purchased thermal power	GJ	6,427,463	4,294,027	3,279,073
	Comprehensive energy consumption <sup>4</sup>	MWh	17,985,903	11,865,553	9,011,701
Water consumption	Comprehensive energy intensity	MWh/MW of wafers	102	134	162
	Total water consumption	Ten thousand tonnes	2,823	2,730	1,240
	Total water consumption intensity	Ten thousand tonnes/ MW of wafers	0.016	0.031	0.022
Packaging material use	Total use of packaging materials	Tonnes	25,058	13,525	6,630
	Packaging material intensity	Tonnes/MW of wafers	0.14	0.15	0.12

<sup>1</sup> Our approach to business segmentation was updated in 2023, resulting in a re-calibration of the statistical scope for 2022 to ensure uniformity. For further details, please refer to the "Reporting Scope" section in "About this Report." The data for 2022 should be taken in accordance with the figures disclosed in this current report.

<sup>2</sup> In 2023, the addition of Inner Mongolia Xinyuan silicon metal operations, due to its unique business characteristics, resulted in more waste gases, wastewater, and solid waste than other business lines. Consequently, there was a significant increase in the total emissions compared to previous years.

<sup>3</sup> In 2023, the suspension of rod silicon production at Jiangsu Zhongneng and the subsequent halt of hydrogenation facilities led to a surge in hazardous waste disposal, noticeably increasing the total amount and intensity of hazardous waste discharge.

<sup>4</sup> The comprehensive energy consumption data was calculated with reference to the General Rules for Calculation of the Comprehensive Energy Consumption (GB/T 2589-2020).

<sup>5</sup> The GHG emissions accounting methods and coefficients refer to the National Development and Reform Commission's 24 industry-specific GHG emission accounting methods and reporting guidelines, ISO 14064-1:2018, and the GHG Protocol. For emissions from purchased electricity, we comply with the 2011 and 2012 Average CO<sub>2</sub> Emission Factors for China's Regional Power Grids.

<sup>6</sup> This report rectifies the Scope 2 GHG emissions initially reported for 2021.

KPIs	Criteria	Unit	2023	2022	2021
<b>Response to climate change</b>					
GHG emissions <sup>5</sup>	Scope 1 emissions	tCO <sub>2</sub> e	3,041,801	2,161,981	1,958,520
	Scope 2 emissions	tCO <sub>2</sub> e	5,891,811	3,098,435	1,858,929 <sup>6</sup>
	Total GHG emissions (Scope 1 and 2)	tCO <sub>2</sub> e	8,933,612	5,260,416	3,817,449
	Total GHG emission intensity (Scope 1 and 2)	tCO <sub>2</sub> e/ MW of wafers	50.45	59.41	68.47
<b>Social</b>					
<b>Employment</b>					
Number of employees		Headcount	15,002	11,527	8,863
By employment type	Regular	Headcount	12,446	11,019	8,863
	Non-regular <sup>7</sup>	Headcount	2,556	508	0
By position <sup>8</sup>	Senior management	Headcount	62	80	54
	Middle management	Headcount	281	299	208
	Frontline employee	Headcount	12,103	11,148	8,601
By gender <sup>8</sup>	Male	Headcount	9,853	9,037	6,618
	Female	Headcount	2,593	2,490	2,245
By age <sup>8</sup>	30 and below	Headcount	4,346	3,953	5,963
	31-50	Headcount	7,827	7,262	2,494
	Above 50	Headcount	273	312	406
By region <sup>8</sup>	Mainland China	Headcount	12,414	11,492	8,824
	Hong Kong, Macao, and Taiwan	Headcount	25	23	39
	Overseas	Headcount	7	12	
Number of middle and senior management roles by gender	Female	Headcount	39	N/A <sup>9</sup>	N/A
	Male	Headcount	304	N/A	N/A
Number of middle and senior management roles by age	30 and below	Headcount	2	N/A	N/A
	31-50	Headcount	273	N/A	N/A
	Above 50	Headcount	68	N/A	N/A
<b>Employee Turnover</b>					
Overall turnover rate		%	22.9	18.5	17.2
Turnover rate by gender	Male	%	23.2	18.7	16.6
	Female	%	22.0	17.7	19.1
Turnover rate by age	30 and below	%	32.4	25.9	20.7
	31-50	%	17.9	15.8	15.9
	Above 50	%	16.5	6.9	9.1

<sup>7</sup> Non-regular employee refers to labour dispatch employees and interns, etc.

