



Golden Concord Holdings Limited

Suzhou
Address: No. 28, Xinqing Road, Suzhou Industrial Park, Jiangsu Province (GCL Energy Center)
Tel: 86-512-6853 8285
Fax: 86-512-6983 8989

Shanghai
Address: 68th Floor, Shanghai World Financial Center, No.100 Century Avenue, Pudong New Area, Shanghai
Tel: 86-21-6857 9688
Fax: 86-21-6877 8699

Hong Kong
Address: Level17, International Commerce Centre, 1 Austin Road West, Kowloon, Hong Kong
Tel: 852-2526 8368
Fax: 852-25267638

www.gcl-power.com
Version: 202311



GCL Group's official
WeChat account

Golden Concord Limited (Group) Holdings Co., Ltd.

2022 Environmental, Social and Governance Report



2022

Environmental, Social and Governance Report



Table of Contents

President's Statement	02	ESG Governance	12	Special Topic:	20	Appendix	148
GCL Overview	04	ESG Awareness	12	Reshaping the Zero-Carbon Ecosystem as the "Chain Leader"		Report Writing Instructions	148
Company Profile	04	ESG Governance	14	Silicon Materials	20	GRI Index	150
Business Distribution	06	ESG Performance in 2022	18	Lithium Materials	24	Response to Sustainable Development Goals	154
Corporate Culture	08			Semiconductor Materials	26	Company Names Included in the Report	156
Brand Value	10					Reader Feedback Form	157

01

Technology

It Embodies not Only Innovation, but Also Transformation and Leadership

Opportunities and challenges: Energy Transformation Requires Technological Innovation	28
Our Response: Technology is GCL's "Primary Energy Source"	30
.....	
Our Actions	32
Basis of Technological Innovation	32
Technological Renovation	34
Application of Research Outcomes	40
Intellectual Property Protection	42

02

Green

It is More than a Concept; it Signifies our Mission and Dream

Opportunities and Challenges: Green Energy Will be the Answer to the Future of Mankind and Our Planet	44
Our Response: Bring Green Energy Into Life	46
.....	
Our Actions	48
Climate Change Risks and Opportunities	48
Building a Green Industrial Cluster	52
Empowering the Zero-Carbon Industry Ecosystem	62
Practicing the Concept of Green Development	67

03

Digitalization

Beyond Empowerment, it Enables Connection and Reconstruction

Opportunities and Challenges: Digital Revolution Drives Market Change	80
Our Response: Riding the Wave of the Digital Economy	82
.....	
Our Actions	84
Building a Digital GCL	84
Manufacturing Digitalization	87
Business Digitalization	92
Management Digitalization	96

04

Responsibility

Aside from Corporate Growth, it's Also about Employee Development and Community Building

Opportunities and Challenges: Value Symbiosis is the Only Way to Sustainable Development	104
Our Response: Strong GCL, Well-off Employees, and Good Reputation	106
.....	
Our Actions	108
Strong GCL: Thriving Through Economic Cycles With Resilience	108
Well-Off Employees: Striving to Ensure Employees Enjoy Both Financial Prosperity and Enriched Spirits	124
Good Reputation: Taking Sustainable Social Development as Our Own Responsibility	136

President's Statement

“ *As a provider of future-oriented energy solutions, GCL is committed to cooperating with all stakeholders to construct a sustainable future, in line with the strategy of "Technical GCL, Digital GCL and Green GCL".* ”

In 2022, continual influences of global climate change, international geopolitics, and economic deceleration have collectively accelerated the transformation of the energy industry, significantly impacting its structure. Despite the rapid growth in renewable industries, notably photovoltaic and wind power, there was also escalating competitive pressure. Amidst these challenges, GCL still made widespread progress under the strategic guidance of "Technical GCL, Digital GCL and Green GCL" strategy. This outcome manifests our robust capabilities in sustainable development and serves as our dedicated response to the imperatives of ESG mandates.

GCL Group is a pivotal player in the energy industry, with a strong vision of shaping the future of our energy systems. We firmly believe that technology is the "primary energy source". As an industry leader, we are obliged to, together with our partners, envision a sustainable future by incorporating green and digital energy transformations into social and environmental progress. Standing at the top of the supply chain, GCL closely collaborates with downstream partners to explore innovative decarbonization solutions in various fields, such as silicon materials, lithium materials, carbon materials, and integrated circuit materials. In 2022, we stepped up our efforts by enabling large-scale mass production of low-carbon FBR granular silicon, a cost-effective "black-technology" independently developed by GCL. This is a key step towards reducing carbon footprints across the entire PV industry. Simultaneously, in the field of perovskite modules which is known as a "next-generation PV technology", we realized the mass production of large-size high-efficiency perovskite modules. Furthermore, we swiftly advanced in over a dozen major infrastructure projects, mainly electronic-grade polysilicon, source-grid-load-storage network, high-efficiency photovoltaic cells, photovoltaic modules, energy storage materials, LNG export terminals, and pumped storage. In the era of digital economy, we have embraced a radical digital transformation across manufacturing, operating, and management activities, creating a number of manufacturing bases recognized as "Smart Demonstration Plant" and "Industrial Internet Benchmark

Plant" provincially or beyond. In addition, we've built an SAP-based digital management platform integrating operating, financial and HR management functions, and successfully launched the "GCL Intelligent Chain" supply chain digital platform.

In our pursuit of self-growth and a brighter energy future, we faithfully remain attentive to the prospects and advancement of our stakeholders. We strive to foster a more inclusive and harmonious value-oriented community and ecosystem, using our influence to yield benefits to all parties involved. Our shared commitment to shaping a superior future resonates strongly with our ethos — "Strong GCL, Well-off Employees, and Good Reputation".

ESG forms the basis for steady, long-term business growth, and helps build a company with shared value. It is by no means a standalone concept but rather integrates into every aspect of business operation and management. As we look towards the future, we reaffirm our commitment to setting the benchmark high, and taking the lead in driving the transformation of the energy industry, contributing to a greener world. To deliver the ambition, we will take solid measures, together with our stakeholders, to forge a more sustainable, efficient, and promising energy industry.

GCL Group

Secretary of Party Committee, President,
and Chairman of the ESG Committee

Zhu Yufeng



GCL Overview

Company Profile

Founded in 1990, Golden Concord Limited (Group) Holdings Co., Ltd. (hereinafter referred to as "GCL Group", the "Group", "GCL" or "we") is a global leader in innovative technology centered around green, low-carbon, and zero-carbon practices. Over the past 33 years, GCL Group has created a comprehensive business portfolio, including the integration of wind power, PV power, energy storage, and hydrogen energy, the source-grid-load-storage network, the systematic exploration of new energy, clean energy and mobile energy, and the coordinated development of silicon materials, lithium materials, carbon materials, and core integrated circuit materials. The Group is determined to propel the new and clean energy innovations and technology onwards, blueprinting for a "Technical GCL", "Digital GCL" and "Green GCL" in line with the national strategy of "carbon neutrality and peaking".

GCL Group aspires to become a globally recognized new energy and clean energy solution provider. Relying on practices and resources accumulated, GCL has successfully expanded its green business to over 100 countries across six continents. Within China, our operations are centered around the Yangtze River Delta, Beijing-Tianjin-Hebei region, and the Greater Bay Area, with influence extending to East China, South China, Southwest China, and Northwest China. Our notable ventures include large-scale green energy bases in Jiangsu, Xinjiang, and Inner Mongolia, along with "black-technology" manufacturing out-

posts in Jiangsu, Anhui, Sichuan, and Inner Mongolia. This strategic positioning allows us to develop influential new energy networks and a thriving industrial ecology. Globally, we are proactive in responding to China's Belt and Road Initiative. This is reflected in the construction of the largest oil and gas projects in East Africa, specifically within Ethiopia and Djibouti, and our growing investment in clean energy.

As of the end of 2022, GCL Group had achieved significant milestones with assets totaling RMB 201.3 billion, and an impressive operating income of RMB 181.9 billion. The Group encompasses several listed companies on both the A-share and H-share markets, including GCL Technology Holdings Limited (03800.HK, hereinafter referred to as "GCL TECH"), GCL System Integration Technology Co., Ltd. (002506.SZ, hereinafter referred to as "GCL S.I."), GCL New Energy Holdings Limited (00451.HK, hereinafter referred to as "GCL New Energy"), and GCL Energy Technology Co., Ltd. (002015.SZ, hereinafter referred to as "GCL-ET"). Boasting over 3,000 personnel dedicated to energy R&D, GCL Group has consistently secured its ranking among the top 500 global new energy companies, the top 500 Chinese enterprises, and the top 500 Chinese private firms for several successive years. In addition, the Group holds esteemed roles in industry-related associations, including Chair of the Global Solar Council and the Asian PV industry Association, and Vice-Chair of the China Electricity Council.



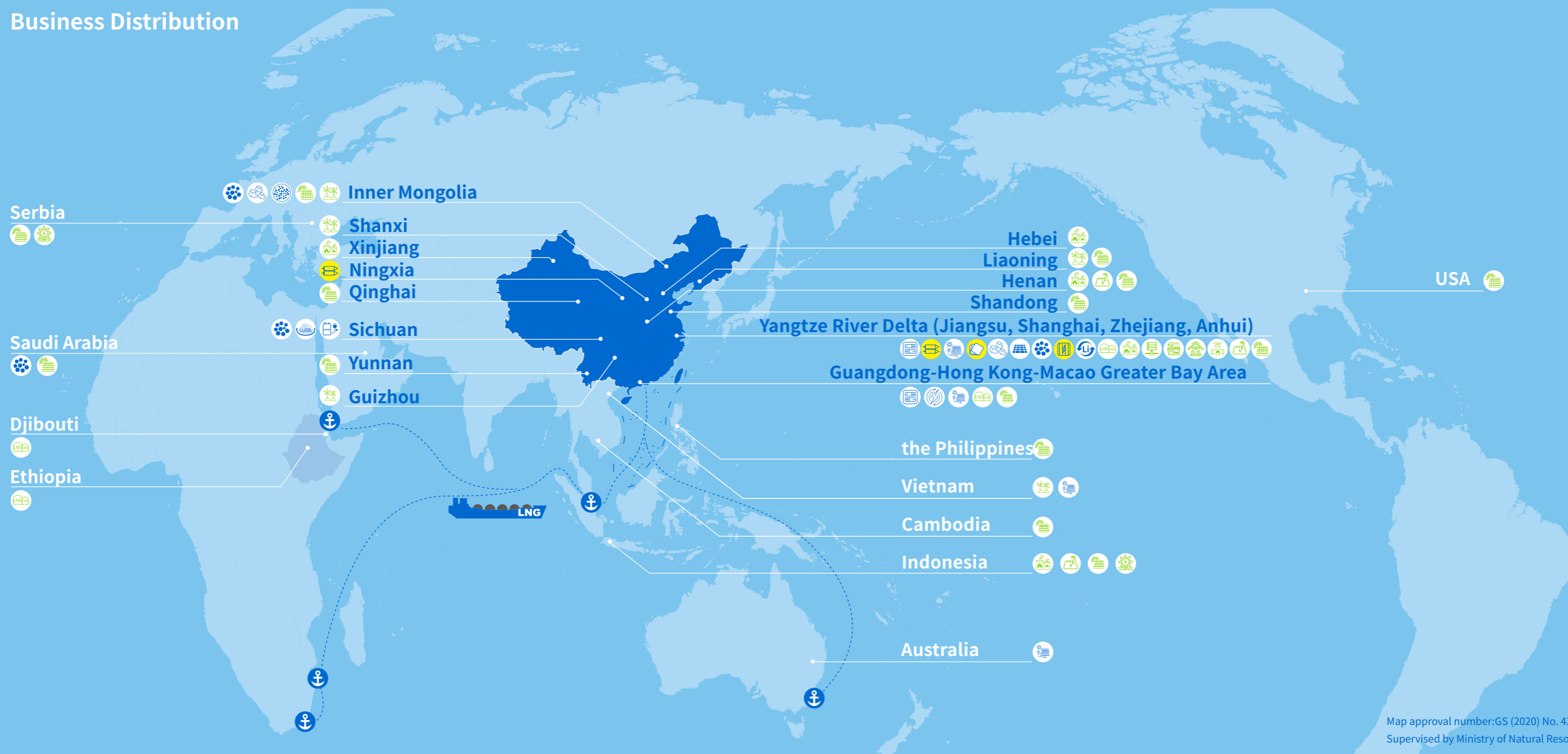
Asset size as of the end of 2022

RMB **201.3** billion

Operating income in 2022

RMB **181.9** billion

Business Distribution



Semiconductor Materials

- Electronic grade polysilicon
- Semiconductor large silicon wafers

PV Industry Chain

- Silica powder
- Granular silicon
- Crystal pulling
- Silicon wafers
- PV cells
- PV modules
- Perovskite

Lithium Battery Storage Industry Chain

- Lithium ore
- Lithium carbonate
- Lithium Iron Phosphate
- Silicon carbon anode
- Cells
- Packs
- Lithium battery recycling

Hydrogen Energy Industry Chain

- Green hydrogen
- Blue hydrogen
- Natural gas

Energy Ecology

- Eco-friendly thermal power
- Gas power
- PV power
- Wind power
- Waste-to-energy
- Biomass power
- Pumped storage
- Hydropower

Digital Energy

- PV-ESS-ultra-fast-charging solution

Intelligent Computing Center

- Energy Intelligence Computing Center
- Energy industry big model

Corporate Culture

“

A tall tree needs stable roots, and a long river must have a powerful source.

”



Culture forms the bedrock of an enterprise, providing a profound and enduring influence. Since its inception, GCL Group has thrived alongside the times, playing an active role in the vibrant development, innovation, evolution, and advancement of China's energy industry. With our gaze firmly set on the long-term future, we have defined our aspirations and value propositions. We have consistently enhanced and refined our cultural matrix to amplify the collective alignment within the Group.

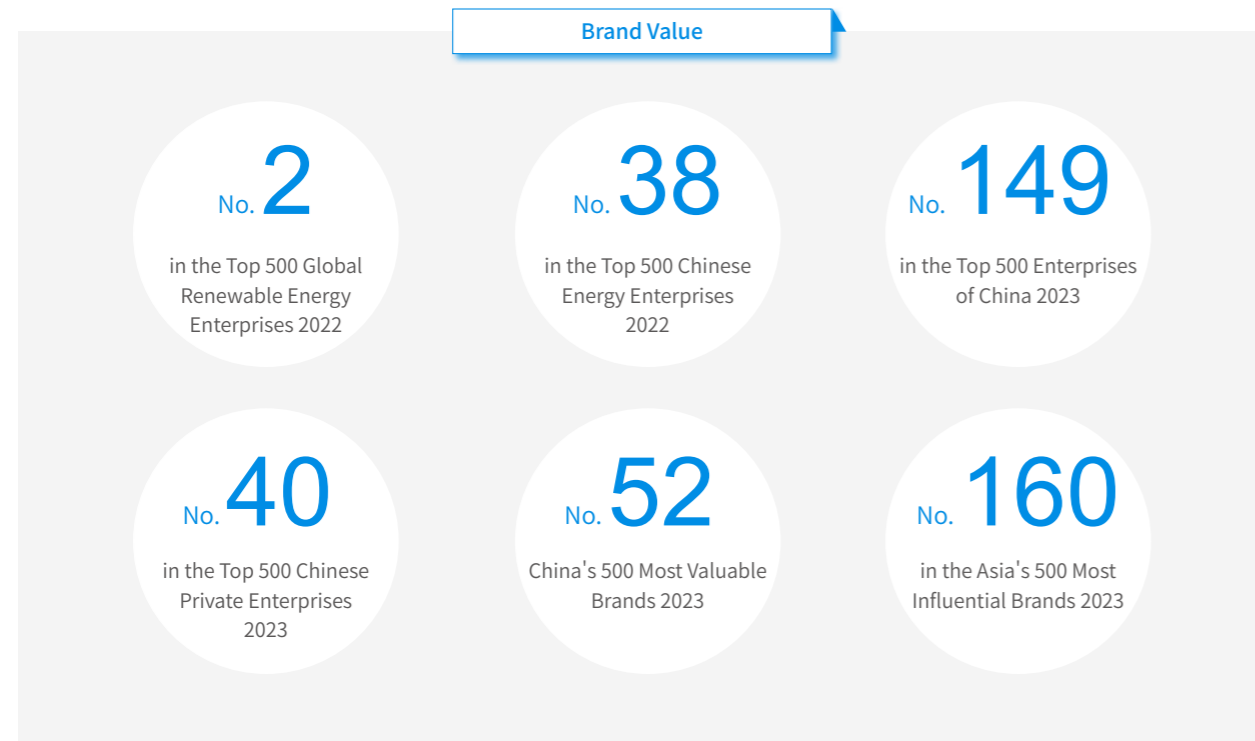
GCL Group's Cultural Matrix



Brand Value

Through 33 years of committed operations, GCL Group has emerged as a global frontrunner in the new energy industry, with a prominent brand footprint in China and across the world. Centered around the master brand of "GCL", we have built a series of competitive sub-brands in PV, mobile energy, clean energy, and other zero-carbon sectors. In 2023, GCL Group's brand value rose impressively to RMB 150.675 billion, catapulting it to the 52nd spot among China's most valuable brands, a significant advancement from the 69th ranking the previous year.

Reflecting on 2022, GCL Group exemplified its vanguard role of a green and zero-carbon technology pioneer, making strides in technological innovation, industrial leadership, and green development. Crafting green value through material, application, and service changes, we collaborated with our partners to advance the intermingling of regional economic, social, and ecological benefits. Our efforts have garnered widespread recognition and accolades from various sectors, punctuating GCL Group's inherent influence.



Member of the China Chamber of International Commerce Standing Council	Chairman of the Global Green Energy Council
Vice President of the China Chamber of Commerce for Import and Export of Machinery and Electronic Products	Chairman of the Asian PV industry Association
Chairman of the Global Solar Council	Vice Chairman of the China Electricity Council

GCL Group		
 The 15th China Management Model Innovation Award China Management Model C50+ Forum	 Annual Industry Case of the "Sustainable China Industrial Development Action" in 2022 APEC China Business Council	 2021-2022 Excellent Member China Electricity Council
GCL-ET	GCL S.I.	
China Model Enterprise with Brand Influence in Carbon Reduction China Times	2022 China Top Photo voltaic Brand Award — BIPV Technology Breakthrough Award in-en.com CHN Energy Research Institute	
2022 New Energy Enterprise with Scientific and Technological Innovation The Economic Observer	PVBL 2022 Global Best Zero Carbon Case Award PVBL Global Photo voltaic Brand Ranking	2021-2022 Contract Credit Enterprise in Shanghai Shanghai Contract Credit Promotion Association
2022 "Star" Company in Innovation Chinese Securities Journal	Value Certificate of Top 100 Global Photo voltaic Brands PVBL Global Photo voltaic Brand Ranking	Annual Ultra-Efficient Photo voltaic Module Award OFweek Solar PV industry Conference and Annual Award Ceremony
GCL TECH	GCL New Energy	
Hong Kong Awards for Environmental Excellence Hong Kong Awards for Environmental Excellence Committee	Excellent Intelligent Photo Voltaic Operation and Maintenance Enterprise Organizing Committee of the "Leading China" Renewable Energy "Top 100 Photo voltaic Enterprises" Selection	
2022 Wall Street Insights ESG Annual Innovation Experiment Wall Street Insights	NSDGAA HK HK Green Finance Association	

ESG Governance

ESG Awareness

ESG is not a novel concept for GCL Group. Our mission is to "focus on green development and continuously improve the living environment of human beings". Apparently, "E" has already been a gene of GCL. Seventeen years ago, GCL successfully produced polysilicon using a Modified Siemens Process, breaking the monopoly of foreign companies, while significantly lowering China's PV energy cost. What's more, in line with China's "dual carbon" goals, GCL independently developed the FBR granular silicon technology which further reduced PV energy cost. These outcomes played an irreplaceable role in China's environmental protection and energy transformation. GCL always strategically aligns corporate growth with the benefits of employees, suppliers, partners, communities, and other stakeholders, which explains our good reputation.

GCL is devoted to incorporating ESG into sustainable corporate development. We firmly believe that deep-rooted industry expertise, sustainable operations, and quality growth represent the most significant social responsibilities for any business. In our journey, these responsibilities require an organic fusion of stakeholder concerns and demands into our development strategy. They lead us to leverage our positive influence to inspire, empower, and grow alongside our stakeholders. Our focus lies in the energy, a field in which we are steadfastly committed to crafting a superior energy future through the interplay of technology, environmental consciousness, and digital innovation. We strive to harness our influence to not only advance our future but also that of our stakeholders, thereby aligning collective growth with ESG principles.

Technological efforts

Promoting technological innovation and transformation
Leading product iteration and IP protection



Green efforts

Identifying climate risks and opportunities
Building green industrial clusters
Empowering zero-carbon industrial ecology
Practicing green concepts



Digital efforts

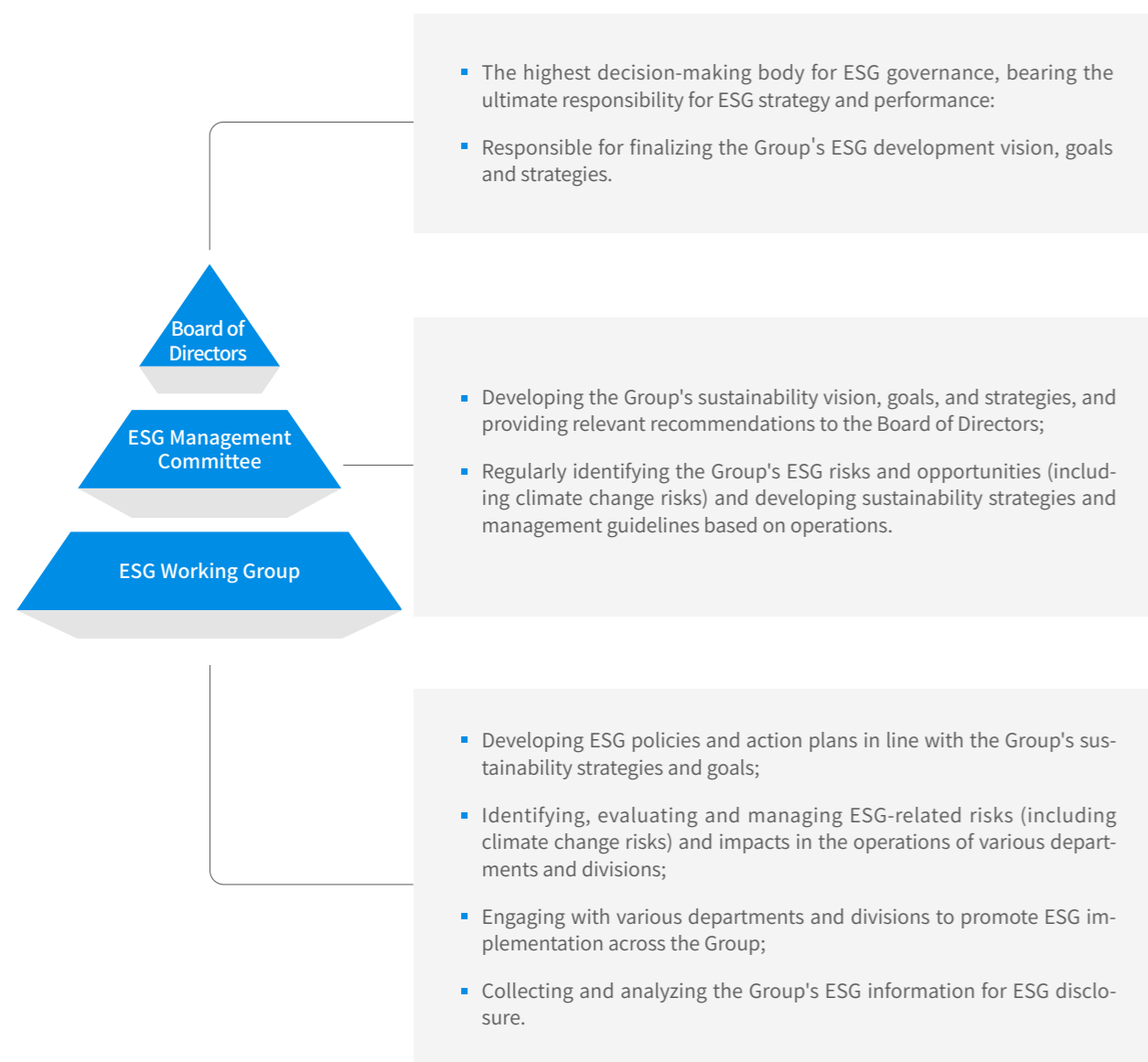
Digitalization strategy, manufacturing digitalization
Operation digitization, management digitization



ESG Governance

ESG Governance Structure

GCL Group has created a three-layer ESG governance structure to effectively integrate ESG elements into internal management. The structure clearly defines the responsibilities and work priorities of each layer and enables the three layers to collectively promote ESG implementation across the Group.



Stakeholder Engagement

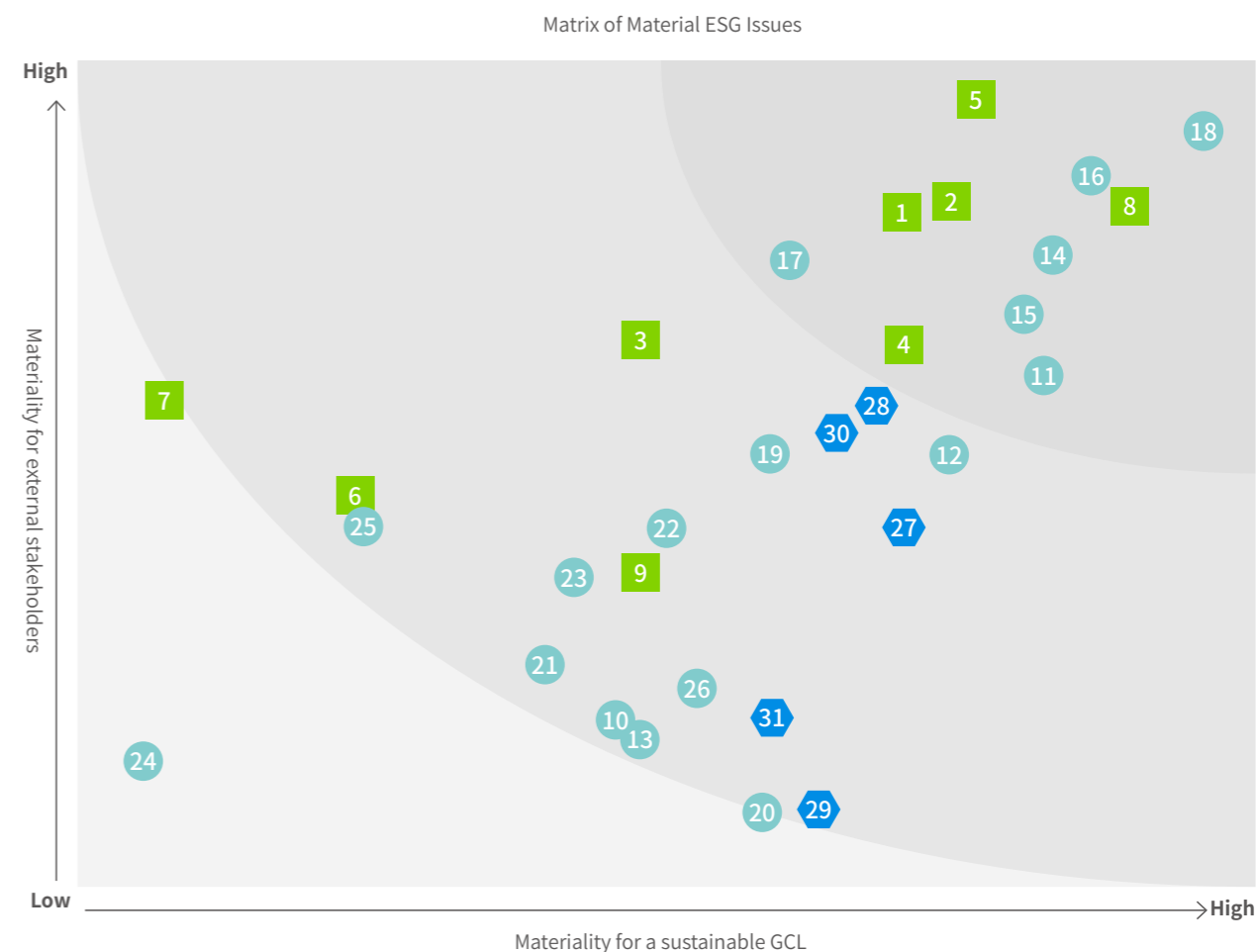
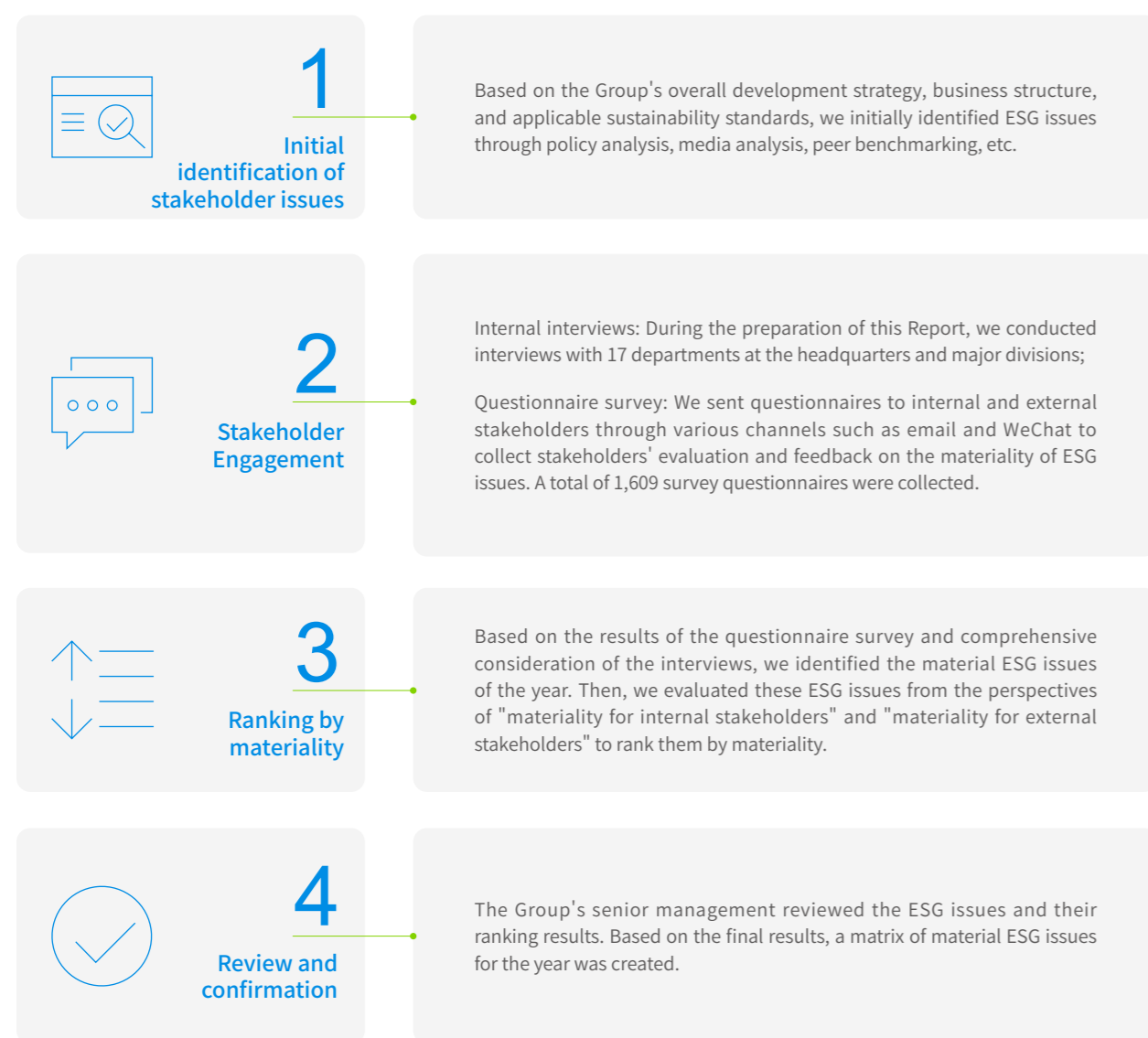
GCL Group is committed to building a sustainable society with a shared future. Aside from constantly pursuing business growth, we strive to maximize the benefits of shareholders, employees, and the wider society. To this end, we actively engage with all stakeholders through various mechanisms and channels, listening to their expectations and demands, and timely giving them feedback. Such interactions fostered our win-win relationships with stakeholders.

Main Stakeholders	Major Concerns of Stakeholders	Engagement Channel
Governments and Regulators 	Paying taxes according to law Operational compliance Environmental compliance Promoting regional industrial development Creating jobs	Strategic cooperation Supervision & inspection Work reporting Policy suggestions
Shareholders and Investors 	Corporate governance Investor relations management Climate risk management R&D and innovation Intellectual property management	Investor meetings Onsite investigations
Employees 	Equal employment Compensation and benefits Employee rights and interests Employee care Employee development and training Occupational health and safety	Workers congress Employee seminars Engagement with the Labor Union Seminars Employee activities Online channels such as phone, email, and WeChat official account
Suppliers 	Supply chain management Business ethics Responsible sourcing Win-win relationship	Supplier engagement Supplier evaluations and assessments Transparent procurement
Partners 	Promoting industry development R&D and innovation Intellectual property management Business ethics	Strategic cooperation High-level communication Onsite investigations Industry exchanges
Clients and Consumers 	Product quality and safety Customer service R&D and innovation Responsible marketing Information security	Onsite investigations Satisfaction surveys Customer complaint management Questionnaire surveys
Communities and the Public 	Education and training Eco-friendly community Biodiversity Charity	Community building Public benefit activities Volunteer services
Media 	Environmental protection Rights protection Information transparency	News reports Management interviews Onsite investigations Industry exhibitions

ESG Materiality Identification

To better address the needs of our stakeholders, we incorporated strategic, operational and sustainability elements into peer benchmarking surveys, executive interviews, and questionnaire surveys to identify ESG issues pertinent to GCL. The materiality of issues was evaluated from the perspectives of "materiality for internal stakeholders" and "materiality for external stakeholders". Finally, selected issues formed an annual matrix of material issues which are addressed herein.

Materiality Identification Process:



Environmental Issues (E)		Social Issues (S)		Corporate Governance Issues (G)	
1	Environmental management system	10	Diversity, equality and employee employment	19	Customer service management
2	Energy management	11	Employees' rights and interests	20	Network security and information security
3	Water resources management	12	Compensation and benefits	21	Digitization _
4	Material management	13	Human capital development	22	Supply chain management
5	Pollution management	14	Occupational health and safety	23	Responsible procurement
6	Addressing climate change	15	Technological innovation and R&D	24	Public benefits
7	Biodiversity protection	16	Product and service quality	25	Community impact and contribution
8	Developing clean energy	17	Providing green and low-carbon products	26	Industry cooperation and development
9	Eco-friendly activities	18	Workplace safety		
				27	Corporate governance
				28	Business ethics and anti-corruption
				29	Risk management and internal control
				30	Intellectual property protection
				31	ESG management

ESG Performance in 2022

Technology is GCL's "primary energy source"

More than 10 "black technologies"

Granular silicon, large-sized perovskite, electronic-grade polysilicon, large semiconductor wafers, PHY cathode materials, etc.

Five exclusive technologies in the world

PHY cathode materials, silane anode materials, supramolecular electrolytes, high-efficiency cells and other key materials and technologies

The first in China

The first large-scale electronic-grade polysilicon manufacturer in China

Nearly **3,000** patent grants

Leading the formulation of **180+** international, national, and industry technical standards

30 national high-tech enterprise

Riding the wave of the digital economy

Manufacturing digitalization: Building industry-based lighthouse factories to lead the Group's intelligent manufacturing

Comprehensively promoting intelligent manufacturing

We built industry-base lighthouse factories adopting advanced software (e.g., MES, APS, WMS, QMS), and upgraded automation hardware based on a lean analysis.

Leveraging digital measures to comprehensively improve product quality

Digital twins, DCS precise process control, intelligent quality inspection, and other digital quality control means collectively promoted product quality.

Operation digitalization: Digital power resource coordination and strong computing power

Digital energy

We created a green energy ecosystem integrating the functions of power generation, power storage and computing.

Intelligent operation and maintenance system

The system has been incorporated into more than 300 new energy projects with capacity totaling 10+ million kW

Intelligent computing power

GCL has China's first energy intelligent computing center - GCL Intelligent Computing (Suzhou) Center

Management digitization: Comprehensive management digitalization evolving around business digitalization

SAP ERP

The GCL Digital Language System was built based on SAP ERP.

"GCL Intelligent Chain" supply chain management platform

The platform advances the supply chain reform, helping create a standardized, process-oriented, and transparent supply chain.

Zero accident

No major network security and information security incidents have occurred.

Integrated Financial Management System

A digital financial management system integrating digital operation, smart finance, digital taxation, and smart finance has been created.

Digital Party Building Platform

The platform operates on both PC and mobile terminals, enabling information sharing between the Group and party organizations at various levels.

GCL Coordination Platform

The platform offers a new digital office model incorporating all scenarios, promoting coordination across the Group.

Bring green energy into life

Integrated business structure

A business portfolio integrating the PV industry, energy ecosystem, hydrogen energy industry, and lithium material industry

Industry-leading renewable capacity

A massive capacity from PV, wind, biomass, gas, and high-efficiency thermal sources

1,279,753,063.70 tons

Amount of water recycled

Helping other industries to reduce carbon footprint

Close collaboration with transportation, construction, industrial parks and other sectors

Suzhou's first zero-carbon headquarters

GCL Energy Center has obtained the Carbon Neutrality Certification

RMB **373.7887** million

Environmental protection investment in 2022

23 subsidiaries

have obtained the ISO 14001 Environmental Management System Certification

Strong GCL, Well-Off Employees, Good Reputation

37,908

Employees

2,100

Online and offline courses

52.62

Average training hours per person

3,525

Suppliers

RMB **150** million

As of the end of 2022, student aid had amounted to

RMB **281** million

As of the end of 2022, GCL Sunshine Charity Foundation's external donations totaled

Special Topic

Reshaping the Zero-Carbon Ecosystem as the "Chain Leader"

As a global leader in innovative technology centered around green, low-carbon practices, GCL has a diverse business portfolio covering renewable energy (wind power, PV power, energy storage, hydrogen energy), clean energy, and mobile energy. Over the past 33 years, in line with China's national strategies, GCL was determined to overcome technical challenges related to core materials and technologies monopolized by foreign companies, and has made breakthroughs in fields like silicon materials, lithium materials, carbon materials, and integrated circuit materials. Our intensive endeavors have culminated in a multitude of innovative, industry-leading, and forward-thinking technologies that have been successfully integrated throughout our organization.

Breakthroughs in silicon materials, solar energy, energy storage and hydrogen energy empowered the entire renewable energy ecosystem:

Relying on a series of independently developed black technologies, GCL Group has successfully upgraded upstream technologies and materials, which consequently led to the equipment and manufacturing reform in midstream companies, and the application reform in downstream companies. Such a top-down reform model greatly promoted decarbonization throughout the supply chain.

Silicon Materials

—Silicon materials and silicon energy provide a new source for further energy

As the most used material in the PV and semiconductor industry, silicon is essential for some strategic emerging industries such as new energy, new materials, and electronic information. Silicon energy is playing a key role in global carbon neutrality. Over the years, GCL has been engaged in the R&D and innovation of silicon materials and wafers, contributing to every quality increase and price decrease of silicon materials and wafers worldwide. The FBR granular silicon, a black technology independently developed by GCL, is the latest contribution made by GCL to greener, affordable, and even cheap PV solutions.

R&D history

In 2011 when GCL Group was in a rapid ascending phase, we began to explore ways of establishing technological ingress barriers to fortify its competitive standing. Investing over a decade in research, capital, and talent acquisition, we finally developed the FBR granular silicon, a polycrystalline silicon material prepared using the Fluidized Bed Reaction (FBR) method. This patented technology, which enables the industry to be independent from foreign equipment and key materials, has been rated as a key technological breakthrough included in the *14th Five-Year Plan for Scientific and Technological Innovation in the Energy Sector* by the National Energy Administration and the Ministry of Science and Technology.

Since 2011, GCL TECH has invested more than

RMB **10** billion

in granular silicon R&D and pilot equipment

Milestones:

2012	2013	2019	2021	2022
Pilot production of silane gas succeeded.	Pilot production of granular silicon succeeded.	Production of granular silicon reached 10,000 tons.	Production of granular silicon reached 20,000 tons, through a replicable production process.	The world's first 100,000-ton granular silicon base was put into production.



Xuzhou Photo voltaic Granular Silicon Technology Application Demonstration Project. Employees are transporting a 6-meter-long monocrystalline silicon rod.

Advantages of the FBR granular silicon

The PV industry always seeks higher efficiency and lower costs. The FBR granular silicon provides a compelling alternative to traditional rod-shaped silicon. With its low upfront investment and operating costs, reduced carbon emissions, and superior product quality, FBR granular silicon addresses challenges—high energy consumption and low production efficiency—long faced by cell manufacturing. This low-carbon solution will surely propel the industry into its next stage of development.

Low cost | Satisfying the urgent need of the PV industry

Compared with the Modified Siemens Process, the FBR method is more streamlined and efficient. Its three-phase fluidization system and technical process enable easier purification of silane, higher silicon content, and lower decomposition temperature, which collectively reduce energy consumption to a great extent. Compared with traditional rod-shaped silicon, granular silicon has the following advantages:

Area occupied per unit capacity: 60mu (approx. 4.02 ha.)/10,000 tons a decrease of 60% compared with that of the rod-shaped silicon	Single conversion rate: 99%	Labor force per unit capacity: 65 persons/10,000 tons, a decrease of 60% compared with that of the rod-shaped silicon
---	------------------------------------	---



Effective carbon reduction | Excellent carbon footprint performance supports the low-carbon development of the PV industry

As the next generation silicon-based new material, FBR granular silicon has the multiple advantages of low cost, high efficiency and excellent carbon footprint. It offers a new solution to the carbon reduction and decarbonization across the PV industry and the wider energy sector, imposing a far-reaching impact on the development of the PV industry and the clean energy revolution.

Manufacturing: The excellent carbon footprint performance of granular silicon has been confirmed by authoritative certification

Granular silicon's Power consumption per product is 13.8 kWh/kg	A decrease of 80% compared with that of the rod-shaped silicon
The carbon footprint of 1 kg of granular silicon is only 37 kg of carbon dioxide equivalent	Compared with rod-shaped silicon, granular silicon reduces carbon footprint by approx 80% which sets a new world record

FBR granular silicon received the world's first carbon footprint certification issued by the French Environment and Energy Management Agency

Application: FBR granular silicon controls the life cycle carbon emissions of solar modules at a low level

The carbon footprint of the PERC modules is averaged at 400-450 kg CO₂/kW,

10%~20% lower than that of other modules of the same type.

Large PERC modules produced using granular silicon

It helps reduce life cycle carbon emissions of Solar modules

Low-carbon granular silicon, along with photovoltaic modules manufactured using granular silicon, can command premium pricing across diverse market segments, simultaneously mitigating the risk of cost escalation due to potential carbon taxation.

Lithium Materials

—The future of energy storage materials is the future of new energy

Key challenges in the development of new energy sources like wind, solar, and hydrogen, in tandem with burgeoning sectors including smart grids and electric vehicles, all converge on a single, vital technology—energy storage. As the fundamental material for fabricating energy storage systems, lithium materials assume a pivotal role in this scenario.

GCL Group is devoted to heightening the energy density of batteries and extending their lifespan through innovative advancements in energy storage materials. Our approach helps upgrade the integrated source-grid-load-storage network. With over a decade's deep involvement in the lithium iron technology, GCL now boasts an cutting-edge proprietary technology for the manufacturing zero-carbon battery materials, namely, the GCL PHY one-step physical method for cathode material manufacturing. When contrasted with the traditional wet synthesis process, this novel technology presents a host of significant advantages:



With the advantages of low overall cost, high energy density, strong safety performance, long cycle life, and good storage performance, the novel technology has been incorporated into four products which have been sold before production:

Product advantages

<p>C3 high-efficiency lithium iron phosphate energy storage material</p> <p>The energy efficiency is 95%, and the pole piece is compacted at 2.45 g/cc.</p>	<p>C7 ultra-high compact density lithium iron phosphate energy storage material</p> <p>The pole piece is compacted at 2.60-2.80 g/cc.</p>
<p>C5 long-cycle lithium iron phosphate energy storage material</p> <p>The pole piece is compacted at 2.45 g/cc, and the lifecycle is 8,000 cycles.</p>	<p>C9 high-power ultra-high compact density lithium iron phosphate energy storage material</p> <p>The pole piece is compacted at 2.60-2.80 g/cc</p>



Turning the concept of green lithium into a reality—Sichuan GCL Lithium Technology Co., Ltd.'s 360,000 t/y lithium iron phosphate battery project (Phase I) was officially put into production in July 2023. It is the first 100,000-ton level physical method lithium iron phosphate cathode material project in the world.

Semiconductor Materials

—The first large-scale electronic-grade polysilicon manufacturing company in China

For a substantial period, the global market for electronic-grade polysilicon has been dominated by companies based outside of China, posing a severe risk to the security of China's integrated circuit industry. To address this challenge, GCL collaborated with the National Integrated Circuit Industry Investment Fund to undertake the National Major Science and Technology Projects-02 Special Project, focusing on the manufacturing technologies and comprehensive processes for extremely large-scale integrated circuits. This strategic move is facilitating our expansion into the semiconductor integrated circuit industry. To date, we have obtained 1,481 semiconductor-related patent licenses, ensuring a stable supply of cutting-edge base materials for the chip industry.

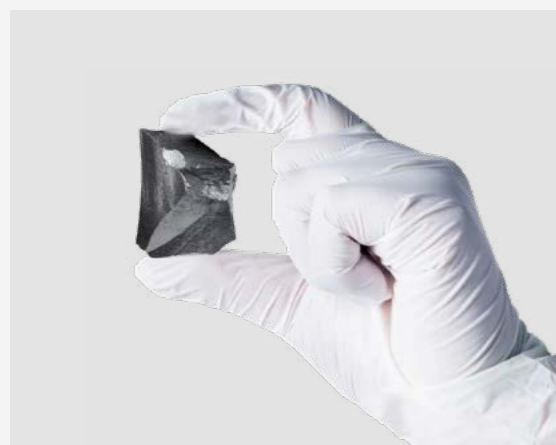
Electronic-grade polysilicon

Electronic-grade polysilicon key technologies:

Electronic-grade polysilicon, a base material intrinsic to integrated circuits, is often referred to as the "cornerstone" of the electronics and information industry. It has a purity of 13N, or above 99.9999999999%. Furthermore, any key impurity content must be controlled to less than 10^{-10} .

Electronic-grade polysilicon is an advanced electronic material, derived from industrial silicon, which undergoes a multitude of physical and chemical processes to achieve a specified level of purity. This highly purified silicon forms an essential intermediary in the silicon product industry chain, finding utilization in the fabrication of polished silicon wafers, solar cells, and other high-purity products. Its manufacturing necessitates highly sophisticated purification technology.

GCL Group has effectively addressed a myriad of challenges, including the purification of trace impurities, superior cleanliness management, and comprehensive online quality surveillance. We have also revolutionized a range of core technologies such as the intelligent non-contact silicon processing system, thereby creating a fully independent electronic-grade polysilicon manufacturing process. This has disrupted the enduring foreign technology monopoly in the electronic-grade polysilicon production process. Following considerable technological research, Jiangsu Xinhua Semiconductor Technology Co., Ltd. (hereinafter referred to as "Xinhua Semiconductor")—a subsidiary of GCL Group, has increased its capacity to a world-leading level. Xinhua Semiconductor has captured nearly 50% of the domestic market sector, ensuring sufficient supply of raw materials for the integrated circuit industry.