<sup>8</sup> The number of employees by position, gender, age and region in 2022 include non-regular employees.

<sup>9</sup> The data was not available for 2022. Since 2023, we have standardized the indicator management to provide more detailed disclosures (similarly hereinafter).

## HKEX ESG Reporting Guide

KPIs	Criteria	Unit	2023	2022	2021
Turnover rate by region	Mainland China	%	23.0	19.2	N/A <sup>1</sup>
	Hong Kong, Macao, and Taiwan	%	0.0	11.5	N/A
	Overseas	%	0.0	0	N/A
<b>Employee training and development</b>					
Annual number of training participants		Headcount	12,446	15,329	12,873
Total hours of training for regular employee		Hours	980,137	1,183,399	N/A
Average hours of training per employee		Hours	78.75	77.2	95
<b>Occupational health and safety</b>					
Number of work-related injuries		/	38	29	28
work-related fatalities		Headcount	0	0	0
Hours lost to work-related injuries		Hours	11,832	21,414	34,416
<b>Products</b>					
R&D investment		RMB billion	1.873	1.686	1.041
R&D investment accounting for the annual revenue		%	5.56	4.69	6.17
Number of patents	Number of patents applied	/	219	139	98
	Number of patents granted	/	110	108	99
	Total number of patents granted	/	1,067	N/A	N/A
<b>Customer services</b>					
Customer satisfaction rate		%	96.85	91.00	91.60
Customer complaints		/	289	N/A	369
Customer complaint resolution rate		%	100	100	100
<b>Supply chain management</b>					
Total number of suppliers		/	2,957	1,764	1,764
Number of suppliers in mainlan China		/	2,949	1,759	1,759
Number of suppliers in Hong Kong, Macao, and Taiwan		/	5	2	2
Number of overseas suppliers		/	3	3	3
<b>Community investment and participation</b>					
Annual total expenditure on community and volunteer activities		RMB10,000	240	1,320.7	N/A
Employees participating in philanthropic/volunteer activities		Headcount	395 <sup>2</sup>	4,800	N/A
Hours of employee participation in philanthropic/volunteer activities		Hours	583	13,788	N/A
<b>Governance</b>					
<b>Business ethics training</b>					
Training for Board members		Hours	13.5	N/A	N/A
Board training coverage		%	100	N/A	N/A
Training for employees		Hours	5,000	N/A	N/A
Employee training coverage		%	100	100	100
Number of concluded legal cases regarding corrupt practices		/	1	N/A	0

<sup>1</sup> The data was not available for 2022. Since 2023, we have standardized the indicator management to provide more detailed disclosures (similarly hereinafter).

<sup>2</sup> In 2023, due to the end of the fight against the Covid-19, there was a decrease in the number of attendances and hours of employees participation in community service/volunteer activities.

KPIs	Section in this report
<b>A. Environmental</b>	
<b>A1: Emissions</b>	
General Disclosure	Environment: Green Development-Reducing Waste Generation
A1.1 The types of emissions and respective emissions data.	Environment: Green Development-Reducing Waste Generation
A1.2 Direct (Scope 1) and energy indirect (Scope 2) greenhouse gas emissions (in tonnes) and, where appropriate, intensity (e.g. per unit of production volume, per facility).	Environment: Green Development-Responses to Climate Change
A1.3 Total hazardous waste produced (in tonnes) and, where appropriate,intensity (e.g. per unit of production volume, per facility).	Environment: Green Development-Reducing Waste Generation
A1.4 Total non-hazardous waste produced (in tonnes) and, where appropriate,intensity (e.g. per unit of production volume, per facility).	Environment: Green Development-Reducing Waste Generation
A1.5 Description of emission target(s) set and steps taken to achieve them.	Environment: Green Development-Reducing Waste Generation
A1.6 Description of how hazardous and non-hazardous wastes are handled,and a description of reduction target(s) set and steps taken to achieve them.	Environment: Green Development-Reducing Waste Generation
<b>A2: Use of Resources</b>	
General Disclosure	
A2.1 Direct and/or indirect energy consumption by type (e.g. electricity, gas or oil) in total (kWh in '000s) and intensity (e.g. per unit of production volume, per facility).	Environment: Green Development-Optimizing Resource Management
A2.2 Water consumption in total and intensity (e.g. per unit of production volume, per facility).	Environment: Green Development-Optimizing Resource Management
A2.3 Description of energy use efficiency target(s) set and steps taken to achieve them.	Environment: Green Development-Optimizing Resource Management
A2.4 Description of whether there is any issue in sourcing water that is fit for purpose, water efficiency target(s) set and steps taken to achieve them.	Environment: Green Development-Optimizing Resource Management
A2.5 Total packaging material used for finished products (in tonnes) and, if applicable, with reference to per unit produced.	Environment: Green Development-Optimizing Resource Management
<b>A3: The Environment and Natural Resources</b>	
General Disclosure	Environment: Green Development-Implementing of Environmental Management
A3.1 Description of the significant impacts of activities on the environment and natural resources and the actions taken to manage them.	Environment: Green Development-Implementing of Environmental Management
<b>A4: Climate Change</b>	
General Disclosure	Environment: Green Development-Responses to Climate Change
A4.1 Description of the significant climate-related issues which have impacted, and those which may impact, the issuer, and the actions taken to manage them.	Environment: Green Development-Responses to Climate Change
<b>B. Social</b>	
<b>Employment and Labour Practices</b>	
<b>B1: Employment</b>	
General Disclosure	Social: Striving for Higher Values-Together for the Shared Future of Our People
B1.1 Total workforce by gender, employment type (for example, full-or part-time), age group and geographical region.	Social: Striving for Higher Values-Together for the Shared Future of Our People
B1.2 Employee turnover rate by gender, age group and geographical region.	Social: Striving for Higher Values-Together for the Shared Future of Our People
<b>B2: Health and Safety</b>	
General Disclosure	Social: Striving for Higher Values-Together for the Shared Future of Our People
B2.1 Number and rate of work-related fatalities occurred in each of the past three years including the reporting year.	Social: Striving for Higher Values-Together for the Shared Future of Our People

KPIs	Section in this report
B2.2 Lost days due to work injury.	Social: Striving for Higher Values-Together for the Shared Future of Our People
B2.3 Description of occupational health and safety measures adopted, and how they are implemented and monitored.	Social: Striving for Higher Values-Together for the Shared Future of Our People
<b>B3: Development and Training</b>	
General Disclosure	
B3.1 The percentage of employees trained by gender and employee category (e.g. senior management, middle management).	Social: Striving for Higher Values-Together for the Shared Future of Our People
B3.2 The average training hours completed per employee by gender and employee category.	Social: Striving for Higher Values-Together for the Shared Future of Our People
<b>B4: Labour Standards</b>	
General Disclosure	
B4.1 Description of measures to review employment practices to avoid child and forced labour.	Social: Striving for Higher Values-Together for the Shared Future of Our People
B4.2 Description of steps taken to eliminate such practices when discovered.	Social: Striving for Higher Values-Together for the Shared Future of Our People
Operating Practices	
<b>B5: Supply Chain Management</b>	
General Disclosure	
B5.1 Number of suppliers by geographical region.	Social: Striving for Higher Values- Building a Responsible Supply Chain
B5.2 Description of practices relating to engaging suppliers, number of suppliers where the practices are being implemented, and how they are implemented and monitored.	Social: Striving for Higher Values- Building a Responsible Supply Chain
B5.3 Description of practices used to identify environmental and social risks along the supply chain, and how they are implemented and monitored.	Social: Striving for Higher Values- Building a Responsible Supply Chain
B5.4 Description of practices used to promote environmentally preferable products and services when selecting suppliers, and how they are implemented and monitored.	Social: Striving for Higher Values- Building a Responsible Supply Chain
<b>B6: Product Responsibility</b>	
General Disclosure	
B6.1 Percentage of total products sold or shipped subject to recalls for safety and health reasons.	/
B6.2 Number of products and service related complaints received and how they are dealt with.	Social: Striving for Higher Values- Enhancing Service Quality
B6.3 Description of practices relating to observing and protecting intellectual property rights.	Social: Striving for Higher Values-Leading Technological Innovation
B6.4 Description of quality assurance process and recall procedures.	Social: Striving for Higher Values- Enhancing Service Quality
B6.5 Description of consumer data protection and privacy policies, and how they are implemented and monitored.	Governance: Sound Business Operations-Lines of Defense in Compliance
<b>B7: Anti-corruption</b>	
General Disclosure	
B7.1 Number of concluded legal cases regarding corrupt practices brought against the issuer or its employees during the reporting period and the outcomes of the cases.	Governance: Sound Business Operations-Commitment to Business Ethics
B7.2 Number of concluded legal cases regarding corrupt practices brought against the issuer or its employees during the reporting period and the outcomes of the cases.	Governance: Sound Business Operations-Commitment to Business Ethics
B7.3 Description of anti-corruption training provided to directors and staff.	Governance: Sound Business Operations-Commitment to Business Ethics
<b>Community</b>	
<b>B8: Community Investment</b>	
General Disclosure	
B8.1 Focus areas of contribution (e.g. education, environmental concerns, labour needs, health, culture, sport).	Social: Striving for Higher Values-Assuming Social Responsibility
B8.2 Resources contributed (e.g. money or time) to the focus area.	Social: Striving for Higher Values-Assuming Social Responsibility