电子级多晶硅

The first large-scale electronic-grade polysilicon manufacturing company in China

Domestic market share:

50%

Planned capacity of electronic-grade polysilicon:

15,000 tons

Semiconductor silicon wafers

Semiconductor silicon wafers, the most critical material in chip manufacturing, represent the highest cost component among semiconductor materials. Presently, the dominant sizes are 12-inch and 8-inch wafers. Their demand is principally motivated by sectors such as communications equipment, data centers, the Internet of Things, and automotive and industrial electronics. On these silicon wafers, integrated circuits, and various semiconductor devices can be formed using techniques like photolithography and ion implantation. Following a rigorous and persistent R&D journey, GCL has become independent from foreign technologies, while promoting the localized manufacturing of silicon wafers.



Large semiconductor wafers

Silicon-based electronic specialty gases

Silicon-based electronic specialty gases are indispensable foundational materials in the manufacturing of integrated circuits, optoelectronics, and microelectronics, particularly for very-large-scale integrated circuits, liquid crystal display devices, semiconductor luminescent devices, and other semiconductor materials. These gases primarily find use in epitaxy, doping, and etching processes, where their purity and cleanliness directly impact the precision and accuracy of circuits and devices.

Leveraging its proprietary, closed-loop comprehensive process for producing electronic-grade polysilicon, Xinhua Semiconductor can simultaneously manufacture high-purity electronic-grade trichlorosilane while producing electronic-grade polysilicon. This process takes place at a dedicated gas filling station, leading to a significant reduction in manufacturing costs. Xinhua Semiconductor already runs a top-tier production base for silicon-based electronic specialty gases, boasting an annual output exceeding 1,500 tons. Once this project is operational, it promises to further improve raw material utilization rates. This development is of enormous value in advancing the localization of electronic specialty gases and minimizing dependence on imports.



Silicon-based electronic specialty gas products

Technology

—It Embodies not Only Innovation, but Also Transformation and Leadership

Opportunities and challenges: Energy Transformation Requires Technological Innovation

Energy acts as the bedrock and powerhouse for economic and societal development. China has been the world's largest energy producer, consumer, and carbon emitter for many years. The ongoing evolution of China into a formidable modern socialist country necessitates higher standards for energy supply and consumption. Under the overarching objectives of achieving carbon neutrality and peaking, advancing ecological civilization, and ensuring security in six areas and stability in six areas, China's energy industry grapples with formidable challenges including safety assurance, method modification, structural adjustments, and shoring up weaknesses. Technological innovation in the energy sector stands out as the primary path to resolving these issues.

The developmental of the new energy industry are intrinsically tied to technological innovation. In retrospect, the history of the PV industry is a testament to the power of technological evolution and continuous enhancement. Accelerating advancements in the technical landscape of the new energy sector have markedly reduced costs and prices, thus fueling a consistent decrease in solar energy costs per kilowatt-hour. As a result, solar energy, due to its cost parity or even better pricing, has made its way into ordinary households for daily use. Moreover, it has rapidly expanded within the industrial production sphere, creating a green premium advantage in the realms of green planning, green manufacturing, and green products.

Technology is the compass that guides the future of energy, and innovation is the crucible where future energy is forged. The current energy revolution demands technological innovation more urgently now than at any previous stage.



Our Response

Technology is GCL's "Primary Energy Source"

What technological innovations are needed for energy renovation?

Our response and achievements

More eco-friendly and inclusive

The carbon footprint of every kg of **FBR granular silicon produced** is only **37** kg of CO₂e

Large-size PERC modules partly using FBR granular silicon have an average carbon emission reduction of approximately

10%~20%

compared to other modules of the same type;

It helps reduce costs, providing affordable PV solutions.

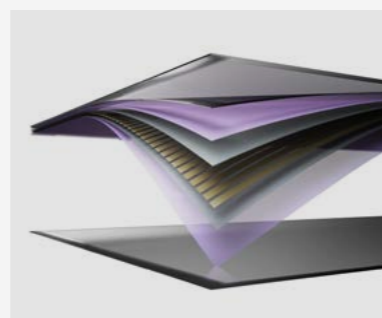


More efficient and cutting-edge

GCL possesses the world's most advanced **perovskite technology**

GCL takes the perovskite industry into the era of "commercial modules". It has the world's first 100 MW mass production line of perovskite modules with the largest floor area and the highest efficiency. Module size is

1_m × 2_m



More independent and controllable

In partnership with the National Integrated Circuit Industry Investment Fund, GCL has developed China's first electronic-grade polysilicon production process with completely independent intellectual property rights

GCL is China's first manufacturer with mass production lines for all sizes of electronic-grade polysilicon products.



Affordable Lithium battery and energy storage solutions

GCL boasts the world's only one-step physical cathode material manufacturing technology. It simplifies the production process, elevates environmental safety, and lowers the per unit cost of energy storage.

GCL's lithium batteries help provide affordable and even cheap energy storage solutions.



Continuous efforts and investment

By the end of 2022:

GCL has been granted nearly **3,000** patents

GCL had led the formulation of more than

180 international, national, and industry technical standards

GCL had undertaken

500+ R&D projects at all levels, such as "black technologies"

GCL had set up more than

70 engineering technology centers and other R&D institutions

There were more than

3,000 R&D personnel at home and abroad

GCL had set up

two national and provincial key laboratories

GCL had established

five academician workstations and postdoctoral workstations

3%

of operating income had been invested in R&D

Our Actions

Taking technology as the "primary energy source", GCL dedicates 3% of operational revenue to R&D. This commitment enables R&D to promote innovation in management, business models, and corporate culture. After years of sustained developments in technical domains such as semiconductor materials, we have developed a range of core technologies with independent intellectual property rights. Furthermore, many of these technologies stand at the forefront of the industry.

3%

Dedicates operational revenue to R&D

R&D Team

GCL Group places significant emphasis on talent as the driving force behind technological innovation. Utilizing research institutes and innovation centers as platforms, we have cultivated a robust R&D team composed of over 3,000 internal specialists from home and abroad, and hundreds of external experts, including 10 academicians from the Chinese Academy of Sciences. The Group's research capabilities encompass a network of R&D bodies, includes five academician workstations, five postdoctoral workstations, more than 70 technical research institutes (including engineering technology centers), 30 high-tech enterprises, and two key laboratories recognized at the national and provincial levels.

Basis of Technological Innovation

GCL Group has taken a range of measures to seek technological outcomes and breakthroughs, such as improving the R&D management system, establishing incentive mechanisms to foster innovation, recruiting and training R&D professionals, and investing in frontier technological fields.

R&D Management System

GCL Group has built a three-layer R&D management framework, composed of headquarters, divisions, and affiliated enterprises/research institutes from top to bottom. On this basis, there is a global R&D and innovation network where domestic research institutes and international research centers in the U.S. and Japan work under the guidance of the Group's Central Research Institute. There is also a Technology Center responsible for the development and application of engineering technologies.

The Technological Innovation Committee of the GCL's Board of Directors is responsible for GCL's top-level design for technological innovation. The Central Research Institute is the Group's R&D management body, responsible for centralized innovation, development of forward-looking technologies, resource coordination, integration of government, industry, academic, research and application resources, technology management, and outcome assessment. Division-level professional research institutes and technology centers, along with their subordinate industry research institutes and overseas R&D centers, are responsible for specific innovation, product technology lines, and professional technology lines, including the R&D of new processes, new technologies, new products, equipment and engineering technologies.



3,000+

R&D specialists from home and abroad

Hundreds of external experts, including

10

academicians from the Chinese Academy of Sciences



R&D Incentive Mechanisms

GCL Group believes in fostering the enthusiasm and creativity of R&D personnel. To this end, we have created a range of incentive mechanisms which encourage innovation, safeguard innovation outcomes, and award innovation personnel. These mechanisms primarily include the innovation incentive system, research exemption system, digital talent training system, and technology partnership system. To ensure fair and transparent evaluation and reward processes, we've formulated the *Technological Achievements Incentive Management Measures*, clearly specifying reward mechanisms, selection criteria, application procedures, and other facets of rewarding innovation.

Industry-University-Research Cooperation

GCL Group is committed to fostering collaboration with universities and research institutes. Our partners include Tsinghua University, Zhejiang University, Chinese Academy of Sciences, among others. During the reporting period, we fortified cooperative endeavors with universities and research institutes—such as Suzhou University and Zhejiang University—in silicon materials, energy storage, and perovskite, and partnered with Jiangsu Industrial Technology Research Institute to co-establish the Yangtze River Delta Solar Photo voltaic Technology Innovation Center. Collectively, these initiatives steered technology innovation and industry progress.

Technological Renovation

GCL firmly believes that technological innovation is fundamental for ongoing advancements and self-improvement. It remains the key driving force propelling GCL Group to spearhead transformations in the industry and capitalize on emerging developmental opportunities. In 2022, we fervently pursued breakthroughs in core research areas, such as granular silicon fluidization control technology, silicon powder utilization technology, CCz technology, silicon carbon anode materials, TOPcon batteries, BIPV, and PVT. Our breakthroughs stimulated industry evolution, significantly shaping the technological landscape of the sector.

Promoting the Evolution of the PV Industry

Next generation photovoltaic technology - perovskite

Tips

Perovskite, heralded as the third generation of solar cells, represents a truly disruptive innovation in photovoltaics. Astonishingly, a commercial-sized module of 1m x 2m requires a mere 2 grams of this raw material. Once perovskite reaches large-scale industrialization, it stands to significantly reduce costs while maintaining efficiency. The cost of perovskite modules could potentially be less than half that of crystalline silicon modules, marking a substantial step forward in improving affordability and performance of solar modules. This development could trigger a new wave of an industrial revolution. However, it should be noted that perovskite solar cells are currently in the nascent stages of industrialization, and mass production of large-size modules still presents substantial challenges.

GCL Group owns the foremost perovskite technology, and has independently developed materials, equipment, and processes required for the mass preparation of high-quality large-size perovskites modules. Currently, our third-generation technology has successfully evolved from the laboratory to the commercial mass-production stage. We've constructed the world's first 100 MW perovskite module mass-production line boasting the largest floor area and the highest efficiency worldwide. The modules are 1m by 2m in size, with efficiency exceeding 18%, and a staggering 70% cost reduction compared to crystalline silicon. Moreover, the life expectancy of our products extends beyond 25 years. Relying on core technologies and industrial advantages in perovskite cells, we have secured financial backing from industry-leading investment institutions, such as Temasek Investment, Sequoia Capital, IDG China, and Tencent.

Kunshan GCL Photoelectric Materials Co., Ltd. (hereinafter referred to as "GCL Photoelectric") has made significant strides in the field of perovskite, having undertaken two national-level key R&D projects and three provincial-level key projects. The company has successfully resolved critical challenges related to photovoltaic cell attenuation, photothermal stability, and packaging quality. What's more, it has a robust portfolio of more than 60 technologies with core intellectual property rights, along with 17 invention patents and 49 utility model patents.

18%

Target module efficiency exceeds

70%

A cost reduction compared to crystalline silicon

协鑫始终秉持着光伏行业本质，以钙钛矿组建“商用尺寸——面积大于 2m²”作为前提，全力以赴，提升标准组件的转换效率。

Advantages of GCL's perovskite technology:

GCL has a 100 MW mass production line producing the largest modules in the world. Modules produced lead the world in efficiency and stability.

State-of-the-art perovskite manufacturing process

Industry-leading large-area preparation

The 1m x 2m perovskite module produced by GCL Optoelectronic is the largest perovskite module in the world.



Continuous Czochralski monocrystalline silicon technology (CCz technology)

Granular silicon + CCz: An innovative combination anticipated to usher in a new era of PV technology

Characterized by its spherical shape, granular silicon possesses superior fluidity and filling properties. These give granular silicon a high pulling rate which empowers it to effectively fill up gaps in the crucible, thereby increasing the production of silicon rods. Furthermore, the uniform size and shape of granular silicon cause minimal disturbance to the thermal environment of the crystal pulling furnace during the melting process, which means more silicon particles can be melt at a higher rate without being crushed. These advantages create a crucial foundation for the extensive application of the CCz technology in the foreseeable future.

GCL has successfully applied its

185 kg/d

CCz crystal pulling furnaces to a

200 MW

pilot project

GCL has embarked on uncharted territory with the CCz technology. Its innovative single crystal furnaces concurrently perform feeding, melting, and pulling, eliminating the traditional separate processes of feeding and rod cooling. The combination of high-fluidity granular silicon with the CCz technology substantially improves the production of single crystal silicon, profoundly bolstering the manufacturing of n-type solar cells.

GCL has successfully applied its 185 kg/d CCz crystal pulling furnaces to a 200 MW pilot project, and has established a CCz-based manufacturing base in Xuzhou to explore the practice on a larger scale. With the prevalence of n-type and large-diameter single crystals, the alliance of granular silicon with CCz is poised to answer the escalating demand for n-type silicon wafers, creating greater value to the PV industry.

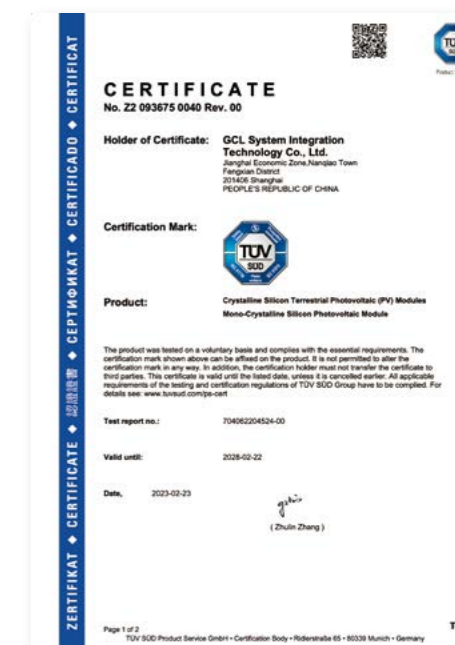
Exploring Cutting-Edge Technology in the Industry

High-efficiency heterojunction modules (HJT modules)

HJT is known as the next generation solar cell technology.

HJT cells have the advantages of low process temperature, excellent passivation properties, high open circuit voltage, and double-sided power generation.

HJT double-glass modules feature high power, high double-sided power generation efficiency, lower power temperature coefficient, and low attenuation rate. These attributes collectively extend the life of modules, while effectively increasing the capacity and profitability of power stations. GCL S.I. is committed to the R&D of HJT modules. Currently, it has obtained the third-party product certification and TUV certification for its 210 HJT (12 BB) modules. In the future, the company will focus on the efficiency increase and marketing of their products.



Third-party certification obtained by HJT components



R&D of TOPCon modules

Currently, n-type cells are widely viewed as a revolutionary technology, poised to lead the future of the PV industry. Currently, n-type cells are widely viewed as a revolutionary technology, poised to lead the future of the PV industry. In 2022, GCL S.I. developed large-sized, n-type, high-efficiency tunnel oxide passivated contact (TOPCon) cells, encapsulated in both single and double glass modules. These received the TÜV Rheinland certification, attesting to their compliance with the IEC standard testing. The 210 mm series TOPCon modules achieve a maximum power of 685 W, while the 182 mm series reach a noteworthy 575 W. The conversion efficiency of these modules surpasses 22%, outperforming the original PERC technology by 4.5%.



210 mm single-glass and double-glass modules obtained German TÜV Rheinland certification

GCL S.I.'s offshore floating modules appeared in the world's first wind-solar integrated energy system

GCL S.I.'s offshore floating modules exhibit outstanding water resistance, robust corrosion resistance, and impressive PID resistance. Relying on material optimization, high water-resistant packaging, and multiple waterproofing junction boxes, these modules perform exceptionally against wave impacts and salt spray corrosion, and present high overall reliability.

In November 2022, GCL S.I.'s offshore floating modules made their debut in the world's first deep-sea floating solar power station sited 30 kilometers offshore, at a depth of 30 meters. Upon employing the air-cooled system, the temperature dropped by 17 degrees, which means the modules' output increased by 6.63% at a power temperature coefficient of 0.39%. This project presents a significant breakthrough in the research of deep-sea floating wind-solar integrated energy systems and promotes the development of offshore solar power solutions at the same time.



Leading the Evolution of Mobile Energy Technology

GCL-ET has built an integrated source-grid-load-storage network that empowers its mobile energy business. Based on cell manufacturing, charging station control systems, charging architecture, and separate port BMS have been deployed to expand the cell market, while effectively expediting the electrification of vehicles. The company has independently developed a series of core mobile energy storage solutions. The Hub.OS station control platform, for instance, enables multi-station collaboration, multi-energy complementation, intelligent off-peak charging, and intelligent charging and battery swapping. The Hub.E micro-grid and energy management technology further leverages the company's inherent strengths. Scenario-specific BMS accepts various models and supports battery pack tracing and battery information uploading. The battery digital twin (BDT) technology allows for a comprehensive "health check" of batteries, extending battery lifecycle by nearly 20%. In addition, in partnership with a famous company, the company has created a power-storage-computing integrated business model, leveraging the single-phase immersion liquid cooling technology and AI supercomputing power.

20%

Extending battery lifecycle by nearly



Application of Research Outcomes

Application of research outcomes is the "last mile" for them to empower industry development and upgrading. In 2022, GCL Group successfully developed a range of black technologies which effectively promote the development of FBR granular silicon, electronic-grade polysilicon, cathode materials, and other related areas, contributing to the advancement of China's new energy sector.

FBR granular silicon

With rapid growing production capacity, "green petroleum" granular silicon will have a profound impact on the global PV industry

In 2022, GCL dramatically increased its production capacity of granular silicon by employing systematic, standardized, digitized, integrated, and intelligent modular replication processes. The production line has become operational and is projected to reach a total capacity of 700,000 tons. GCL is fully ready to meet the growing demand for high-quality silicon materials in the n-type era.



In June, 2022

Xuzhou base's

30,000-ton

FBR granular silicon production line was put into operation

In July, 2022

Leshan GCL New Energy Technology Co., Ltd. (hereinafter referred to as "Leshan GCL")'s first

100,000-ton

FBR granular silicon production line went into operation.

In December, 2022

Baotou base's

100,000-ton

production line (Phase I) was put into operation.

Electronic-grade polysilicon

The construction of China's largest semiconductor integrated circuit-grade silicon base and semiconductor fine chemical base with international competitiveness in Hohhot will greatly promote the localization of China's integrated circuit industry chain.

Hohhot 10,000-ton electronic-grade polysilicon and 100,000-ton granular silicon project officially started

This project represents a collaborative effort between GCL Group and TCL With an annual capacity of 10,000 tons of electronic-grade polysilicon and 6,500 tons of silane electronic specialty gases, the project stands at the forefront of national production capacity, enabling GCL to promote the development of China's large-scale integrated circuit sector. Besides, the project will interact with our bases in Xuzhou, Leshan and Baotou to create the world's biggest granular silicon "green oil field".



Opening ceremony of Hohhot 10,000-ton electronic-grade polysilicon and 100,000-ton granular silicon project

N-type cells

GCL will leverage the Wuhu project to collaborate with upstream companies, actively participating and promoting the development of China's PV industry.

GCL S.I. started its upgrading from p-type cells to n-type cells

The Wuhu cell project employs the highly promising n-type TOPCon high-efficiency cell technology, coupled with the world's leading automated cell production equipment. The aim is to create a large-scale, digital, and intelligent PV cell R&D and manufacturing base. Once operational, the project will effectively cater to the upstream cell requirements of GCL S.I.'s Hefei Module Base. Alongside improving the module capacity of GCL S.I., it will also enhance the reliability and stability of the supply chain.



Groundbreaking ceremony of the GCL S.I. 20 GW high-efficiency TOPCon PV cell manufacturing base (Phase I 10 GW)

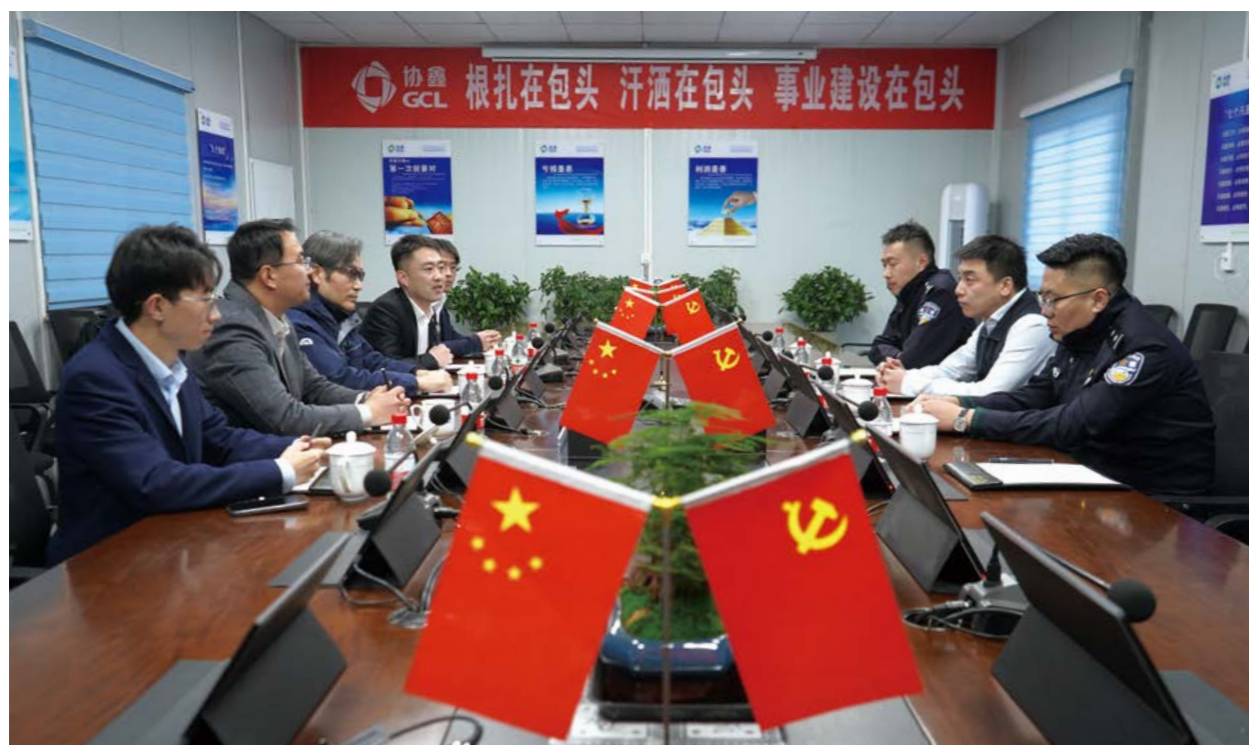
Intellectual Property Protection

Building a moat around intellectual property is imperative to the successful execution of GCL's R&D strategies. Recognizing this importance, GCL Group is highly committed to comprehensively safeguarding intellectual properties, including patents, trademarks, copyrights, trade secrets, among others. We have formulated the *Intellectual Property Management Standards* and the *Intellectual Property Application Management Process* to regulate intellectual property management at Group, division, and subsidiary levels. Further, we've set interim intellectual property management goals in the *GCL Group 14th Five-Year Strategic Action Plan for Intellectual Property Management* and established the Leading Group for Comprehensively Promoting the Strategic Action Plan for Intellectual Property Management to take charge of the implementation of the plan. Additionally, we created an intellectual property management platform to increase the efficiency of intellectual property management through well designed regulations, processes, and digital instruments.

Intellectual Property Protection for Key Projects

GCL Group prioritizes the protection of intellectual property rights, particularly for significant projects and core technologies. During the reporting period, the Discipline Inspection and Supervision Center established an Intellectual Property Protection Committee devoted to enhancing the supervision, management, and intellectual property safeguards for regional subsidiaries and key projects. In 2022, we set up regional intellectual property protection stations in the southwest and northwest territories and assigned supervision personnel to various bases to ensure the security of core technologies. Furthermore, we inspected the confidentiality measures at key locations such as the Leshan and Baotou bases.

Intellectual property protection work was also carried out at division and subsidiary levels. GCL TECH formulated a series of regulations according to its business needs, including the *Guidelines on Options for Patent and Technical Secret Protection*, the *GCL TECH Patent Writing Quality Evaluation Form*, among others. It also established an Intellectual Property Maintenance Team to maintain core technologies related to FBR granular silicon, high-efficiency polycrystalline silicon, ingot monocrystalline silicon, CCz, etc.