## GRI Index

Instructions	GCL reported the information cited in this GRI content index with reference to GRI standards from January 1 to December 31, 2023
GRI 1 applied	GRI 1: Foundation 2021

Disclosure issue/ number	Description	Section in this report
GRI 2: General Disclosure 2021		About this Report
Organization and its reporting		
2-1	Organisational details	About GCL Technology
2-2	Entities included in an organization's sustainability report	About this Report
2-3	Reporting period, frequency and contact point	About this Report
2-4	Restatements of information	About this Report
Activities and workers		
2-6	Activities, value chain and other business relationships	About GCL Technology
2-7	Employees	Social: Striving for Higher Values-Together for the Shared Future of Our People
2-8	Workers who are not employees	Social: Striving for Higher Values-Together for the Shared Future of Our People
Governance		
2-9	Governance structure and composition	Governance: Sound Business Operations-Governance Capacity
2-10	Nomination and selection of the highest governance body	Governance: Sound Business Operations-Governance Capacity
2-11	Chair of the highest governing body	Governance: Sound Business Operations-Governance Capacity
2-12	Role of the highest governance body in overseeing the management of impacts	Governance: Sound Business Operations-Governance Capacity
2-13	Delegation of responsibility for managing impacts	Governance: Sound Business Operations-Governance Capacity
2-14	Role of the highest governance body in sustainability reporting	ESG Governance and Management-ESG Governance
2-15	Conflicts of interest	Governance: Sound Business Operations-Commitment to Business Ethics
2-16	Communication of critical concerns	ESG Governance and Management-ESG Governance
2-17	Collective knowledge of the highest governance body	ESG Governance and Management-ESG Governance
2-19	Remuneration policies	Social: Striving for Higher Values-Together for the Shared Future of Our People
2-20	Process to determine remuneration	Social: Striving for Higher Values-Together for the Shared Future of Our People