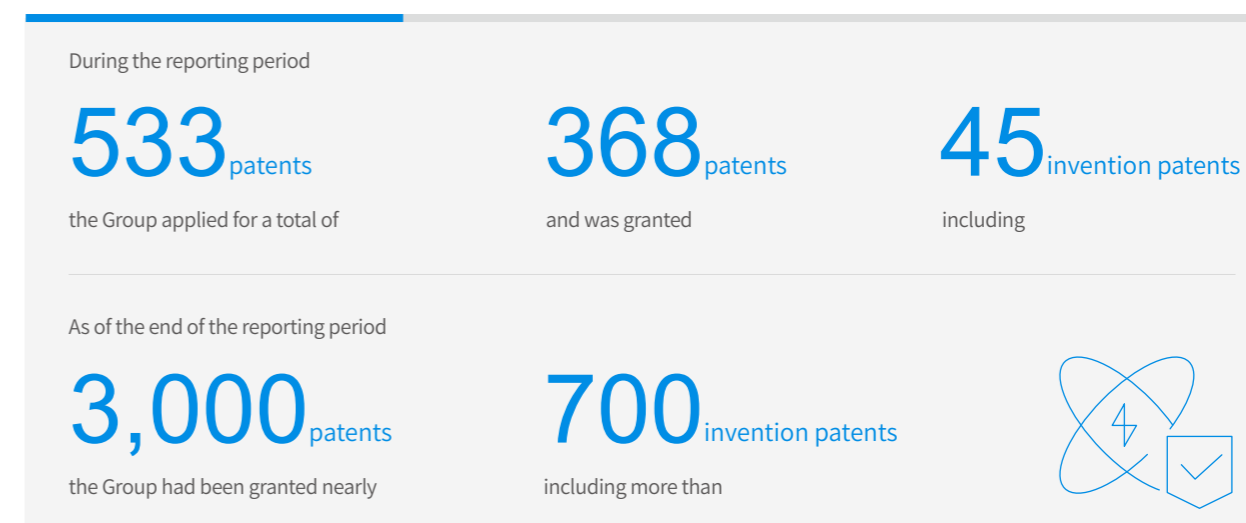


The Second Inspection Team of the GCL Discipline Inspection and Supervision Center visited a regional intellectual property protection station

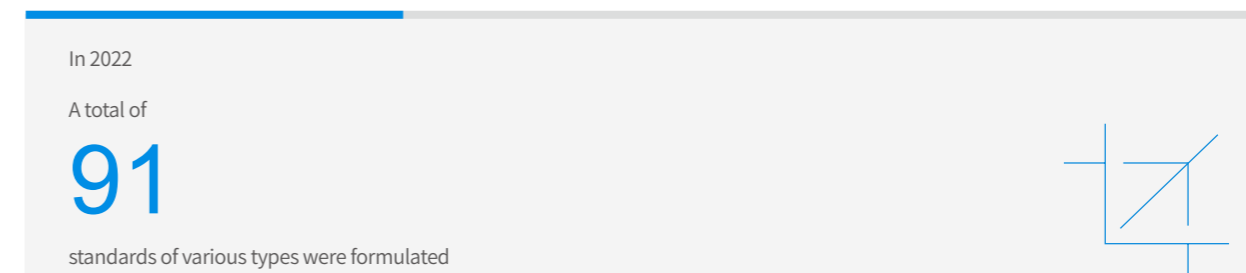
Intellectual Property Promotion and Training

To heighten employees' intellectual property awareness, GCL Group launched various education and training initiatives which nurtured an enriching culture of intellectual property. In 2022, the Group complied the *100 Questions on Basic Intellectual Property Knowledge*, a 26,000-character guide that was duly published on the GCL Sea of Knowledge of GCL University. Chairman Zhu Gongshan and President Zhu Yufeng have championed the cause, urging the promotion and learning of intellectual property knowledge across the Group. Furthermore, the Group organized intellectual property training targeting all employees. At the division level, training and education activities were conducted during the Intellectual Property Week.

Intellectual Property Protection Achievements



In 2022, GCL Group led or participated in the formulation of 91 external standards related to solar cell quality testing, electronic-grade polysilicon, etc. Among them, GCL TECH led the revision of national standard *Fluidized Bed Reactor Granular Silicon*; Xinhua Semiconductor led the revision of national standard *Electronic Grade Polysilicon*; GCL-ET's Mobile Energy Team led or participated in the formulation of 34 national, industry and group standards, establishing a leading position in the industry.



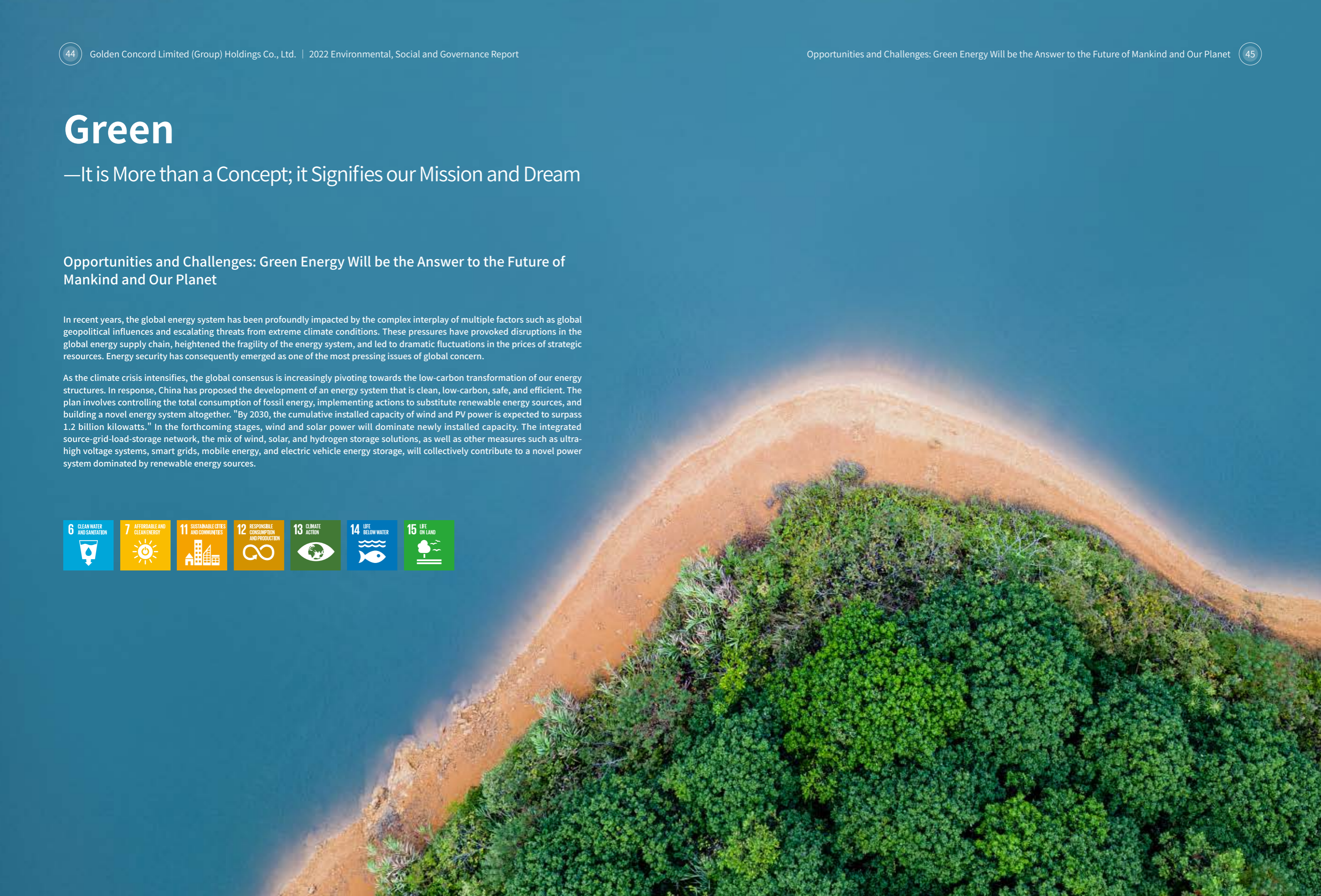
Green

—It is More than a Concept; it Signifies our Mission and Dream

Opportunities and Challenges: Green Energy Will be the Answer to the Future of Mankind and Our Planet

In recent years, the global energy system has been profoundly impacted by the complex interplay of multiple factors such as global geopolitical influences and escalating threats from extreme climate conditions. These pressures have provoked disruptions in the global energy supply chain, heightened the fragility of the energy system, and led to dramatic fluctuations in the prices of strategic resources. Energy security has consequently emerged as one of the most pressing issues of global concern.

As the climate crisis intensifies, the global consensus is increasingly pivoting towards the low-carbon transformation of our energy structures. In response, China has proposed the development of an energy system that is clean, low-carbon, safe, and efficient. The plan involves controlling the total consumption of fossil energy, implementing actions to substitute renewable energy sources, and building a novel energy system altogether. "By 2030, the cumulative installed capacity of wind and PV power is expected to surpass 1.2 billion kilowatts." In the forthcoming stages, wind and solar power will dominate newly installed capacity. The integrated source-grid-load-storage network, the mix of wind, solar, and hydrogen storage solutions, as well as other measures such as ultra-high voltage systems, smart grids, mobile energy, and electric vehicle energy storage, will collectively contribute to a novel power system dominated by renewable energy sources.



Our Response

Bring Green Energy Into Life

In the face of the energy transformation, what actions should we take?

GCL Group's response

It is necessary to develop light energy actively and orderly, silicon energy, hydrogen energy, and renewable energy.

Silicon energy

Build the world's leading integrated PV industry chain;

Use FBR granular silicon to provide more eco-friendly and affordable PV solutions

Hydrogen energy

Proposed the hydrogen energy development strategy of "Blue Hydrogen + Green Hydrogen";

Expanded natural gas business abroad and built a complete integrated natural gas industry chain. GCL Huidong Jiangsu Rudong LNG Terminal project launched

Renewable Energy

Launched more new energy projects to increase the installed capacity of renewable energy

Source-grid-load-storage integration is needed

Source

Continued to expand the clean power business, with installed capacity from solar, wind, biomass, and gas power, leading the industry in the proportion of clean energy installed capacity.

Grid

Created a comprehensive energy network integrating power, heating and cooling information;

Eight projects were rated as **pilot demonstration projects by the National Energy Administration**.

Load

Obtained the **National First-Tier** Demand Side Management Service Provider Certification

Storage

Vigorously developed cutting-edge energy storage technology, efficient energy storage materials, and energy storage systems, and carried out in-depth cooperation with Huawei and other companies in the fields of digital energy and energy storage

Stricter green and low-carbon requirements

Green factories

Multiple **national and provincial** green factories

Suzhou's first zero-carbon headquarters

GCL Energy Center obtained the **Carbon Neutral Certification**

Our Actions

Climate Change Risks and Opportunities

Guided by the framework and recommendations of the Task Force on Climate-Related Financial Disclosures (TCFD), GCL Group proactively addressed climate challenges. This includes identifying and examining opportunities and risks related to climate change, integrating climate governance into various divisions, improving overall resilience towards climate threats, and effectively preparing for climate risks.

Identification of Climate Risks

GCL Group mainly conducted climate risk identification at the division and subsidiary levels. Various factors, including relevant policies and regulations, extreme weather conditions, and upstream and downstream customer markets, were considered to identify climate-related physical and transition risks. Subsequently, we analyzed the potential impact of each risk factor on the Group and developed countermeasures.

		Risk description	Potential impacts	Countermeasures
Physical risks	Acute risks	Extreme weather events such as typhoons, heavy rains, floods, droughts, extreme cold, and extreme heat	<ul style="list-style-type: none"> Affecting transportation, causing supply chain disruptions and affecting product production; or affecting product delivery, thereby affecting operating costs; 	<ul style="list-style-type: none"> Imposing certain impacts on the production infrastructure (e.g., facility damage), resulting in increased facility maintenance/replacement costs; Increased rate of safety incidents;
	Chronic risks	Events such as rising sea levels and sustained hot weather caused by long-term changes in climate patterns	<ul style="list-style-type: none"> Insufficient power supply due to sustained high temperatures increases production costs and affects production or supply capabilities; Continuous high temperature affects the efficiency of PV stations and affects the service life of modules; 	<ul style="list-style-type: none"> Relocation or structural changes to bases located in coastal areas due to rising sea levels ; Increased safety risks in the production process.
Transition risks	Policy and regulatory risks	Promulgation of new regulations and industry standards to strengthen greenhouse gas management	<ul style="list-style-type: none"> Increased compliance costs (e.g. EU carbon tariffs); Some of the industries in which the company operates are included in carbon emission control, causing increased carbon market prices and operating costs; 	<ul style="list-style-type: none"> Failure to pay close attention to policies and regulations, resulting in lawsuits or related penalties.
	Technology risks	Technological improvements or innovations that support the shift of economic systems to low-carbon, efficient energy will have a significant impact on the organization	<ul style="list-style-type: none"> Additional investments occur as a company transitions to lower-emission products or services; 	<ul style="list-style-type: none"> The difficulty of technological breakthroughs is uncontrollable; New renewable energy technologies emerge.
	Market risks	Customers are more inclined to purchase low-carbon and eco-friendly products (e.g., overseas markets have higher requirements for product carbon footprints)	<ul style="list-style-type: none"> Rising production and operating costs; Higher requirements for low-carbon management of products. 	<ul style="list-style-type: none"> Provided green and low-carbon products: <ol style="list-style-type: none"> GCL TECH's FBR granular silicon effectively reduces the power consumption of silicon manufacturing by nearly 80% compared to the Modified Siemens Process. It is currently the silicon-based raw material with the lowest carbon footprint in the global market; Large-size PERC modules using FBR granular silicon have an average carbon emission reduction of approximately 28% compared to other modules of the same type .
	Reputation risks	Stakeholders are paying increasing attention to corporate green and low-carbon performance	<ul style="list-style-type: none"> Damage to corporate reputation or corporate brand image 	<ul style="list-style-type: none"> Intensified stakeholder engagement

Identification of Climate Opportunities

While conducting climate risk identification, GCL also analyzed its potential opportunities in addressing climate change based on the concerns of the industry and stakeholders.

Opportunity category	Opportunity description	Countermeasures
Products and services	Companies that develop new low-carbon products and services will improve competitiveness and shift customer and manufacturer preferences.	Further explored low-carbon fields such as clean energy, PV industry, and semiconductor materials to develop new business scenarios and low-carbon products and solutions, expanding the market.
Resource efficiency	Strengthened water, waste, and material management, or technological innovation will improve resource efficiency.	Improved environmental management and resource recycling; Promoted digitization across production processes to improve resource efficiency;
Energy type	Use of low-carbon energy will reduce energy costs.	Some production bases (e.g., some of the affiliated factories of GCL S.I.) installed rooftop solar panels on buildings; Used green electricity, for example, GCL Leshan has obtained Clean Energy Consumption Certificate issued by the Sichuan Electric Power Trading Center.
Resilience	This includes improving efficiency and designing new products to seize opportunities related to climate resilience.	Launched low-carbon products; Developed cutting-edge technologies such as perovskite, and granular silicon + CCz ; Focused on energy storage, computing power and other fields to explore the construction of new power systems.

Indicator	Unit	Emissions in 2022
Scope 1 emissions	TCE	9,201,244.85
Scope 2 emissions	TCE	2,349,323.03
Total greenhouse gas emissions (Scope 1 + Scope 2)	TCE	11,550,567.88
Comprehensive greenhouse gas emission intensity	TCE/RMB 10,000 revenue	2.24

GCL Group's Greenhouse Gas Emissions

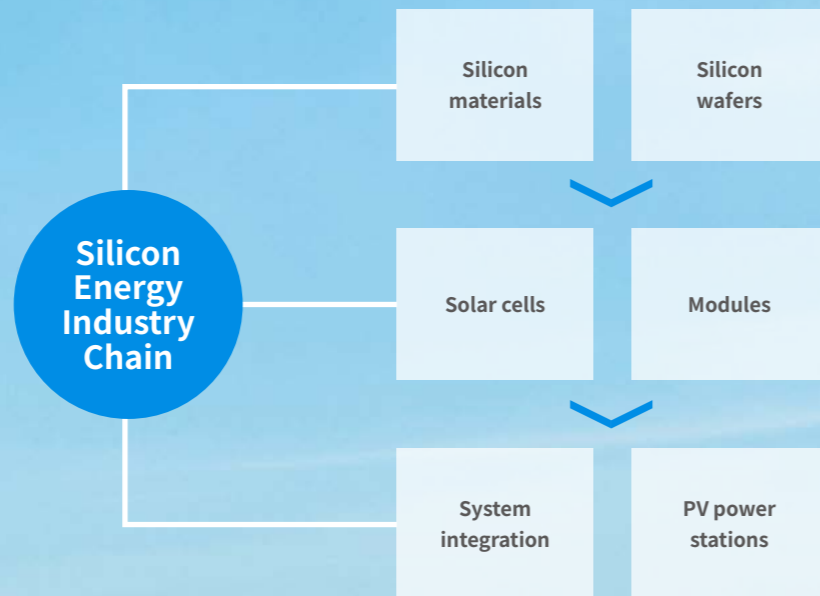


Building a Green Industrial Cluster

Silicon Energy Industry Chain

GCL Group established its foothold in the PV industry in 2006 through the manufacturing of silicon materials. Relying on its innovative GCL Modified Siemens Process, GCL successfully shattered foreign technology monopolies, rapidly growing into a world-class leader in polysilicon production. Since then, GCL systematically broadened its reach to encompass the R&D, manufacturing and integration of silicon wafers, cells, and modules, along with the construction, operation, and maintenance of PV power plants. These efforts contributed to the formation of a world-leading PV supply chain which plays an essential role in global carbon neutrality.

As the leader in the PV arena, GCL Group has cultivated distinct advantages across all sectors of the industry. In the realm of PV material R&D and manufacturing, GCL's FBR granular silicon introduces a novel PV material that supports China's "dual carbon" goals effectively. GCL S.I. stands as a leading provider of integrated PV and storage solutions, boasting the largest manufacturer base in the world — Hefei 60 GW AI-driven factory. Through enriching product portfolio, the company provides the cheapest yet diversified low-carbon integrated PV generation and storage smart solutions fitting to different PV scenarios considering the variable regions, types, and scales.



GCL continues to provide society with high-quality, efficient, low-cost zero-carbon products

Lower costs — GCL S.I. Hefei Super Module Factory leads the industry in processing costs

In October 2022, GCL S.I.'s Hefei Super Module Factory 60 GW Large-Size Module Production Base (Phase I) reached its design capacity of 15 GW at an industry-low cost, producing 1.11 GW of modules in the same month, with a product fulfillment of 113.27%, a record high in a single month. Leveraging digital and intelligent technologies, the factory realized full-process automation across material loading, laying, welding, testing, packaging, sub-packaging, and delivery, comprehensively promoting GCL's intelligent manufacturing and precise operations.



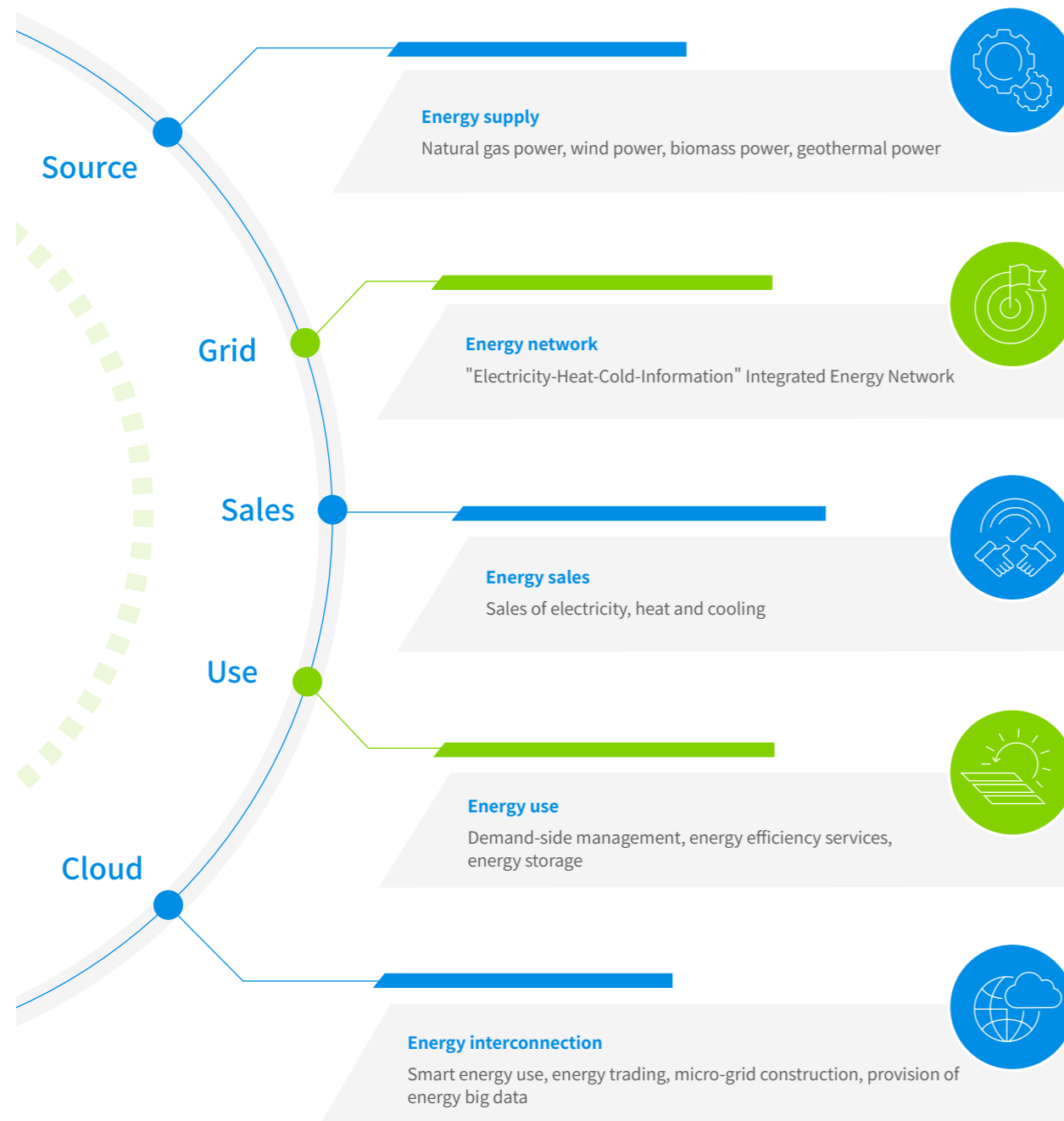
GCL S.I. Hefei Super Module Factory

Lower carbon emissions — large-size module series have obtained French carbon footprint certification due to excellent low-carbon performance

By the end of July 2022, the average carbon footprint of GCL's integrated 182 and 210 large-size PERC high-efficiency module series was 400-450 kg of CO₂/kW, about 10%-20% lower than that of similar models from other companies. The module certified this time has a maximum power of 675 W, suitable for all scenarios such as household distribution, industrial and commercial projects, and large-scale ground power stations. With extremely competitive carbon footprint performance, it is expected to make low-carbon and clean PV modules reach more customers.