Disclosure issue/ number	Description	Section in this report
Strategy, policies and practices		
2-22	Statement on sustainable development strategy	ESG Governance and Management-ESG Governance
2-23	Policy commitments	Governance: Sound Business Operations-Commitment to Business Ethics
2-25	Processes to remediate negative impacts	Governance: Sound Business Operations-Commitment to Business Ethics
2-26	Mechanisms for seeking advice and raising concerns	Governance: Sound Business Operations-Commitment to Business Ethics
2-27	Compliance with laws and regulations	Governance: Sound Business Operations-Lines of Defense in Compliance
Stakeholder engagement		
2-29	Approach to stakeholder engagement	ESG Governance and Management-Stakeholder Engagement
GRI 3: GRI 3: Material Topics 2021		
3-1	Process to determine material topics	ESG Governance and Management-Responses to Reporting Principles
3-2	List of material topics	ESG Governance and Management-Responses to Reporting Principles
3-3	Management of material topics	ESG Governance and Management-Responses to Reporting Principles
Economy		
GRI 201: Economic Performance		
201-2	Financial implications and other risks and opportunities due to climate change	Environment: Green Development-Responses to Climate Change
201-3	Defined benefit plan obligations and other retirement plans	Social: Striving for Higher Values-Together for the Shared Future of Our People
GRI 205: Anti-corruption		
205-2	Communication and training about anti-corruption policies and procedures	Governance: Sound Business Operations-Commitment to Business Ethics
205-3	Confirmed incidents of corruption and actions taken	Governance: Sound Business Operations-Commitment to Business Ethics
GRI 206: Anti-competitive Behaviour		
206-1	Legal actions for all anti-competitive behaviour, anti-trust, and monopoly practices	Governance: Sound Business Operations-Commitment to Business Ethics
Environment		
GRI 302: Energy		
302-1	Energy consumption within the organization	Environment: Green Development-Optimizing Resource Management
302-3	Energy intensity	Environment: Green Development-Optimizing Resource Management
302-4	Reduction of energy consumption	Environment: Green Development-Optimizing Resource Management
302-5	Reductions in energy requirements of products and services	Environment: Green Development-Optimizing Resource Management
GRI 303: Water		
303-1	Interactions with water as a shared resource	Environment: Green Development-Optimizing Resource Management

Disclosure issue/ number	Description	Section in this report
303-2	Management of water discharge-related impacts	Environment: Green Development-Optimizing Resource Management
303-5	Water consumption	Environment: Green Development-Optimizing Resource Management
GRI 304: Biodiversity		
304-1	Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas.	Environment: Green Development-Implementing Environmental Management
304-2	Significant impacts of activities, products and services on biodiversity	Environment: Green Development-Implementing Environmental Management
304-3	Habitat protected or restored	Environment: Green Development-Implementing Environmental Management
GRI 305: Emissions		
305-4	GHG emissions intensity	Environment: Green Development-Responses to Climate Change
305-5	Reduction of GHG emissions	Environment: Green Development-Responses to Climate Change
305-7	Nitrogen oxides (NO <sub>x</sub> ), sulfur oxides (SO <sub>x</sub> ), and other significant air emissions	Environment: Green Development-Reducing Waste Generation
GRI 306: Waste		
306-1	Waste generation and significant waste-related impacts	Environment: Green Development-Reducing Waste Generation
306-2	Management of significant waste-related impacts	Environment: Green Development-Reducing Waste Generation
306-3	Waste generated	Environment: Green Development-Reducing Waste Generation
306-4	Waste diverted from disposal	Environment: Green Development-Reducing Waste Generation
306-5	Waste directed to disposal	Environment: Green Development-Reducing Waste Generation
GRI 308: Supplier Environmental Assessment		
308-1	New suppliers that were screened using environmental criteria	Social: Striving for Higher Values- Building a Responsible Supply Chain
308-2	Negative environmental impacts in the supply chain and actions taken	Social: Striving for Higher Values- Building a Responsible Supply Chain
Society		
GRI 401: Employment		
401-1	New employee hires and employee turnover	Social: Striving for Higher Values-Together for the Shared Future of Our People
401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees	Social: Striving for Higher Values-Together for the Shared Future of Our People
401-3	Parental leave	Social: Striving for Higher Values-Together for the Shared Future of Our People
GRI 403: Occupational Health and Safety		
403-1	Occupational health and safety management system	Social: Striving for Higher Values-Together for the Shared Future of Our People
403-2	Hazard identification, risk assessment, and incident investigation	Social: Striving for Higher Values-Together for the Shared Future of Our People