Energy Ecosystem

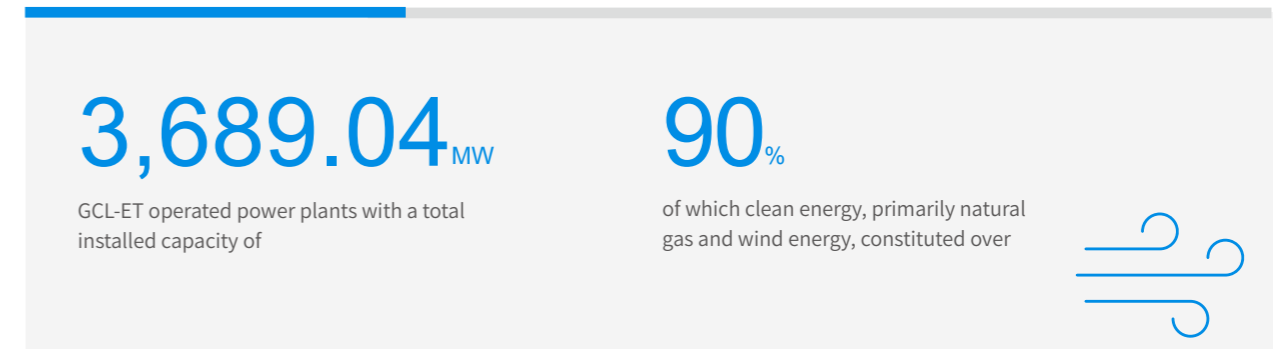
GCL has built an integrated ecological chain encompassing energy production, energy trading, energy networking, and related services. GCL has built an integrated ecological chain encompassing energy production, energy trading, energy networking, and related services. Aligned with the trajectory of global energy transformation, we strive to transition from being a clean energy producer to a comprehensive clean energy service provider. Our emphasis lies on green energy production, operation, and comprehensive energy services. Based on clean-energy generation and co-generation, we have extended to energy storage, energy efficiency management, and distribution and sale of electricity, aiming to construct a fully-integrated "source-grid-sales-use-cloud" system. This comprehensive approach positions us as a leading provider of energy data and ecological services.



Energy Generation

GCL Group is at the forefront of China's mixed-ownership power enterprises, leading the charge towards the development and expansion of the clean power industry. Continued to expand the clean power business, with installed capacity from solar, wind, biomass, and gas power, leading the industry in the proportion of clean energy installed capacity. Our energy production endeavors are paramount in driving transformations in regional energy structures and ensuring a reliable energy supply.

On the clean energy front, GCL-ET, a division of GCL Group, has been an active investor in clean energy co-generation and wind power projects since 2003, utilizing natural gas and biomass as fuel. As of December 31, 2022, GCL-ET operated power plants with a total installed capacity of 3,689.04 MW, of which clean energy, primarily natural gas and wind energy, constituted over 90%. Additionally, GCL has extended power operations to efficient and eco-friendly thermal power, pumped storage, and hydropower, among others, with existing capacity and capacity under construction totaling 8 GW. We also actively engaged in power distribution, sales, and carbon asset management. All these efforts make us an industry-leading private power holding company and a provider of green energy solutions.



GCL continues to provide society with more stable and efficient clean energy solutions

More energy — GCL-ET Liaoning Juxin 50 MW Wind Power Project has full capacity connected to the grid

The project was connected to the grid at full capacity in August 2022, with a total installed capacity of 50 MW. After operation, it will generate 165 million kWh of electricity every year, while reducing nearly 120,000 tons of carbon emissions. The project will help upgrade the local energy structure and protect local environment.

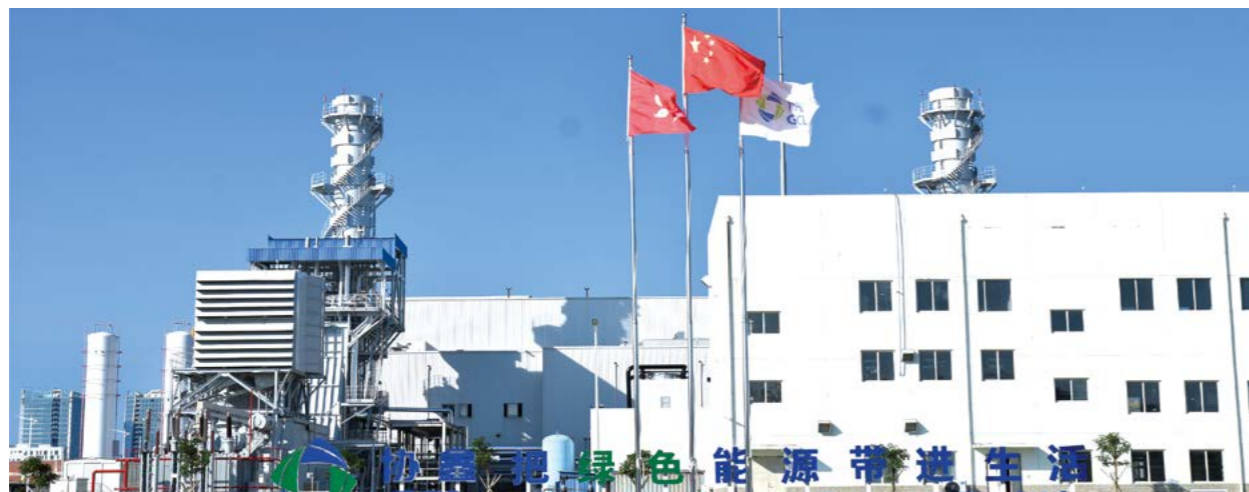


GCL-ET Liaoning Juxin 50 MW Wind Power Project

Cleaner and more efficient — GCL-ET's two subsidiaries won prizes at the National Gas-Fired Power Generation Unit Competition organized by the China Electricity Council¹

Guangxi GCL Zhongma Distributed Energy Co., Ltd. is a green symbol of GCL in Guangxi. Compared with coal-fired units of the same capacity, this project can save 200,000 tons of standard coal every year, reduce sulfur dioxide emissions by more than 2,200 tons, and reduce more than 1,500 tons of nitrogen oxides. In addition, it completely eliminates the discharge of dust and wastewater.

Wuxi Blue Sky Gas Turbine Thermal Power Co., Ltd. (hereinafter referred to as "Wuxi Blue Sky") is a typical clean energy example set by GCL-ET. This project is the first six-in-one smart energy center in China that comprehensively applies six energy systems including natural gas co-generation of heat, electricity and cooling, light energy, wind energy, waste heat and pressure, LED, and energy storage. It represents a pioneering endeavor to integrate five types of clean energy generation: natural gas, solar power, differential pressure, wind power, and solar thermal power generation. In addition, it is the first Chinese power project that simultaneously uses the high-efficiency PV power system, and the solar thermal boiler.



Guangxi GCL Zhongma Distributed Energy Co., Ltd.

¹ Source: 2021 energy efficiency benchmarking competition for gas-fired power generation units announced by the China Electricity Council.

More stable — GCL-ET demonstrated dedication towards its primary responsibility of ensuring power supply to various regions

In 2022, despite operational cost pressures induced by escalating fuel prices, continuous high temperatures, and other challenges, GCL-ET effectively coordinated its subsidiaries to uphold its primary duty of securing power production and distribution. By guaranteeing fully powered units, the company maintained a stable supply of local heat and power, an effort which earned recognition from regulatory bodies in various regions. Taking GCL-ET's subsidiaries, Suzhou Blue Sky Gas turbine Thermal Power Co., Ltd. and North Gas Turbine Thermal Power Co., Ltd., as examples, these entities supplied a whopping 2 billion kWh of clean power and 1.55 million tons of steam to the Suzhou Industrial Park over the course of the year. This effort not only ensured grid stability and daily business operations within the park, but also contributed to its environmental protection and biodiversity preservation with continual supply of clean electricity.



Energy Trading

Since 2015, GCL has holistically ventured into various facets of the energy trading business, including electricity sales, carbon assets, green power, and CCER². We hold 20 energy trading licenses spanning multiple provinces and serve over 4,000 clients. We manage nearly 30 emission control enterprises and nearly 60 emission reduction companies, with carbon credits exceeding 30 million tons. We have developed CCER projects that have led to emission reductions exceeding one million tons. Furthermore, we have sold more than 100 million kWh of green electricity and green electricity certificates which addressed 90% of our users' power requirements.

20+

Electricity sales license

20 billion kWh

Annual power sales

Energy Network and Services

GCL provides users with high-quality energy transmission, distribution, operation, and maintenance services. Based on the Micro-grid Centralized Control Cloud Platform, we created a "offline + online" intensive operation and maintenance model, providing users with comprehensive, full life cycle management of energy consumption. Our energy systems extensively employ a diverse array of energy technologies, including natural gas co-generation for heat, electricity and cooling, solar energy, wind energy, low-grade thermal energy, hydrogen energy, and energy storage. By seamlessly integrating and converting multiple energy sources, we deliver the most economical, efficient, reliable, and eco-friendly energy solutions to our users. Furthermore, GCL has successfully won bids and launched operations for several national incremental power distribution reform pilot projects.

Energy storage - GCL Zhejiang Jiande Pumped Storage Power Station started construction

This project marks the first pumped storage power station in east China and represents the most significant investment ever made in Jiande City. It has been included in the National Energy Administration's Pumped Storage Medium and Long-term Development Plan (2021-2035) and the Zhejiang Province's "14th Five-Year Plan" for Energy Development. The project is slated to commence production by 2029.

In September 2022, preliminary work officially got underway. The project envisages the construction of six 400 MW reversible hydro-generator units, amounting to a total installed capacity of 2,400 MW. Encompassing an estimated area of 161.44 hectares and a total investment of RMB 14 billion, the station mainly assumes the functions of peak shaving, valley filling, energy storage, frequency modulation, phase modulation, and emergency backup for the East China Power Grid. This pivotal role enhances the peak shaving capacity of the power system and advances the integration of new energy sources such as wind and solar power into the grid.



Aerial view of GCL Zhejiang Jiande Pumped Storage Power Station

² CCER: 国家核证自愿减排量。

Hydrogen Energy Industry Chain

In line with the strategy of "Blue Hydrogen + Green Hydrogen", GCL Group has set short-term and medium-term blue hydrogen objectives, and medium-term and long-term green hydrogen objectives. For this end, we started natural gas business abroad, and built a range of LNG terminals within China, contributing to the development of China's hydrogen industry.

GCL has natural gas bases in the Ogaden Basin in Ethiopia, from where natural gas is sent to terminals in China. This process involves the exploration, development, production, storage, transportation, processing, trade, sales, and utilization of natural gas. The process brings benefits such as energy substitution and foreign exchange earnings to the Ethiopian government, and at the same time, contributes to GCL's gas-trade-electricity integration strategy. The Ethiopia-Djibouti Natural Gas Project has been included in China's List of "Belt and Road" Projects and is also a key project for both Ethiopia and Djibouti.

GCL Huidong Jiangsu Rudong LNG Terminal project launched

The facility is a national "14th Five-Year Plan" energy development planning project, and a regional energy infrastructure construction project specified in the Outline of the Integrated Regional Development of the Yangtze River Delta. Also, it is a major energy infrastructure project in Jiangsu Province's "14th Five-Year Plan", and a major project in 2022 defined by the Jiangsu Province and the National Development and Reform Commission.

This project marks China's first LNG terminal undertaking that amalgamates functions of LNG loading, unloading, storage, transportation, shipping, and transshipment. With an annual processing capability of 4 billion cubic meters of natural gas, it is scheduled to be operational by mid-2025. This endeavor is an upscale extension of GCL's Ethiopia-Djibouti Oil and Gas Project, holding substantial significance for the progress of our natural gas ventures.



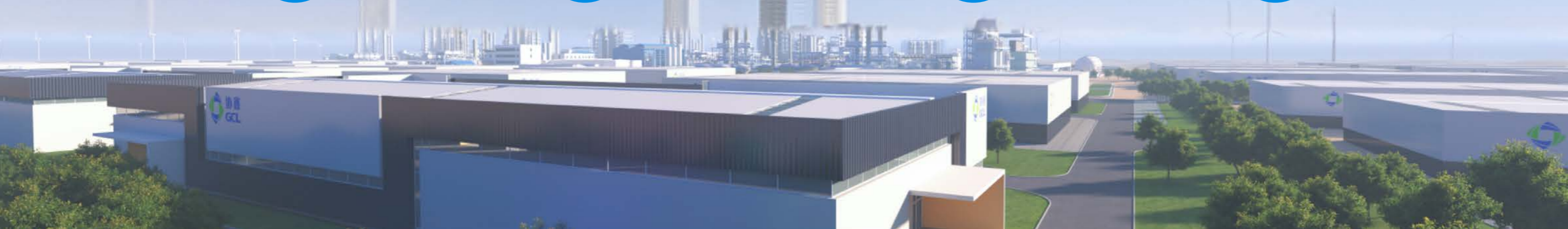
Groundbreaking Ceremony of GCL Huidong Jiangsu Rudong LNG Terminal

Lithium Battery Storage Industry Chain

Lithium materials will be "new oil and gas" in the future

Given the growing demand for energy storage, and the implementation of the mobile energy and PV-ESS (energy storage system) integration strategies, GCL has proactively expanded into the upstream lithium battery storage sector, from lithium mining, lithium carbonate, cathode materials, anode materials, batteries, PACK, terminal products, energy storage system platforms, to battery recycling. This expansion provides comprehensive energy storage solutions to power plants, grids, and users. Ultimately, lithium batteries are cycled using cutting-edge technologies, concluding the business chain perfectly.

GCL Lithium Materials Industry Chain



Empowering the Zero-Carbon Industry Ecosystem

China's "carbon neutrality and peaking" goals are urgent and challenging. Their implementation necessitates the innovative collaboration of enterprises across various sectors, such as energy, industry, transport, and construction. In particular, specialized, high-end, and innovation-driven SMEs promoting green and low-carbon solutions are required to shore up weaknesses and develop strengths, leading the industry to a promising future.

—Zhu Gongshan, Chairman of GCL Group

Zero-Carbon Smart Transportation

Relying on green and digital energy solutions, GCL has honed three core competencies: source-grid-load-storage integration, digital operations, and cyclic advancement in energy replenishment technologies. According to the needs of heavy-duty truck operations, online car-hailing, and zero-carbon parks, we have developed a "3+X" solution integrating vehicles, batteries and charging stations. In addition, we collaborated with transportation organizations, vehicle platforms, vehicle manufacturers, and battery manufacturers to integrated key resources along the supply chain. Such collaboration will contribute to a zero-carbon urban smart transportation ecosystem with lower costs, higher efficiency, lower carbon footprints, and higher value.

Scenario application: empowering zero-carbon transportation

GCL has started a project to set up comprehensive energy stations and power replenishment stations in urban hubs, logistics centers, and urban construction areas in key regions such as Zhejiang and Jiangsu. Pilot stations have been built in the urban areas of the Yangtze River Delta and Pearl River Delta, setting replicable examples for the rest regions.

GCL helped several cities build zero-carbon travel networks

Electric Zhejiang

In November, ten stations were inaugurated in Hangzhou and Ningbo!

They are projected to provide energy replenishment services for close to 800 electric ride-hailing vehicles. The entire replenishment process can be completed in a brisk 90 seconds, without the need for drivers to exit their vehicles. This allows drivers to increase their daily work time by an average of 1.5 hours, which means a monthly income increase of approximately RMB 1,500.

Electric Jiangsu

Launch of 13 stations in four cities!

These charging stations for passenger vehicles are positioned in Nanjing, Suzhou, and Wuxi, focusing on ride-hailing scenarios. The remaining three stations are deployed in Xuzhou, specifically designed to accommodate urban construction and coal transportation scenarios. This helps accelerate the electrification of heavy-duty trucks.

Electric Shenzhen

12,000 vehicles + 3,000 power replenishment stations + 100 comprehensive stations

GCL cooperates with Shenzhen Bus Group around the batteries of its 6,000 electric taxis and 6,000 buses. The cooperation covers management of battery assets, establishment of a battery fund, energy storage, and cascading utilization of power batteries. Our aim is to set a new industry standard, not just for Shenzhen but for the global stage.



Empowering zero-carbon logistics



March 2022

GCL-ET and Changjiu Logistics signed a strategic cooperation agreement on battery swapping

May 2022

GCL-ET exchanges opinions with DST Car Rental (Shenzhen) Co., Ltd. on cooperation

Joining hands with the upstream and downstream partners to build a mobile energy ecosystem

February 2022
GCL-ET and Guiyang Industrial Development Holding reached a strategic cooperation agreement

Focusing on battery bank cooperation



September 2022
CATL and GCL Group formally signed a long-term strategic cooperation agreement

The two parties will carry out technical cooperation and exchanges in terms of the versatility of heavy-duty truck battery swapping stations, the cascading utilization of power batteries, and power battery recycling.

December 2022
GCL-ET and Tsinghua University jointly released the *White Paper on Urban Zero-Carbon Transportation*

The white paper comprehensively analyzes the five key paths (regulations, management, roads, vehicles, and people) to achieve zero-carbon urban transportation and six typical application scenarios, trying to address challenges in zero-carbon urban transportation.



Carbon Reduction in the Construction Sector

As a significant carbon emitter, the construction industry plays an integral role in achieving the "carbon neutrality and peaking" goals. The success of the industry's energy conservation and carbon reduction efforts have direct implications for these goals. Building integrated photovoltaics (BIPV) represents a pivotal stride towards achieving this ambitious target. GCL S.I. has been at the forefront of this realm, relying on its BIPV modules, Lotus modules, and Photo voltaic/Thermal (PTV) systems. These products provide integrated solutions to specific challenges, such as urban roof PV drainage, stains, and return on investment. What's more, the company consistently broadened PV application scenarios through a "PV+" approach, significantly contributing to the reduction of greenhouse gas emissions in the building sector.

On January 18, 2023, GCL Optoelectronic received a 3C Certification for their perovskite based BIPV glass from the China Quality Certification Center (CQC), making a key advancement in shaping China's BIPV market. This certification acts as a "green card", allowing its newly developed perovskite modules to access the BIPV market.

Xinfuding solar roof

Xinfuding series are BIPV solar roof products designed for industrial and commercial buildings. One of the products employs a novel frame, metal clamps and pressure blocks which, together with color steel tiles, formulate a secure, robust attachment to the roof. Not only does this design provide exceptional wind resistance, it's also easily installed. Another BIPV product can be directly laid onto the roof, functioning as an integral building material. The design incorporates an overlapping, multiple water-blocking system between modules and a gutter-style drainage mechanism. This effectively resolves persistent issues like roof leakage, laying a solid technical foundation for the widespread adoption of urban rooftop solar panels.

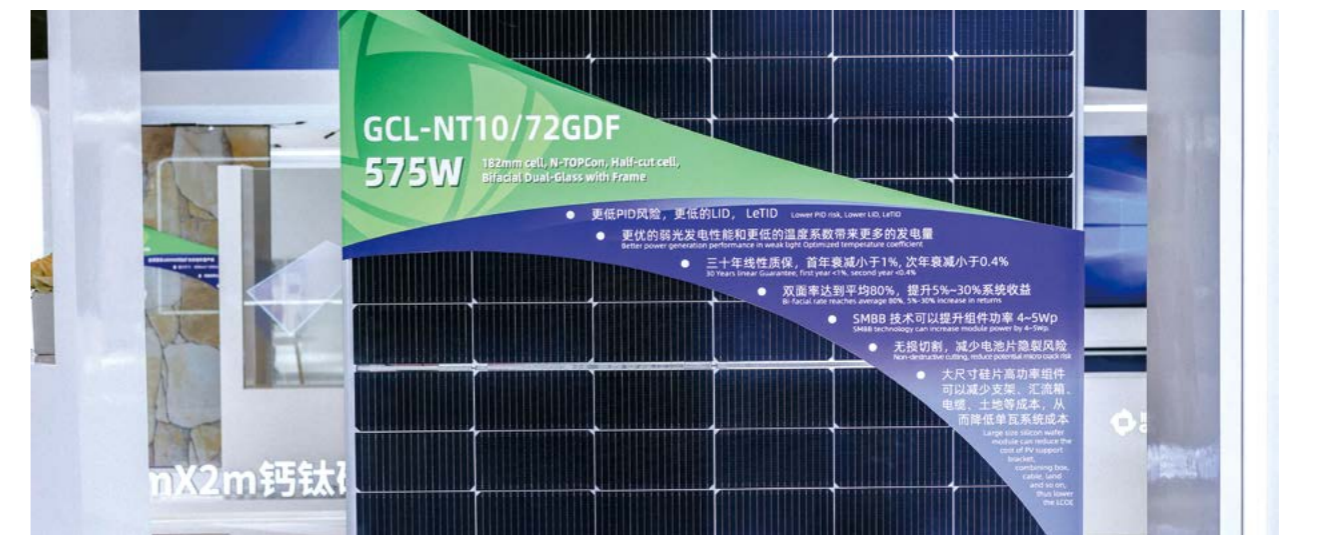
Safe

- Better safety performance
- Excellent waterproof performance
- Efficient mechanical load capacity
- More convenient maintenance

Advantages of Xinfuding series

Economic

- Easy installation, independent patent
- Lower costs, higher power generation efficiency, and higher returns throughout the life cycle



BIPV Xinfuding series products

Zero-Carbon Industrial Parks and Factories

Industrial parks are central to the development of industrial concentration, with zero-carbon, smart parks pioneering the change towards carbon neutrality. GCL-ET, a subsidiary of GCL Group, is a nationwide leader in the realm of distributed energy and micro-grid construction. As a trailblazer in micro-grid-based comprehensive energy service, the company has started zero-carbon collaboration with dozens of high-end industrial parks in several cities including Suzhou, Wuxi, Jinan, and Yangzhong. Benchmark zero-carbon industrial parks and factories include the Suzhou Industrial Park Dual Demonstration Project, the GCL Taizhou Core Port Area Micro-grid Cluster, among others. These projects serve globally recognized companies, such as L'Oréal, Total, and Procter & Gamble, by providing a variety of top-tier carbon-neutral services.

GCL-ET — An industrial park comprehensive energy management service provider with carbon neutrality certification

In November 2022, Taizhou GCL Microgrid Technology Co., Ltd., a subsidiary of GCL-ET, received a Carbon Neutrality Certificate which specifically applies to the Taizhou Military-Civil Integration Industrial Park. Spanning across 142 mu (approx. 9.51 ha.), the park hosts over 20 companies within its ten standard factories and one research office building built across 250,000 square meters. During the inspection period from August 1, 2021 to July 31, 2022, the park effectively achieved carbon neutrality thanks to renewable energy projects, charging stations, energy storage systems, internationally certified carbon asset transactions, and a verifiable blockchain carbon asset emission large-scale data platform.

As the park's clean energy management service provider, GCL-ET is entrusted with the comprehensive promotion of micro-grid cluster construction within the park. It's understood that the park is home to a 3.18 MWp distributed energy project, a 250 kW/1MWh user-side energy storage project, and a 360 kW charging station. These facilities are projected to charge approximately 8,000 vehicles per year, while providing clean, efficient energy to the park.