Disclosure issue/ number	Description	Section in this report
403-3	Occupational health services	Social: Striving for Higher Values-Together for the Shared Future of Our People
403-4	Worker participation, consultation, and communication on occupational health and safety	Social: Striving for Higher Values-Together for the Shared Future of Our People
403-5	Worker training on occupational health and safety	Social: Striving for Higher Values-Together for the Shared Future of Our People
403-6	Promotion of worker health	Social: Striving for Higher Values-Together for the Shared Future of Our People
403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	Social: Striving for Higher Values-Together for the Shared Future of Our People
403-8	Workers covered by an occupational health and safety management system	Social: Striving for Higher Values-Together for the Shared Future of Our People
403-9	Work-related injuries	Social: Striving for Higher Values-Together for the Shared Future of Our People
403-10	Work-related ill health	Social: Striving for Higher Values-Together for the Shared Future of Our People
GRI 404: Training and Education		
404-1	Average hours of training per year per employee	Social: Striving for Higher Values-Together for the Shared Future of Our People
404-2	Programs for upgrading employee skills and transition assistance programs	Social: Striving for Higher Values-Together for the Shared Future of Our People
404-3	Percentage of employees receiving regular performance and career development reviews	Social: Striving for Higher Values-Together for the Shared Future of Our People
GRI 405: Diversity and Equal Opportunity		
405-1	Diversity of governance bodies and employees	Social: Striving for Higher Values-Together for the Shared Future of Our People
GRI 406: Non-discrimination		
406-1	Incidents of discrimination and corrective actions taken	Social: Striving for Higher Values-Together for the Shared Future of Our People
GRI 407: Freedom of Association and Collective Bargaining		
407-1	Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk	Social: Striving for Higher Values-Together for the Shared Future of Our People
GRI 408: Child Labor		
408-1	Operations and suppliers at significant risk for incidents of child labor	Social: Striving for Higher Values-Together for the Shared Future of Our People
GRI 409: Forced or Compulsory Labor		
409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labor	Social: Striving for Higher Values-Together for the Shared Future of Our People
GRI 413: Local Communities		
413-1	Operations with local community engagement, impact assessments, and development programs	Social: Striving for Higher Values-Together for the Shared Future of Our People
GRI 414: Supplier Social Assessment		
414-1	New suppliers that were screened using social criteria	Social: Striving for Higher Values- Building a Responsible Supply Chain
GRI 418: Customer Privacy 2016		
418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	Governance: Sound Business Operations-Lines of Defense in Compliance

## Assurance Statement



### ASSURANCE STATEMENT

#### SGS-CSTC'S REPORT ON SUSTAINABILITY ACTIVITIES IN THE GCL TECHNOLOGY HOLDINGS LIMITED 2023 ESG REPORT

##### NATURE OF THE ASSURANCE/VERIFICATION

SGS-CSTC STANDARDS TECHNICAL SERVICES CO., LTD. (hereinafter referred to as SGS) was commissioned by GCL TECHNOLOGY HOLDINGS LIMITED (hereinafter referred to as GCL Technology) to conduct an independent assurance of the Chinese version of *GCL Technology Holdings Limited 2023 ESG Report* (hereinafter referred to as the Report).

##### INTENDED USERS OF THIS ASSURANCE STATEMENT

This Assurance Statement is provided with the intention of informing all GCL Technology's stakeholders.

##### RESPONSIBILITIES

The information in the report and its presentation are the responsibility of Environmental, Social and Governance Committee, Sustainability Management Committee and the Sustainable Development Center. 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 GCL Technology Holdings Limited's stakeholders.

##### ASSURANCE STANDARDS, TYPE AND LEVEL OF ASSURANCE

The SGS ESG & Sustainability Report Assurance protocols used to conduct assurance are based upon internationally recognised assurance guidance and standards including the principles of reporting process contained within the Global Reporting Initiative Sustainability Reporting Standards (GRI Standards) GRI 1: Foundation 2021 for report quality, GRI 2 General Disclosure 2021 for organisation's reporting practices and other organizational detail, GRI 3 2021 for organisation's process of determining material topics, its list of material topics and how to manages 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:

Assurance Standard Options		Level of Assurance
A	SGS ESG & SRA Assurance Protocols (based on GRI principles and guidance in AA1000)	moderate

##### 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 Options	
1	Appendix C2 to the Listing Rules of HKEX -HKEX Environmental, Social and Governance (ESG) Reporting Guide (effective from 31 December 2023)
2	GRI standards 2021 (Reference)

##### ASSURANCE METHODOLOGY

The assurance comprised a combination of pre-assurance research, interviews with relevant employees located at GCL Energy Center, No.28, Xinqing Road, Suzhou Industrial Park, Suzhou City, Jiangsu Province, P.R.China.

##### LIMITATIONS AND MITIGATION

Financial data drawn directly from independently audited financial accounts has not been checked back to source as part of this assurance process. The carbon emission data are checked by a third party or calculated by themselves without third party verification. During the assurance process, the carbon data audit was conducted on the sampling basis. This verification was limited to the headquarters of GCL-Tech Holdings Limited and did not involve to go deep into other branches. In this verification, only some employees of relevant departments were interviewed and relevant materials were consulted, and the interviews did not involve external stakeholders.

**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 GCL Technology Holdings Limited, 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 auditors registered with CCAA registered ISO 9001 \ ISO 14001\ISO 45001\ISO37001 management system auditor,CSR report lead assessor.

**FINDINGS AND CONCLUSIONS****ASSURANCE/VERIFICATION OPINION**

On the basis of the methodology described and the verification work performed, the specified performance information included in the *GCL Technology Holdings Limited 2023 ESG Report* is accurate, reliable, and provide a fair and pertinent statement of the sustainable development activities of Huatai Securities Co., Ltd. for the period from 1 January 2023 to 31 December 2023.

In SGS opinion , the *GCL Technology Holdings Limited 2023 ESG Report* is presented in accordance with the reporting principles, mandatory disclosure requirements and the KPIs disclosures of Appendix C2 to the Listing Rules of HKEX –HKEX Environmental, Social and Governance (ESG) Reporting Guide (effective from 31 December 2023)

**REPORT RULES****Materiality**

GCL Technology presented the methodology for factors' materiality research and analysis, via materiality analysis, the environmental, social and governance significant issues was reported to stakeholders, which could meet the materiality principle requirement.

**Quantitative**

GCL Technology conducted the statistics and analysis for KPIs, and reported the disclosures' impacts and purposes. In Report, some datas were compared with historical years, which to better assist stakeholders in evaluating and making decisions about the effectiveness of management systems.

**Balance**

GCL Technology presented the balance reporting rule in the Report and reported the environmental, social and governance issues truthfully.

**Consistency**

GCL Technology disclosed the methodologies with consistency for report content and data statistics at all levels in the company, in addition, remarks and interpretations were marked in the Report to assist stakeholders make a clear comparison.

**FINDINGS AND RECOMMENDATIONS**

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

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

April 14<sup>th</sup>, 2024  
WWW.SGS.COM

## Questionnaire for Feedback

Dear reader:

Thank you very much for taking time to read the Report. To consistently enhance the preparation of this report and further the Company's work in ESG, we hope to listen to your opinions and suggestions. Please feel free to share your thoughts with us.

1. How would you rate the overall quality of the Report?

Very Good  Good  Average  Poor

2. How would you rate the legibility, accuracy and integrity of the information and data disclosed in this report?

Very Good  Good  Average  Poor

3. How would you rate the comprehensiveness of this report in reflecting the Company's environmental responsibilities?

Very Good  Good  Average  Poor

4. How would you rate the comprehensiveness of this report in reflecting the Company's social responsibilities?

Very Good  Good  Average  Poor

5. How would you rate the comprehensiveness of this report in reflecting the Company's governance responsibilities?

Very Good  Good  Average  Poor

6. How would you rate the design and layout of this report regarding reading convenience?

Very Good  Good  Average  Poor

7. Which aspect do you think is the most in need of improvement in this report?

Environment  Society  Governance  Safety  Employee  Supply chain

8. What additional information would you like to know?

9. What are your opinions on or suggestions to the ESG Report and our performance?

Feedback method:

- For soft copy feedback, please scan the QR code on the right
- For hard copy feedback, please mail the "Questionnaire for Feedback" form to the Sustainable Development Center of GCL Technology Holdings Limited:  
GCL Energy Center, No. 28 Xinqing Road, Industrial Park, Suzhou, Jiangsu Province, China