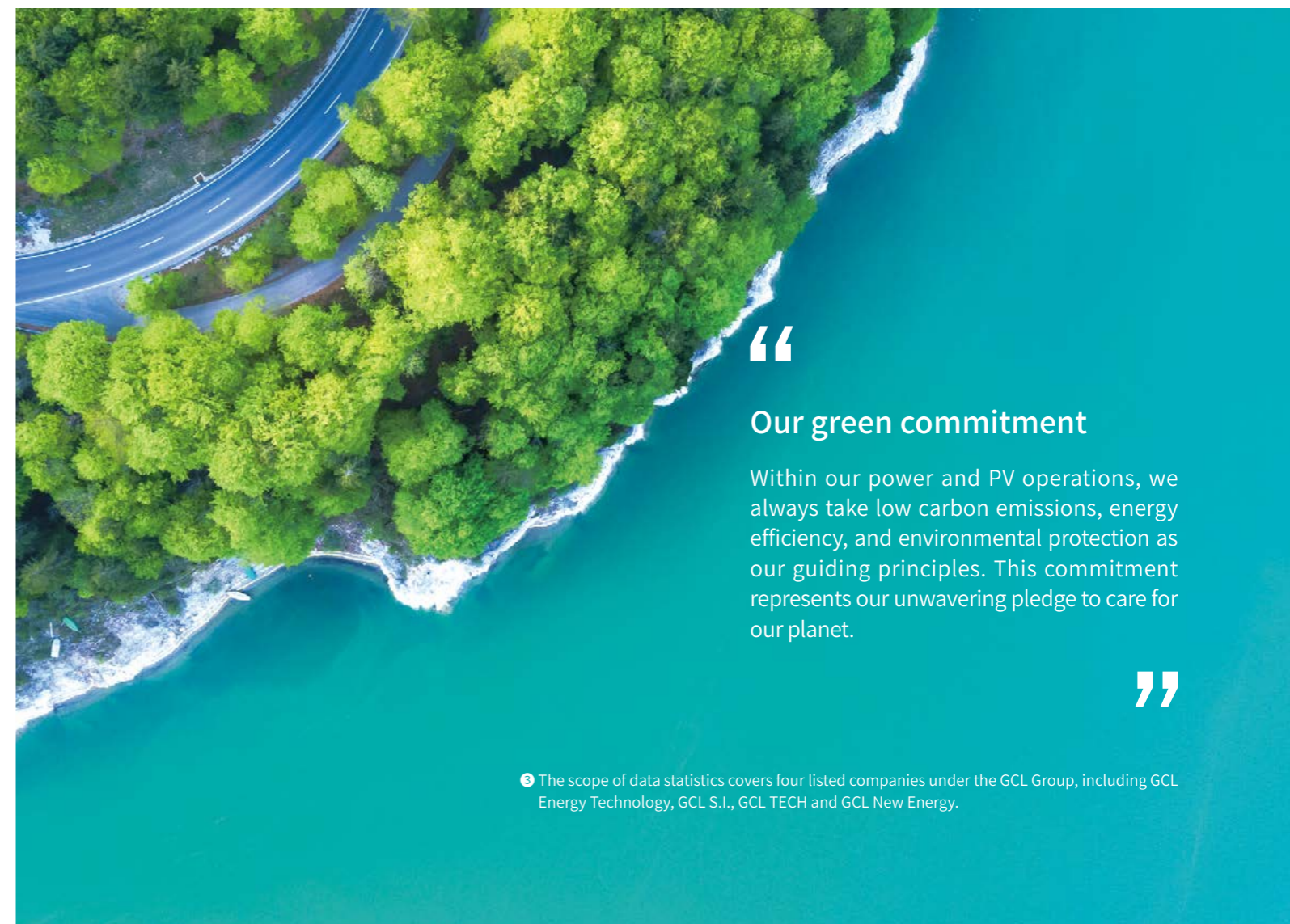
Practicing the Concept of Green Development

As a foremost new energy company, GCL Group is committed to "bringing green energy into life". We've incorporated low-carbon, eco-friendly, and green considerations into operations, management and other activities, and improved related regulations, in a bid to foster and propagate a greener lifestyle.

In 2022, GCL invested

RMB **373.7887** million

in environmental protection.³



“

Our green commitment

Within our power and PV operations, we always take low carbon emissions, energy efficiency, and environmental protection as our guiding principles. This commitment represents our unwavering pledge to care for our planet.

”

³ The scope of data statistics covers four listed companies under the GCL Group, including GCL Energy Technology, GCL S.I., GCL TECH and GCL New Energy.

Excellent Green Manufacturing

With the mission of "Focusing on green development and continuously improve the living environment of human beings", GCL Group and its divisions have comprehensively incorporated "green, low-carbon, innovation, and technology" into every operational facets. We strengthened environmental management, and maximized the recycling of resources, in a bid to balance economic growth with environmental protection. During the reporting period, many subsidiaries were titled "Green Factory".

Many subsidiaries were titled "Green Factory"



In 2022, Tuning GCL S.I. Technology Co., Ltd. won the title of "National Green Factory"



In January 2023, Suzhou GCL Photo voltaic Technology Co., Ltd. (hereinafter referred to as "Suzhou GCL") won the title of "Green Factory in Jiangsu Province"



In January 2023, Xinhua Semiconductor won the title of "Green Factory in Jiangsu Province"

Guangzhou Blue Sky won the "Green +" Enterprise Certification

In 2022, Guangzhou GCL Blue Sky Gas Thermal Power Co., Ltd. (hereinafter referred to as "Guangzhou Blue Sky") was rated as a "Green +" enterprise by the Financial Work Bureau of Guangzhou Development Zone, which highly recognized the company's performance in environmental protection, social responsibility, and corporate governance.

Strict Environmental Management

All divisions and subsidiaries of GCL Group strictly abide by the *Environmental Protection Law of the People's Republic of China* and other laws and regulations, as well as relevant local policies and requirements. Based on sound environmental protection regulations, we took diverse approaches towards a low-carbon, sustainable future, including ensuing environmental protection investment, increasing the proportion of renewable energy, adopting digital and intelligent equipment, and actively exploring new green manufacturing processes.

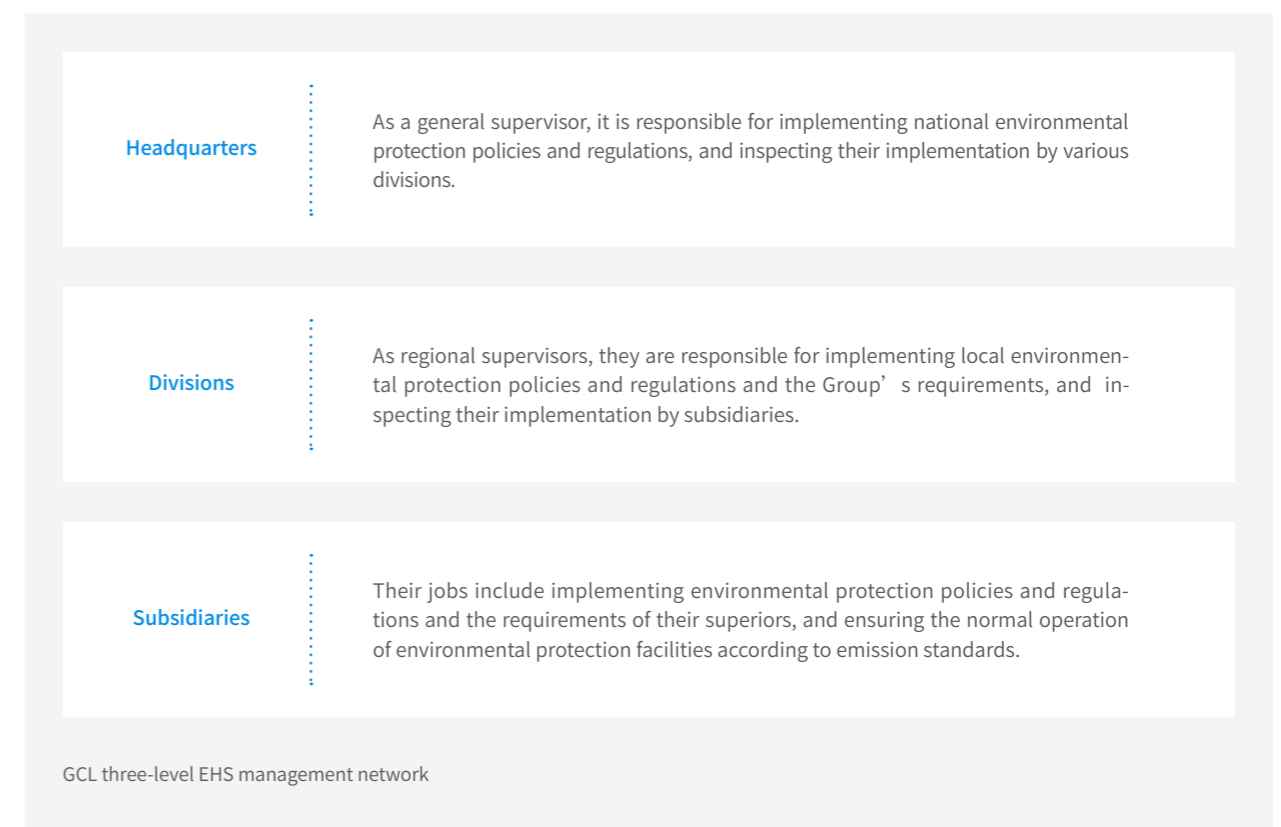
Environmental Management System

The Group has instituted a three-level environment, health, and safety (EHS) management network. At the first level, EHS Management Committee and EHS Office orchestrate the EHS management efforts across the Group. At the lower levels, various divisions and subsidiaries are responsible for implementing environmental protection directives. Generally, we've improved environmental management regulations, enhanced the management of environmental protection facilities and equipment, implemented various environmental monitoring requirements, and formulated environmental emergency plans, to make certain that environmental risks are preventable and controllable.

As of the end of the reporting period

23

subsidiaries had obtained the ISO 14001 Environmental Management System Certification



Energy Management

As a forward-looking enterprise, we have been pursuing an innovation-driven energy management reform, using cutting-edge technologies, intelligent and digital instruments, and independently developed black technologies. Furthermore, we enhanced energy management, made energy conservation modifications, and optimized the energy structure, to achieve more sustainable manufacturing and operations.

Making energy conservation modifications	Optimizing the energy structure	Strengthening energy management
<p>Prioritized the use of cutting-edge equipment to promote operational automation;</p> <p>Optimized production processes and operating procedures to improve energy efficiency;</p> <p>Made energy conservation and emission reduction modifications, such as optimizing the gas turbine combustion system, and the waste heat recovery system.</p>	<p>Increased the proportion of renewable energy, such as installing rooftop PVs in factories;</p> <p>Increased the energy efficiency in offices and living areas, such as using solar or wind energy street lights;</p> <p>Some factories used 100% clean energy.</p>	<p>Established an energy management system;</p> <p>Formulated the Energy Conservation Management Post Responsibility Regulations;</p> <p>Collected energy consumption data online through digital means, conducted energy consumption comparison and analysis, and addressed problems discovered;</p> <p>Established an energy management system and set energy-saving goals.</p>

Energy Management Initiatives

GCL-ET – Increasing energy efficiency using technologies recognized by authoritative organizations



In August 2022, the "Successful Application of High-Efficiency Roots Vacuum Pump in Gas Turbine Power Plants" project submitted by Suzhou Industrial Park North Gas Turbine Thermal Power Co., Ltd., a subsidiary of GCL-ET, won the second prize in the technology category at the 5th National Equipment Management and Technology Innovation Achievements Exchange Conference. With this technology, the company has successfully increased the energy efficiency of gas turbines by 50%-80%. In summer when the water temperature is high, a vacuum condenser can effectively reduce power consumption while improving the safety of operation.

Leshan GCL uses 100% clean energy

As a raw material base to produce green PV products, Leshan GCL has achieved 100% use of clean energy and obtained the Clean Energy Consumption Certificate.

Leshan GCL has achieved

100%

use of clean energy



Xinhua Semiconductor – Green manufacturing decreased comprehensive energy consumption for output value by 35% compared with the previous year

To expedite the formation of a green manufacturing system, GCL Semiconductor has instituted a Green Manufacturing Leadership Group and earmarked specialized funds for environmental protection, energy conservation and emission reduction. In 2022, the company accomplished a notable decrease in total energy consumption relative to output value. This was achieved by optimizing production processes, choosing high-efficiency, energy-saving motors for production equipment, and prioritizing heat energy recovery and utilization.

Energy Consumption of GCL Group⁴

Energy consumption indicators	Unit	Emissions in 2022
Natural gas	m ³	1,962,037,985.05
Gasoline	t	237.59
Diesel fuel	t	1,811.55
Coal	t	3,126,142.14
Steam	t	1,529,494.60
Purchased electricity	MWh	3,336,621.91
Direct energy consumption	TCE	4,845,503.05
Direct energy consumption intensity	TCE/RMB 10,000 revenue	0.94
Indirect energy consumption	TCE	606,763.84
Indirect energy consumption intensity	TCE/RMB 10,000 revenue	0.12
Comprehensive energy consumption	TCE	5,452,266.89
Comprehensive energy consumption intensity	TCE/RMB 10,000 revenue	1.06

⁴ Comprehensive energy consumption is calculated with reference to the *General rules for calculation of the comprehensive energy consumption* (GB/T 2589-2020). Data range includes:

- 1) GCL Energy Technology: natural gas, gasoline, diesel, coal, steam, purchased electricity
- 2) GCL S.I.: natural gas, steam, purchased power
- 3) GCL TECH: natural gas, gasoline, diesel, coal, steam, purchased electricity
- 4) GCL New Energy: natural gas, gasoline, diesel, purchased electricity

Water Resources Management

Water, as the life-source, the backbone of production, and the foundation of ecology, is crucial in our commitment to green and low-carbon practices. Water, as the life-source, the backbone of production, and the foundation of ecology, is crucial in our commitment to green and low-carbon practices. GCL Group and its divisions strictly comply with the *Water Law of the People's Republic of China* and the *Industrial Water Efficiency Improvement Action Plan*, as well as other applicable laws and regulations. Through a wide range of measures, such as strengthening water utilization management, setting water conservation goals, applying cutting-edge technologies from home and abroad, making water conservation modifications, improving industrial water recycling, and conducting water conservation education programs, we effectively reduced water consumption and increased water efficiency across operations. During the reporting period, several subsidiaries earned the title of "Water-Saving Enterprise".

Many subsidiaries use reclaimed water as industrial water source to reduce fresh water consumption

Guangzhou Blue Sky

uses reclaimed water from Yonghe Waste-water Treatment Plant in Huangpu District. The average daily water consumption in 2022 was 15,000 m³, reducing wastewater discharge by approximately 5.475 million m³ every year.

Guangzhou Gas Turbine Project

uses reclaimed water from Jinshan Waste-water Treatment Plant as its water source. Reclaimed is processed before being used as circulating water and for boiler use. The project consumed 308,162.5 tons of reclaimed water in 2022.

Jiangsu Zhongneng Polysilicon Technology Development Co., Ltd.

(hereinafter referred to as "Jiangsu Zhongneng") is the first enterprise in Xuzhou City to use reclaimed water. It replaces canal water with reclaimed water to meet the demand for circulating water. The company consumed 9.85 million tons of reclaimed water in 2022.



Introduction of water-efficient processes, equipment or systems

Kunshan GCL Blue Sky Distributed Energy Co., Ltd.

(hereinafter referred to as "Kunshan Blue Sky") adopts a closed circulation system to reduce the use of cooling water. The water purification station is equipped with a sludge dehydration system, and water from the sedimentation tank is recycled to reduce the use of freshwater.

Jiangsu Zhongneng

collects condensed water using pressure from steam or compressed air, or automatic pumps. Part of the condensed water collected is used as soft water required for steam, and the other part is returned to Jinshanqiao Power Plant and eco-friendly power plants every hour.

GCL New Energy

uses intelligent operation and maintenance robots to achieve all-round, water-free clean of PV power stations, significantly reducing water usage.



GCL New Energy's intelligent operation and maintenance robots

During the reporting period, GCL Group's water usage was as follows:

The total comprehensive water consumption was 39,659,563.80 tons	The amount of recycled water was 1,279,753,063.70 tons	Water intensity was 7.68 t/RMB 10,000 revenue
--	--	---



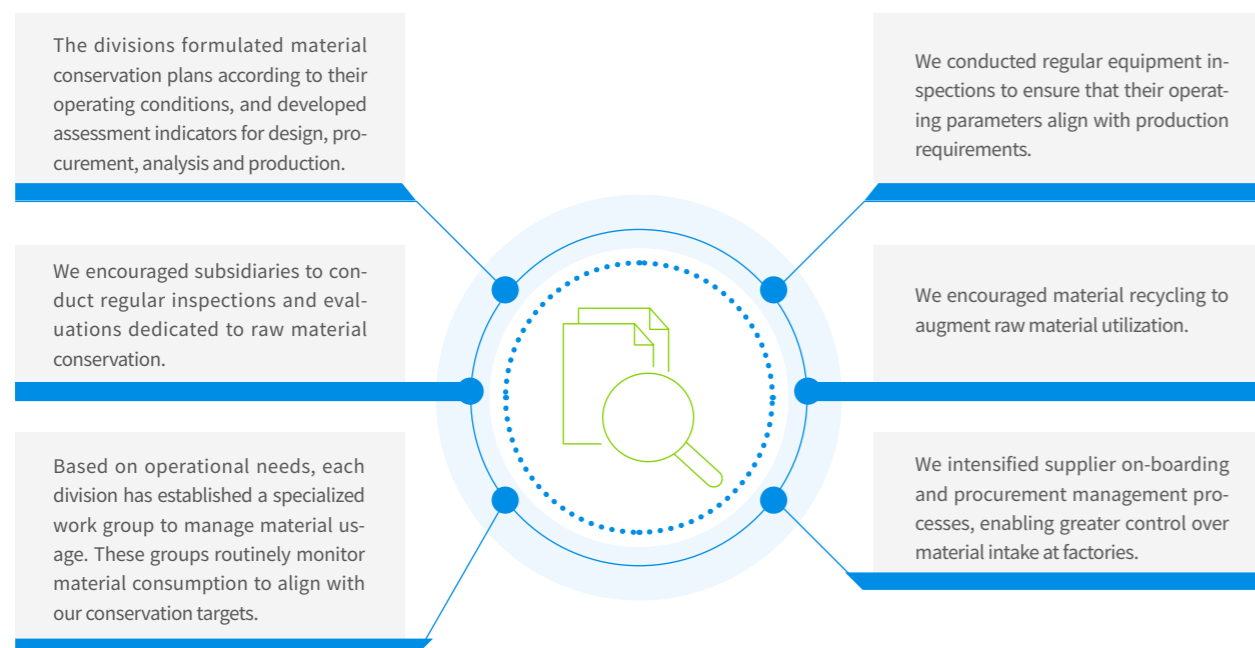
Jiangsu Zhongneng won the title of "Excellent Water Saving Organization"



Wuxi Blue Sky won the title of "Water Saving Enterprise in Jiangsu Province"

Material Management

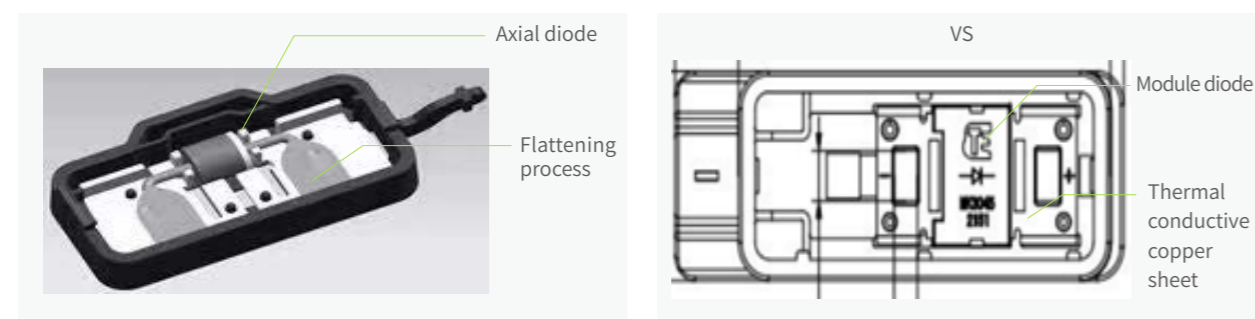
In pursuit of achieving optimal use of materials in our production processes — using the right amount of materials at the right time with the lowest cost and loss while achieving the highest efficiency — GCL exercises stringent control over material management at the production level. While ensuring production efficiency and product quality, we seek resource-efficient manufacturing through recycling and consumption reduction.



In 2022, GCL S.I. undertook an inspection of raw material conservation, strictly adhering to the *Evaluating Guide for Raw Material Saving of Industrial Enterprises* (GB/T 29115). The company also formed an evaluation team and assigned clear roles and responsibilities. Jiangsu Zhongneng disposed waste materials. Internal needs were first met, and the remainder was sold through public bidding via the EPS electronic procurement system. In addition, Jiangsu Zhongneng requested suppliers to give priority to recyclable and biodegradable packaging materials, providing that these materials are safe.

GCL S.I. — Modifying junction boxes to significantly reduce copper usage

In 2022, GCL S.I. reduced the costs of junction boxes by replacing modules with axial diodes. The modification reduced the risk of potential electrical connection failure by 33%, while simultaneously enhancing production line compatibility. Simultaneously, the company selected a new supplier offering innovative environmental protection solutions, whose 2 g/set conductor sheets replaced the original 3.93 g/set sheets, greatly reducing copper usage.



Emissions Compliance

In strict accordance with the *Law of the People's Republic of China on the Prevention and Control of Air Pollution*, the *Law of the People's Republic of China on the Prevention and Control of Water Pollution*, the *Law of the People's Republic of China on Prevention and Control of Solid Waste Pollution*, as well as other relevant laws and regulations, GCL strengthened the management of waste gas, wastewater, and solid waste. Furthermore, we strictly abided by the Pollutant Discharge Permit, strengthened the management of environmental protection facilities and equipment, and implemented online monitoring to ensure that pollutants are discharged in compliance with or better than national standards.

Wastewater Discharge

We rigorously enforce compliance with wastewater discharge regulations. All our subsidiaries involved in wastewater discharge have been equipped with treatment and pre-treatment facilities. We have established a real-time wastewater monitoring system, which, alongside regular third-party inspections, ensure the compliance of wastewater discharge. In addition, we recycled wastewater to increase water efficiency while mitigating the impact on the wastewater system.

GCL TECH — Suzhou GCL optimized its surface cleaning wastewater treatment system

Suzhou GCL optimized its silicon wafer cleaning wastewater treatment system. The upgrade reduces the silica fume content in the wastewater, thereby decreasing the operational pressure of the small sand grain filter system. At the same time, it guarantees improved wastewater treatment results and more stable effluent quality and increases the overall operating efficiency of the wastewater treatment system. Additionally, the remaining silica mud residue is repurposed, creating more value.

Reduced the wastewater station's sludge production by

365 tons

per year, improving its operation efficiency

During the reporting period, GCL Group's wastewater discharge data are as follows:

The total amount of wastewater discharged was 7,788,859.204 tons	Wastewater discharge density was 1.51 t/RMB 10,000 revenue
--	--

Waste Gas Emissions

GCL Group continued to strengthen waste gas emissions management. Through stable environmental protection investment, process transformation, equipment updates, etc., it improved waste gas treatment capacities — the emissions of many subsidiaries were in compliance with or better than national standards.

During the reporting period, Wuxi Blue Sky monitored the seasonal changes in exhaust emissions from gas turbines, and timely adjusted gas turbines to keep annual average emission concentration below 50% of the national limit. The VOCs concentration (13 mg/m³) of factories under GCL S.I. was far below the standard limit (50 mg/m³).

50%

Wuxi Blue Sky kept annual average emission concentration of the national limit below

GCL-ET – Kunshan Blue Sky carried out denitrification transformation, with nitrogen oxide emissions far below the national standard limit.

In 2022, Kunshan Blue Sky invested more than RMB 7 million to denitrate its two units. The new denitrification system reduced the nitrogen oxide concentration from 50 mg/m³ (i.e., the implementation standard) to 30 mg/m³, which indicates an annual reduction of nitrogen oxides by 40%. This effort made a positive contribution to the reduction of local atmospheric pollutant emissions.

Tuning GCL Photo voltaic Technology Co., Ltd. updated its exhaust gas treatment system



During the reporting period, GCL Group's emissions of exhaust gas pollutants were as follows:

Nitrogen oxides	Sulfur oxides	Dust
2,136.94 t	376.74 t	78.43 t

Solid Waste Disposal

The Group managed solid waste in strict accordance with relevant national and local laws and regulations, and the principle of "replacement, reduction and refinement" (3Rs). It formulated the *Management and Control Procedures for Waste and Hazardous Waste*, the *Management Regulations for "Three Wastes"* and other extensive regulations to regulate the management of hazardous waste, and the classification, storage, and disposal processes of general industrial solid waste. The responsibilities of supervisors are clearly defined to further ensure the compliance of waste disposal.

<p>General solid waste</p> <ul style="list-style-type: none"> Built storage yards based on the requirements for preventing flooding, leakage, and scattering; Entrusted a qualified third-party company for recycling; Partially recycled waste produced. 	<p>Hazardous waste</p> <ul style="list-style-type: none"> Set up hazardous waste temporary storage sites; Entrusted a qualified third-party company for centralized disposal; Strictly implemented the five-level duplicated form management system to ensure that the transfer of hazardous waste is traceable.
---	--

Solid Waste Disposal Initiatives

During the reporting period, GCL Group's solid waste disposal is as follows:

Non-hazardous waste	Non-hazardous waste disposal intensity	Hazardous waste	Hazardous waste disposal intensity
1,094,791.71 t	0.21 T/RMB 10,000 revenue	68,240.01 t	0.01 T/RMB 10,000 revenue

Creating Zero-Carbon Offices

As a fervent proponent, communicator, and implementer of energy conservation and carbon reduction initiatives, GCL Group leverages its strengths across everyday operations to create a zero-carbon environment. Specifically, we augmented the utilization of renewable energy to optimize our energy consumption structure, vigorously championed green office practices to advocate for a green lifestyle and conducted environmental protection education to improve employees' green and low-carbon awareness. Furthermore, the GCL Energy Center has become Suzhou's first corporate headquarters with authoritative carbon neutrality certification which demonstrates our success in carbon neutrality practices. Our pioneering efforts set a good example for the industry.

Suzhou's first zero-carbon headquarters - GCL Energy Center received carbon neutrality certification

"GCL Group headquarters park—known as the GCL Energy Center—operates entirely on green electricity. The PV system, natural gas co-generation of heat system, and wind system collectively contribute more than 50% of the park's power consumption. At the same time, the ground source heat pump system, storage system, and intelligent LED system jointly reduce carbon emissions. The two aspects contribute to 100% carbon neutrality within the park."

GCL Group achieved 100% carbon neutrality in early 2023, thanks to the specific measures of a "six-in-one" new energy microgrid, internationally certified carbon asset transactions, and a traceable blockchain carbon asset emission data platform. Across the park, rooftops, carport roofs, and lake surface are equipped with PV and perovskite modules with a collective power capacity exceeding 500 kilowatts. Additionally, the park houses a ground source heat pump system, which comprises 800 heat exchange tubes, located beneath the lake. This system yields an annual electrical savings of roughly 3.6 million KWh. Rounding out the park's green initiatives is an intelligently controlled 200 KWh energy storage system and energy-efficient LED lighting. These elements are widespread throughout the park, reducing building power consumption by more than 60%.

The annual carbon emissions of office buildings in the GCL Energy Center were only

3,869 tons

CO₂ emissions per square meter was only about

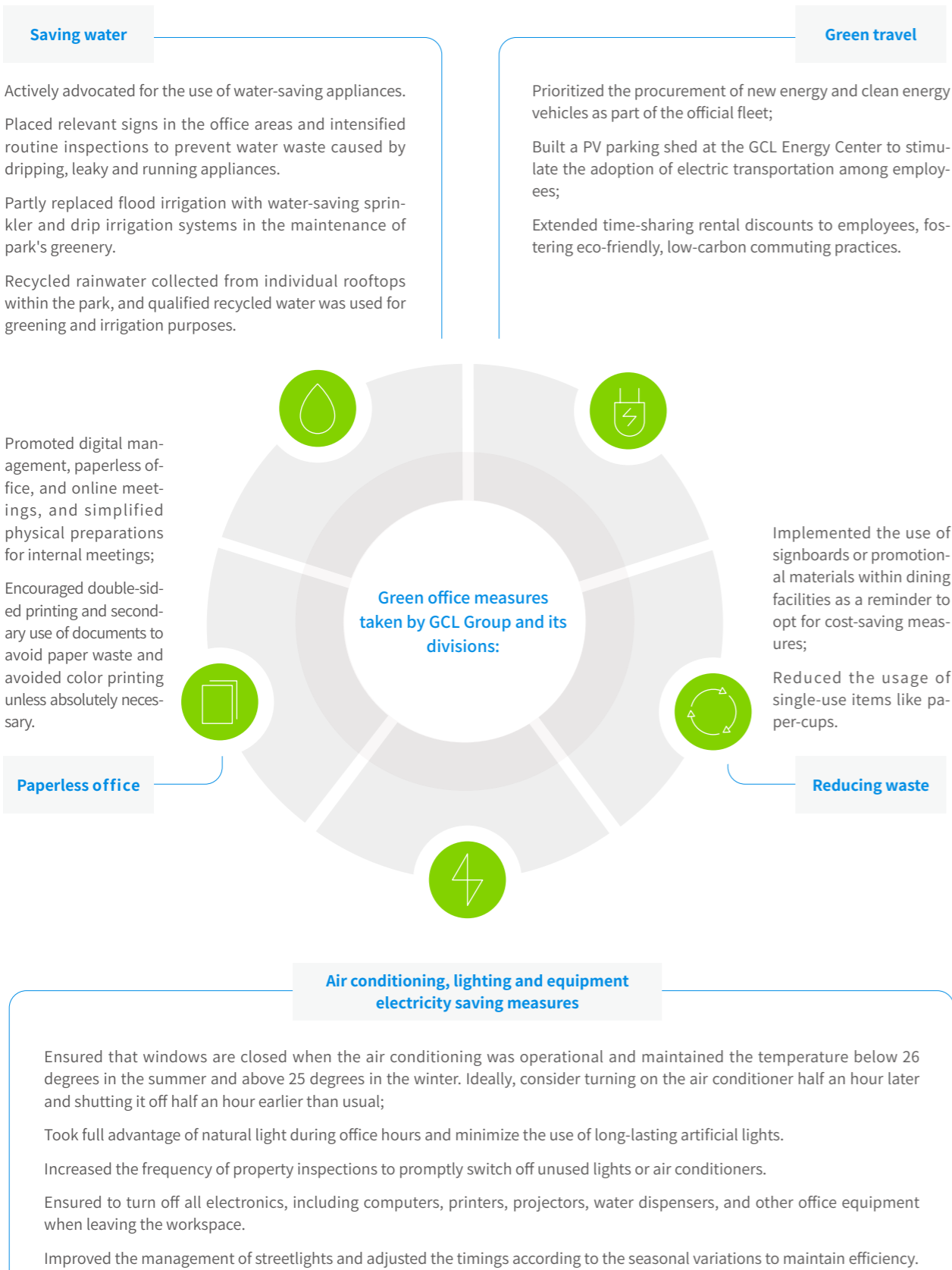
40 kg

much lower than that of similar buildings



GCL Energy Center





Cultivating an Environmental Conservation Culture

We are dedicated to unraveling a vast range of environmental conservation initiatives that aim to disseminate knowledge about environmental protection, strengthen employees' environmental consciousness, and inspire the entire workforce to foster a green, low-carbon corporate culture. Over the reporting period, GCL Group implemented a myriad of environmental conservation training across several themes and formats. Over the reporting period, GCL Group implemented a myriad of environmental conservation training across several themes and formats. In 2022, environmental conservation trainings amassed 13,684.5 hours in total, covering 20,779 individuals.

Jiangsu Zhongneng — "Me and Environment" World Environment Day Campaign



Billboards that spread environmental protection knowledge

Jiangsu Zhongneng organized a two-day "Me and Environment" campaign to celebrate the World Environment Day. Activities include planting low-carbon trees, making a green commitment, award-winning quiz on environmental protection, distributing environmental protection themed bags, etc. Event reports were released via the company's electronic display system, WeChat, Lanxin and other media platforms to increase publicity coverage and participation.

GCL TECH — "Planting Your Green Energy" Internet Arbor Day Campaign



活动宣传海报

On the eve of Arbor Day on March 12, 2022, GCL TECH initiated an online event dubbed "Planting Your Green Energy". The event attracted 615 participants, of which 222 partook in low-carbon energy competition, reducing 834,562.65 kg of emissions in total, and 182 employees "planted" 2,570 trees online.

Digitalization

—Beyond Empowerment, it Enables Connection and Reconstruction

Opportunities and Challenges: Digital Revolution Drives Market Change

The energy industry is ushering in a "digital energy" era marked by a deep fusion of digital and energy aspects. This transition introduces AI, big data, and the Internet of Things as innovative intersections of power electronics and digital technology. Central to this digital drive are the three core cornerstones of AI: data, computing power, and algorithms. The transition is digitalizing physical processes from energy production to sales, including source management, grid management, load management, storage management, and computing. Managing watts with bits, this approach realizes digitalization and intelligent control over the entire energy industry spectrum, greatly increasing energy production, operation & maintenance, and utilization efficiency. Digital energy is expected to fundamentally change energy supply and demand models, and industry structure in the future.

Beyond its profound influence across diverse sectors, digital technology is propelling corporate transformation and innovation at an unparalleled pace, with digital value increasingly coming to the fore. Leveraging digital technology, enterprises now have the capacity to upgrade to intelligent production, advanced supply chains, and strategic marketing. As well, digital tools uncover hidden patterns and logic, assisting enterprises in making more efficient and precise decisions to achieve holistic transformation and upgrading.

The future is now. Digital transformation has transitioned from an option to a critical imperative for enterprises aiming to compete in the upcoming smart technology era. Indeed, digitization is a vital element in constructing a sustainable system that aligns with green, intelligent, and new energy principles.



Our Response

Riding the Wave of the Digital Economy

Digital transformation's impacts on enterprises ?

Our response and achievements

Higher production efficiency and product quality

Manufacturing digitalization: Building industry-based lighthouse factories to lead the Group's intelligent manufacturing

Comprehensively promoting intelligent manufacturing: Focusing on the integration of IT and informatization, we built industry-base lighthouse factories adopting advanced software (e.g., MES, APS, WMS, QMS), and upgraded automation hardware based on a lean analysis;

Leveraging digital measures to comprehensively improve product quality: Digital twins, DCS precise process control, intelligent quality inspection, and other digital quality control means collectively improve product quality management efficiency.

Smarter service solutions in diverse scenarios

Operation digitalization: Digital power resource coordination and strong computing power

Digital energy: We created a green energy ecosystem integrating the functions of power generation, power storage and computing. Also, we launched a PV-ESS-charging-swapping integrated cloud platform and a PV-ESS-ultra-fast-charging solution.

Intelligent operation and maintenance system: The system has been incorporated into more than 300 new energy projects with capacity totaling 10+ million kW. Another initiative is our independently developed GCLinkage operation & maintenance platform which integrates AI with management strategies.

Intelligent computing power: GCL has China's first energy intelligent computing center - GCL Intelligent Computing (Suzhou) Center.

More efficient management and smarter decisions-making

Management Digitalization: Comprehensive management digitalization evolving around business digitalization

SAP ERP-based GCL Digital Language System;

Digital Financial Management System: It integrates digital operation, smart finance, digital taxation, and smart finance, allowing performance evaluation bases on data and processes provided;

GCL Intelligent Chain" Supply Chain Management Platform: It is built based on four modules of supplier management, sourcing management, e-mall, and procurement collaboration to achieve standardized, process-based and transparent procurement.

Digital Party Building Platform: It operates on both PC and mobile terminals, enabling information sharing between the Group and party organizations at various levels, laying a digital foundation for the Group's intelligent party building.

GCL Coordination Mobile Office Platform: It offers a new digital office model that incorporates all scenarios, allows resource integration, and offers standard processes, promoting coordination across the Group.

Situation Awareness Digital Information Security System: It enhances information security through visual tools, enabling the Group to proactively ensure information security.

Our Actions

Digitalization enables GCL to have six strong pillars: business decision-making, operational decision-making, organizational performance, user service, ecological collaboration, and product innovation. By incorporating digital technology into production, operation, and management, GCL is achieving the strategic goal of creating value through digitalization.

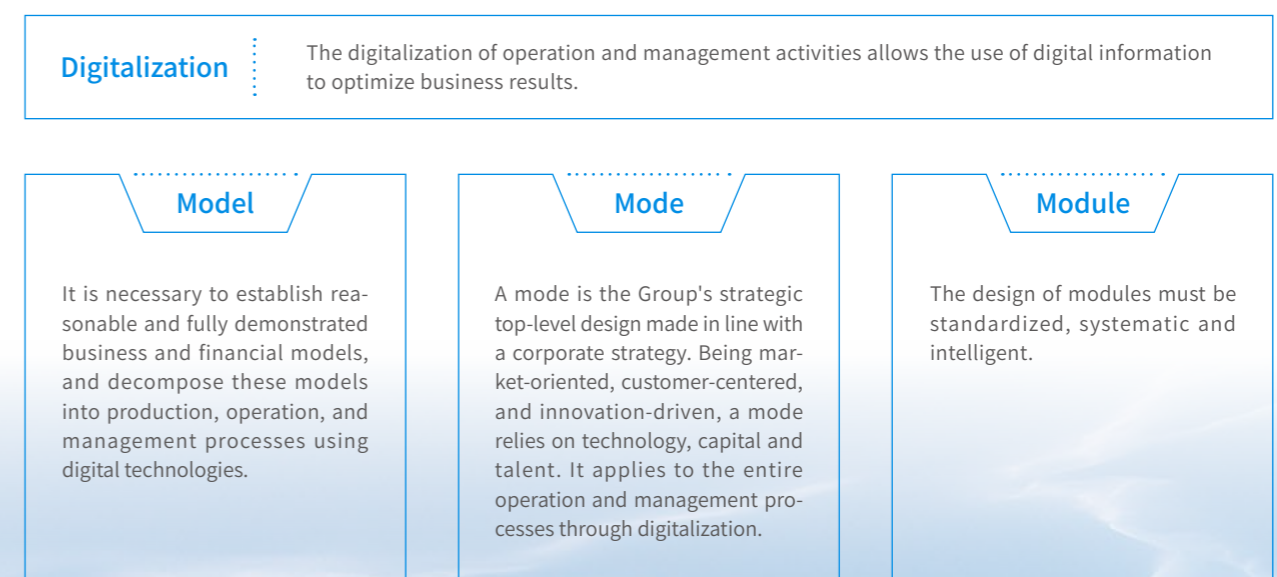
Building a Digital GCL

GCL adheres to the strategic digitalization goal of "becoming a digital powerhouse by virtue of Internet, intelligence and innovation". Based on the "3M + 1D" (Mode, Model, Module, and Digitalization) theory, we've built a "digital GCL" strategic architecture to promote overall digital transformation. Specifically, we replaced traditional information systems with a digital architecture that enhances GCL's external and internal engagement and collaboration. For instance, we integrated the processes of procurement, production, sales and finance using the SAP ERP technology; built external relationships via application platforms like the GCL Intelligent Chain, CRM, and Business Travel System; and created an interactive intelligent manufacturing system based on digital platforms such as MES, WMS, QMS, and DCS. These measures fully embody the value of digitalization.



"3M + 1D" Theory

Digital transformation represents a rebirth that every enterprise must experience. It is a test, a rite of passage that firms must successfully navigate. Mr. Zhu Gongshan, Chairman of GCL Group, has proposed a guiding framework for digital transformation in the real economy, which he calls "3M + 1D". GCL Group has embraced this theory as the backbone of its digital transformation strategy. As a result, we have successfully undergone a metaphorical phoenix's rebirth - rising anew with greater strength and vitality.



"3M" build the foundation of GCL's digital transformation



Overall Architecture of "Digital GCL"

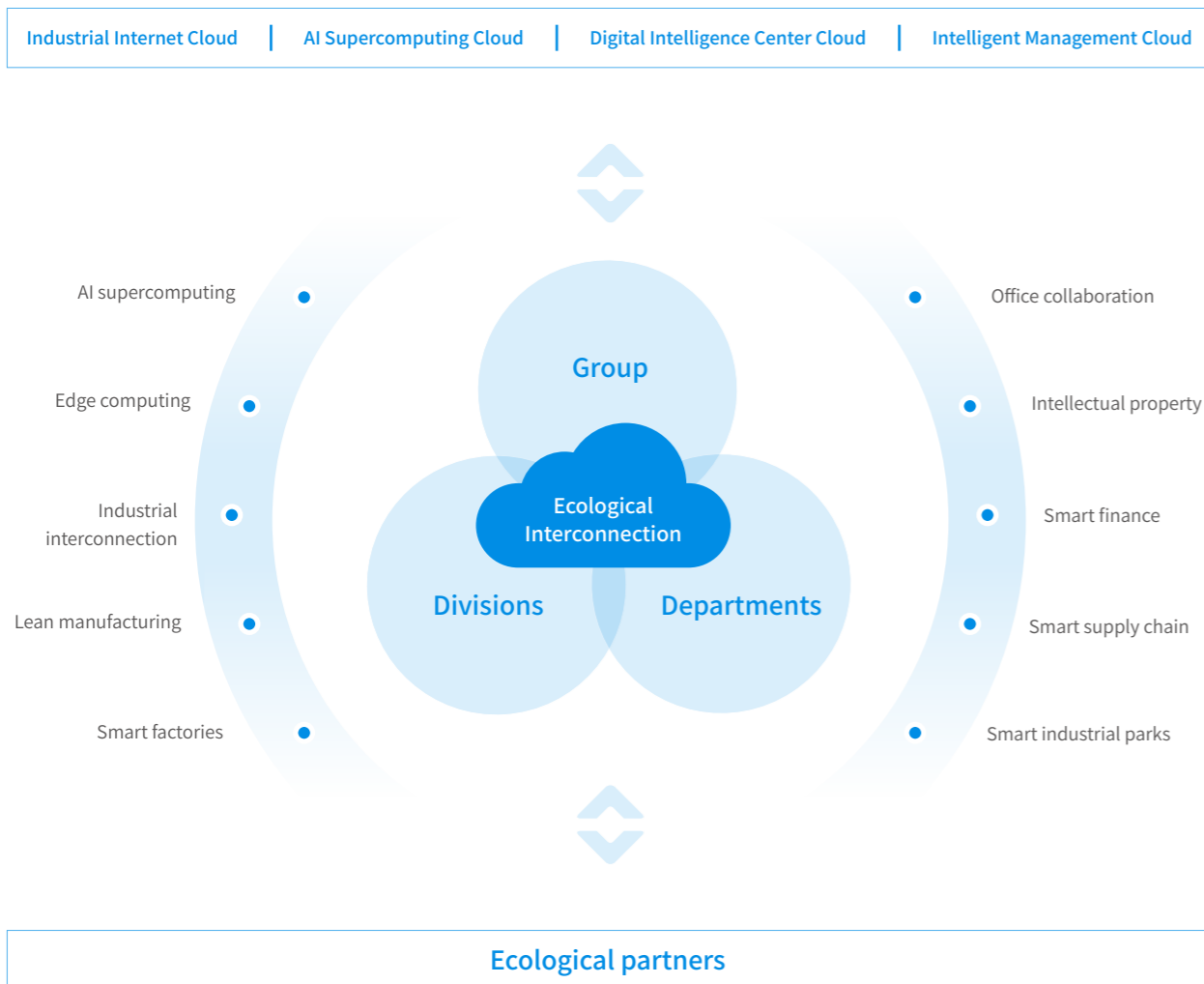
As the leader, decision supporter, and risk manager of GCL's digital transformation, the Group is responsible for the overall planning and promotion of the "Digital GCL" strategy. Detailed tasks include building a unified and standardized platform, and developing mobility, virtualization, 5G, AI and other technologies to ensure the penetration of digitalization into every aspect. The Group's divisions, business departments, and project companies are responsible for the implementation of digitalization decisions according to their specialties. This process is about incorporating digital technologies into development, operation, and maintenance to carry out their digital transformation.

During the reporting period, with the aim of standardizing digital practices across subsidiaries and enhancing project construction, management, and maintenance, GCL Group formulated a digital evaluation model. This model, which incorporates five core dimensions, 78 indicators, and 182 options, is used to evaluate the digitalization level of the Group, identifying areas needing improvement.

Digital evaluation model

78 indicators

182 options



"Digital GCL" strategic plan

Manufacturing Digitalization

GCL Group is determined to pursue manufacturing digitization. Specifically, we accelerated the construction of intelligent manufacturing and digital factories, and used data, computing power, and algorithms as the core driving force to intersect, integrate, develop, and apply production technology and digital technology. Moreover, we promoted data-based technological empowerment by virtue of digital technology, and digitized experience and skills to greatly improve manufacturing efficiency and effectiveness, optimize manufacturing process, while ensuring product quality.

Manufacturing Digitalization

Zhongneng Granular Silicon Digital Factory, Suzhou Photo voltaic Slicing Factory, and Hefei Photo voltaic Module Factory are exemplar smart manufacturing projects of GCL. Based on engineering, operational and environmental data, as well as existing production processes, we constructed mathematical models to optimize production processes and equipment operational parameters, thereby enhancing overall production efficiency and safety. It is noteworthy to mention that all core manufacturing bases of the four listed companies under GCL Group have been conferred with recognitions such as "Intelligent Workshop", "Intelligent Factory", and "Intelligent Manufacturing Demonstration Factory" at provincial level or higher.

Upgrading the MES to improve manufacturing efficiency

In 2022, GCL's Suzhou Smart Manufacturing Team led a MES iterative upgrade at factories in Suzhou, Jurong and Tuning. MES-related process, product, quality, and automation equipment data were integrated to improve manufacturing efficiency.



100%

Devices are connected

75%

The entire production process is intelligent and digitalized with a control rate of

10%

Production and maintenance costs have been reduced by

15%

Equipment failure rate has been reduced by

GCL TECH — Precisely integrating digital green elements into manufacturing

On September 7, 2022, GCL TECH had a remarkable achievement when its application for the "Jiangsu Zhongneng Polysilicon Technology Development Co., Ltd. Digital Low-Carbon FBR Granular Silicon Production Technology" was featured amongst the typical case examples of digital green. Notably, Jiangsu Zhongneng was the first representation from the PV industry on this list.

Jiangsu Zhongneng has established an industry-leading digital 5G+ industrial Internet platform which enables 3D real-world modeling, precise inspection via thermal imaging machines, remote equipment monitoring, and intelligent management. Encompassing a full range of systems related to the core areas of the chemical industry, such as the dark operation system, alarm system, process management system, closed-loop management system, equipment operation management system, intelligent monitoring system, three-dimensional panoramic view system, and immersive somatosensory control system, the platform helps ensure the safe and stable operation of granular silicon manufacturing devices.

Xuzhou Base has built an automated, intelligent FBR granular silicon manufacturing central control system. The system manages data from our R&D bases in Xuzhou, Leshan, and Baotou, ensuring comprehensive protection for our core trade secrets.



Xuzhou Base

Xuzhou Photo voltaic was selected as a smart manufacturing demonstration factory in Jiangsu Province in 2022

This silicon wafer manufacturing and R&D base, guided by a steadfast commitment to "intelligent manufacturing", continually propels industrial transformation and improvement. Intelligent upgrades have led to full automation of key production stages including machining, cleaning, wafer insertion, and testing. This strategy has consolidated and expanded crystal production, enhancing the automation in various processes such as crystal pulling and slicing. As a result, the Company has achieved notable improvements in process stability and a significant reduction in labor costs.



Silicon crystal growth and slicing intelligent manufacturing factory

Quality Management

Quality serves as the bedrock of a business and the cornerstone of its survival. The subsidiaries of GCL Group have established an industry-leading, comprehensive quality management system. By employing digital tools, escalating testing standards, and fostering an ingrained culture of quality, we have effectively safeguarded the excellence of our products.

Quality Management System

We strictly abide by the *Law of the People's Republic of China on Product Quality* and other applicable quality and safety laws, regulations, and industry standards, and has established a complete quality management system based on the characteristics of different products to continuously improve product quality.

GCL TECH	GCL S.I.	Xinhua Semiconductor
<ul style="list-style-type: none"> Improved quality management: The company has built a systematic multi-layer quality management framework, and its 9 subsidiaries have obtained the ISO 9001 quality management system certification; Product recall management: In 2022, no products sold or shipped were recalled due to safety or health reasons; Greatly increased FBR granular silicon quality: The product's total metal impurity content is less than 0.5 ppbw⁵ and the product proportion has exceeded 70%. <p>0.5 ppbw The product's total metal impurity content is less than</p>	<ul style="list-style-type: none"> Comprehensive quality management system: The system covers the six facets of supplier incoming material control, measurement management, reliability management, shipment management, process control, and customer quality management, and controls 52 testing procedures to ensure product delivery quality. Major factories have obtained the ISO 9001 certification and other international quality management system certifications; Excellent quality assurance: The company implemented the quality goals of 12-year limited product warranty and 25/30-year limited peak power warranty; Product recall management: Each genuine component is equipped with a unique product certification QR code to prevent counterfeit and inferior products from entering the market. The Product Recall Control Procedure has been formulated to strengthen product traceability management. There were no product recalls in 2022 . 	<ul style="list-style-type: none"> Quality management system: The company has established a comprehensive quality and reliability assurance system to ensure product quality in every process from R&D to mass production. The system covers the processes of product planning, product realization, performance monitoring, and continuous improvement; Quality management system certification: The company is the first Chinese electronic-grade polysilicon manufacturer with the IATF 16949 quality management system certification. In 2022, the company achieved a 100% yield rate of premium products, and met the standards outlined by 18 key performance indicators common among the world's leading companies. <p>100% The company achieved a yield rate of premium products</p>

Main Quality Control Measures Taken by Manufacturing-Related Divisions

⁵ Customer feedback and internal data indicate that granular silicon with a total metal impurity content <1 ppbw can fully meet the production requirements of N-type silicon wafers. This is consistent with the data disclosed in GCL TECH's 2023 interim report.

Quality Management Digitalization

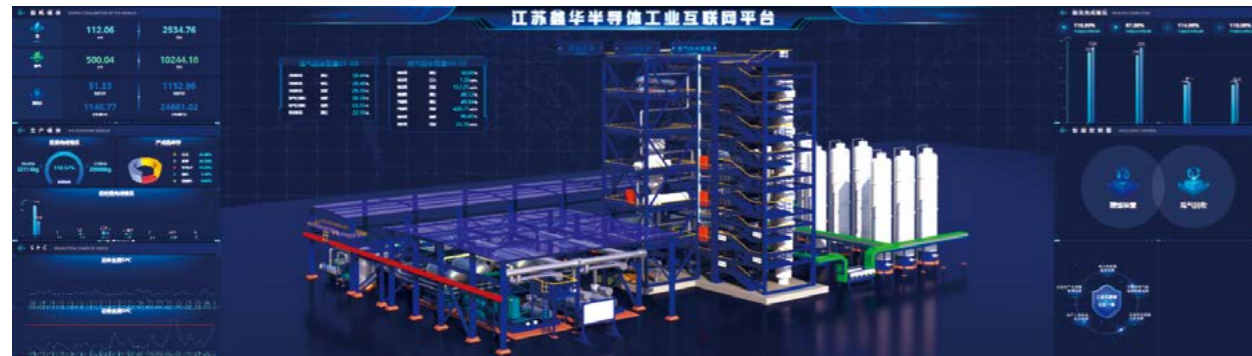
Digital technologies have revolutionized quality management processes in the manufacturing sector. Subsidiaries of GCL Group have seamlessly incorporated digitalization into quality management protocols. Leaning on sophisticated digital platforms and systems, they have enhanced management efficiency and streamlined procedures, which drive the output of high-quality products.

Xinhua Semiconductor — Digitalization outcomes are recognized by national lists

In December 2022, Xinhua Semiconductor's "Digital Twin Factory Construction" and "Advanced Process Control" techniques were listed as exceptional cases in national intelligent manufacturing demonstration factories, reflecting its excellence in digital and intelligent construction. Xinhua Semiconductor has played an instrumental role in stimulating the digital transformation of process-oriented chemical companies throughout the country, underpinned by their venture into intelligent manufacturing.

The process of producing high-purity electronic-grade polysilicon is marked by strong continuity, necessitating precise control of numerous variables. With challenging management and scheduling, high costs linked to experimental trials, and stringent requirements for the company's comprehensive management and control systems, the task at hand is undoubtedly demanding. To address these challenges, Xinhua Semiconductor has adopted the overarching framework of a digital twin smart factory along with an information system model that marries the virtual and the real. By doing so, they've fostered a smart factory operation system that facilitates thorough perception, equipment interconnectivity, digital amalgamation, and predictive intelligence. Visual presentations offer realistic effects of the process while the digital twin design provides a model for data analysis and application. It presents decision makers at various levels with an effective solution to shortcomings in intelligent decision-making within the management and control systems.

Focusing on process control, Xinhua Semiconductor employs artificial intelligence algorithms to forecast the feed of TCS and hydrogen, and their corresponding current values. These predictions are then assigned to specific points within the system, thereby contributing to the reduction furnace's control mechanism. The algorithm self-optimizes through detailed analysis of the gathered big data to continuously optimize operational strategies, thereby increasing the production efficiency of the reduction furnace, while reducing the furnace's overall energy consumption. This greatly streamlines digital management in polysilicon manufacturing, contributing significantly to cost-efficiency and overall productivity improvements.



Xinhua Semiconductor Industrial Internet Platform

Continuous Quality Improvement

Underpinned by an improved quality management system, subsidiaries of GCL Group continued to uplift product quality through diverse means, such as fortifying testing capabilities, conducting quality training, and bolstering supplier quality management. In 2022, the GCL Integrated Photo voltaic Testing Center passed the "National Accredited Laboratory" re-evaluation by the China National Accreditation Service for Conformity Assessment (CNAS), as well as the annual audits by TUV, CSA and other authoritative certification organizations. Besides, the Xinhua Semiconductor Testing Center's laboratory obtained the CNAS certification. This leading-grade testing competence fortifies the company's foothold in product development while providing robust assurance of quality.

During the report period, Zhu Gongshan, Chairman of GCL Group, proposed the inclusion of "Employee Dedication and Quality Control" in corporate culture. For this purpose, a series of activities were conducted across the Group to improve the quality awareness of employees.

GCL S.I. established a QCC⁶ project improvement team to improve product yield

In 2022, GCL S.I. established a QCC project improvement team to work with equipment, process, and production teams to work out how to improve product yield. Through employee training, version replacement, equipment upgrading, equipment parameter adjustment and other measures, they successfully increased the yield rate of modules ordered from 99.50% to 99.70%.

99.70%

They successfully increased the yield rate of modules ordered from 99.50% to 99.70%.



On-site research on improving product yield

Xinhua Semiconductor Testing Center's laboratory obtained the CNAS certification, ensuring product quality with accurate testing

Established in 2018, the Xinhua Semiconductor Testing Center specializes in the monitoring of trace impurities in high-purity silicon and other pure materials. The center is equipped with industry-leading machinery and instruments, with 95% of the technical talent holding over a decade of testing experience. In early 2023, the center obtained the laboratory accreditation certificate awarded by CNAS, which made it one of the few polysilicon manufacturing companies in the high-purity electronics-grade category to achieve this certification. This milestone signifies that the advanced testing capabilities, superior hardware facilities, and sound management practices of Xinhua Semiconductor have gained global recognition, making it an industry leader.



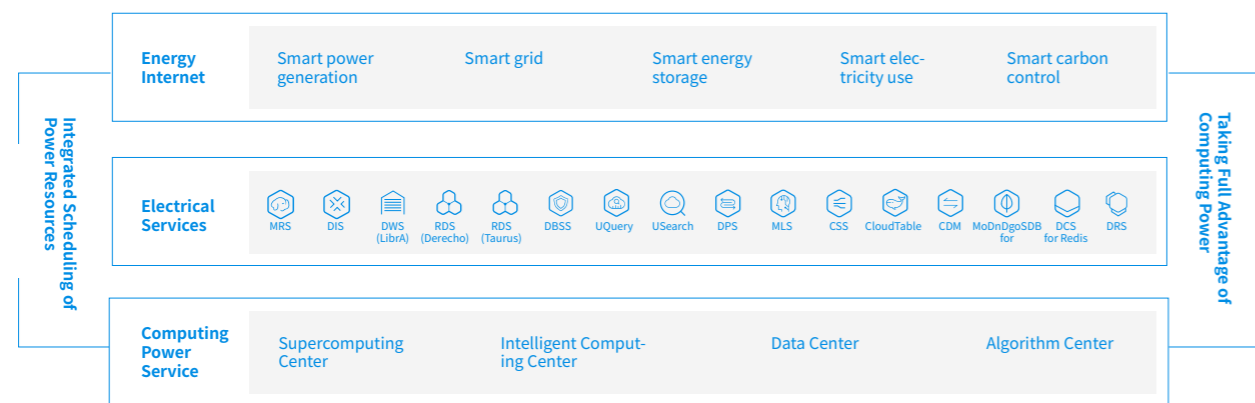
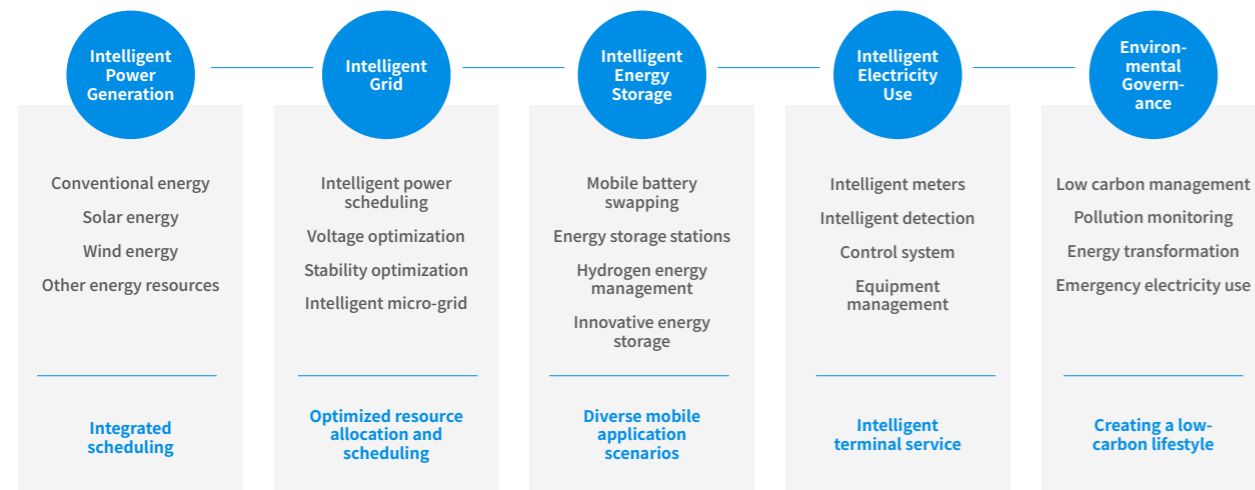
Laboratory personnel in the testing center

⁶ QCC: "Quality Control Circles" 的缩写, 译为“品管圈”即质量控制圈。

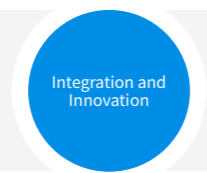
Business Digitalization

Committed to harnessing the power of digital technology, GCL Group actively fosters its incorporation into traditional business paradigms while continually broadening its application across multiple scenarios. Under the "integration of wind power, PV power, energy storage, hydrogen energy, and charging services" and "source-grid-load-storage network" strategies, we've made strides in developing data management, battery charging and swapping, and energy storage solutions. These initiatives enabled GCL's business transformation from a conventional model to a more innovative, digital business scheme, while facilitating digitalization in the larger energy sector.

GCL, bringing green energy into life



Technology-Driven Low-Carbon Transformation
Industrial silicon, granular silicon, energy storage materials, semiconductors, oil and gas, etc.



Digitalization-Empowered Innovation
Supercomputing center, intelligent manufacturing, big data, intelligent operation, etc.

Digital energy

Leveraging its distinctive strengths in areas like green energy, intelligent computing, and power sales, GCL is proactively constructing an integrated green energy ecosystem. The "power + storage + computing" paradigm organically weaves together electrical power and computational ability to establish a novel productivity model. Positioning energy storage at the core of its activities, GCL concentrates on grid-side, industrial, commercial, and mobile distributed energy storage solutions. Further, we are extensively diversifying into the supercharging space, offering users comprehensive solutions that encompass PV, ESS, charging and swapping, contributing to a promising future of digital energy.

PV-ESS-charging-swapping integrated cloud platform

The platform combines superior intelligent operation with automated operation and maintenance mechanisms. By incorporating a two-tier monitoring and dispatching center within the headquarters, it is designed to fully promote the intelligent, unmanned operation of solar energy storage, battery charging, and battery swapping. Utilizing multi-station collaboration and multi-energy complementary technologies, the platform is committed to optimizing power usage and reducing initial investment.

Its core business encompasses myriad layers including cargo logistics, vehicle flow, human movement, capital flow, energy flow, and information flow. Driven by nine major strategic advantages, the platform offers an easier approach to intelligent energy replenishment. It has the capability to manage battery lifespan accurately, bolster energy efficiency effectively, and successfully balance power usage during peak and off-peak times in virtual power plants. It has yielded efficient operations in various fields such as financial asset management, vehicle dispatching services, and intelligent operation management — all accomplished without the need for human attendance.

It's integrated charging and swapping system allows intelligent switching between high-power charging and battery swapping seamlessly. This intelligent switching provides an efficient solution for power management, catering to the diverse requirements of high-power charging.

PV-ESS-ultra-fast-charging integrated solution

The integration PV, ESS, and ultra-fast charging presents a cutting-edge technical solution. Through installed PV and perovskite modules on the roofs, carports, and other spots within integrated energy stations, sunlight is effectively converted into energy, providing extra power for charging stations, which results in significant savings on electrical expenses. To maximize energy conversion efficiency, the solution employs a DC coupling design to connect the storage system with the charging system. The application of liquid-cooled ultra-fast terminal technology optimizes the benefits of the charging operation. Throughout the charging process, both solar power and green electricity serve as energy sources, blending seamlessly with practical usage situations. This enables the coordination among renewable energy, energy storage, and smart charging, creating a new value-driven model for energy utilization.

Energy Storage Solutions

GCL centers its efforts on electrochemical energy storage technology, with lithium iron phosphate serving as the fundamental component. Our independently developed Energy Management Systems (EMS), Battery Management Systems (BMS), and energy storage cloud platform cater to individual household needs as well as industrial and commercial energy storage requirements across a spectrum of scales and use-cases.

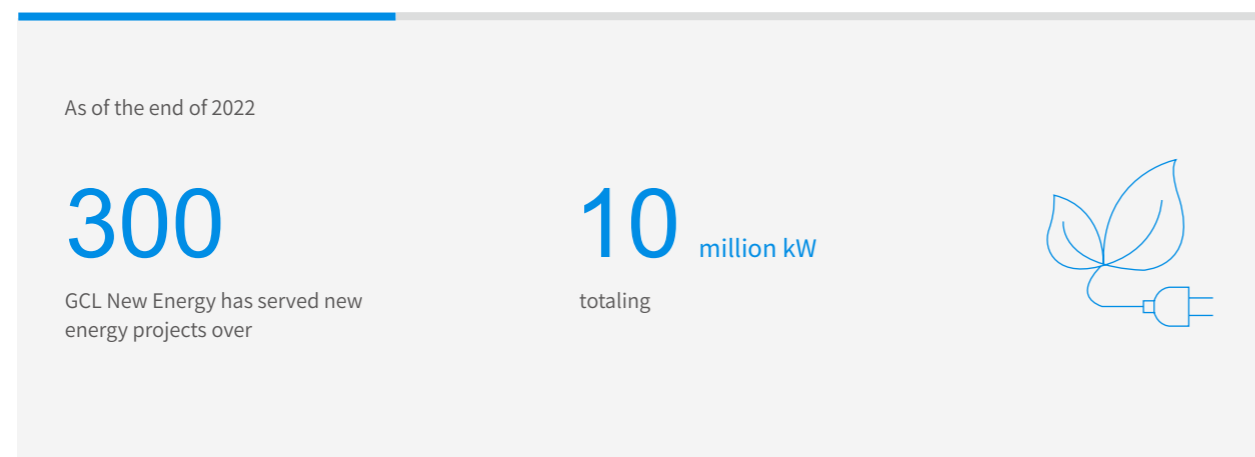


GCL energy storage products

Digital and Intelligent Operation of PV Power Stations

GCL New Energy positions itself as the most professional, potential, and competitive "data + management" service provider in the comprehensive energy sector, relying on incorporating the "IoT + Big Data" technology into management service and data service. With a robust foundation in high-quality operations and maintenance services, GCL New Energy has served over 300 new energy projects totaling 10 million kW across 27 provinces, municipalities, and autonomous regions nationwide. Besides, harnessing vast amounts of data, the company has established varied data analysis models and constructed a new energy intelligent big data analysis system.

GCL New Energy has introduced two key brands: the GCLinkage intelligent operation and maintenance platform and a cloud service app, both protected by independent intellectual property rights. The GCLinkage platform masterfully fuses industrial electric supervisory control and data acquisition (SCADA) technology with Internet big data (Hadoop) technology. It encapsulates the harmonization of operational management ideas with AI concepts, connecting isolated power stations onto a unified network and ushering new energy stations from closed to open systems. In doing so, it profoundly transforms the conventional new energy station operation model, constructing a fresh business paradigm powered by smart and efficient operations.



The GCLinkage platform transcends spatial limitations, encapsulating an extensive range of resources such as wind, solar, and storage. It signifies a strategic shift from traditional management methods towards digital intelligence.

Intelligent Computing Power

In the digital economy era, with the relentless progression of energy technology, energy and computational power have become interdependent pillars often termed as "twin stars". Fully committed to integrating energy and computing, GCL Group has confidently embarked upon the fresh trajectory of digital energy computing. On August 27, 2023, the first phase of China's first-ever energy-efficient computing center, the GCL Intelligent Computing (Suzhou) Center, commenced operations. This center is committed to large-scale model training, and exploring applications within smart energy, zero-carbon transportation, and super factories in the energy sector, playing an important role in fostering progress in the industry.



The GCL Intelligent Computing Center, situated in Suzhou, represents one of the largest new digital infrastructure projects in the region. Capitalizing on NVIDIA's software and hardware capabilities, it has successfully constructed a potent AI cluster.

Management Digitalization

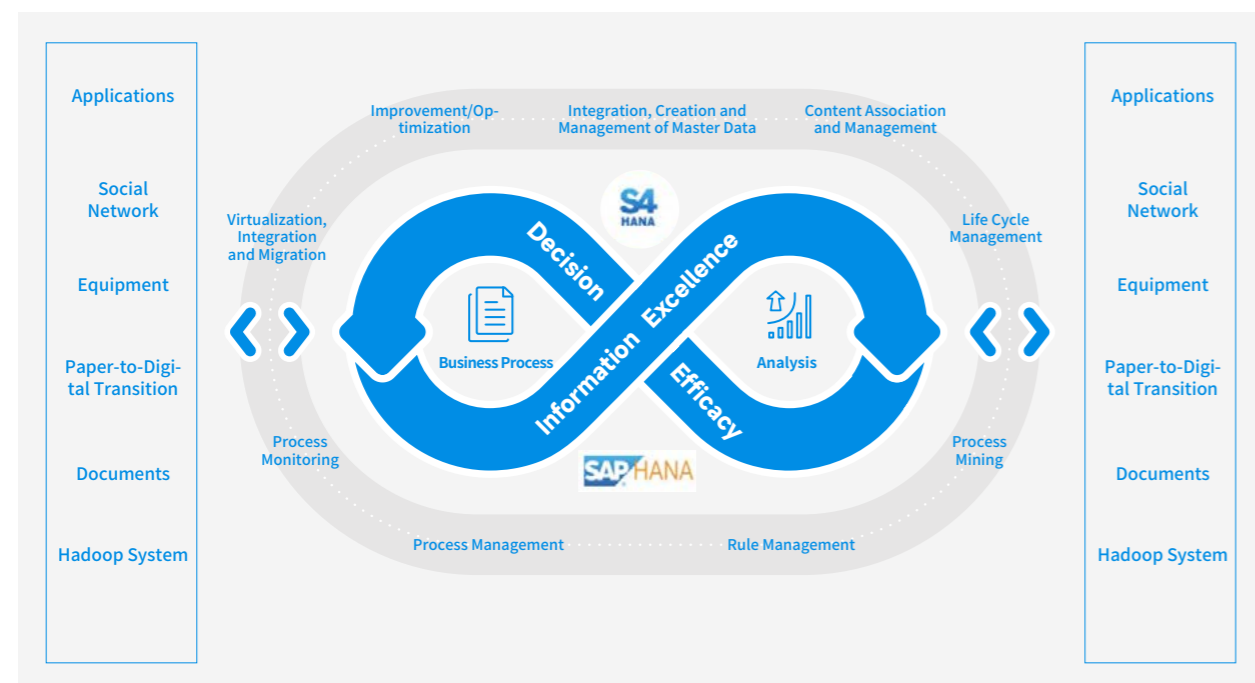
Advocating a business-centric approach, GCL posits that business is the ultimate user and owner of the entire system. Throughout the digitalization journey, we have consistently reinforced our contemplating of business digitalization. Harnessing the power of digital management, we organized and delved into management needs, reimagined organizational structures, enhanced management processes, and heightened financial control and human capital management. This systematic reconstruction elevates our management capabilities and allows us to build new competitive advantages, thereby fostering fresh developmental momentum.

"SAP + " Rock Financial Management Platform

Based on the SAP ERP system, GCL Group has created a financial management system that integrates digital operation, smart finance, digital taxation, and smart finance, allowing performance evaluation based on data and processes provided. Relying on both internal and external resources, the platform manages business across all processes, while promoting coordinated management across the Group, enabling more effective management.

"SAP+" Rock Application: Building a rock-solid base for unified digital language

The SAP ERP system effectively leverages digital technologies such as big data, AI-enabled Robotic Process Automation (RPA), and mobile solutions to infuse business processes with advanced intelligence and integrated management capabilities. This plays a crucial role in enhancing the efficiency and efficacy of business operations, cost forecasting and management, and risk mitigation efforts. By integrating business and financial data in real-time, it achieves a comprehensive synergy of personnel, finance, materials, supply, production, and sales. Moreover, the system aids in visualizing and tracking business data, enabling dynamic coordination. This dual approach significantly diminishes costs and bolsters operational efficiency.



SAP Rock has been widely used to create intelligent business processes and realize system interconnection

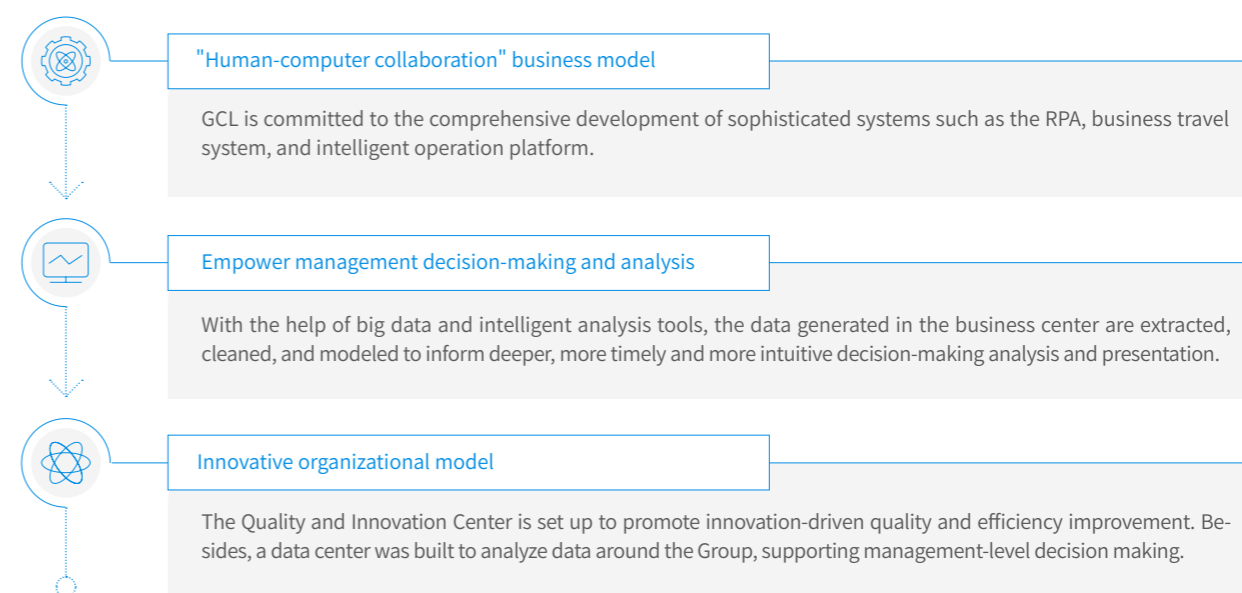
During the reporting period, the Rock Platform was steadily promoted to guarantee on-time incorporation of all new project systems, supporting swift business expansion. To preclude system isolation, the Rock project team strengthened efforts to encourage system integration, so as to integrate the SAP system into the management of new projects. They accelerated the integration of various systems such as MES and WMS, to ensure data verification across these systems and guarantee that information is timeous and reliable. By the end of 2022, all manufacturing and operational enterprises under both GCL TECH and GCL-ET had adopted the SAP system.

Integrated Financial Management System

Smart Financial Sharing

GCL Group is committed to the comprehensive development of sophisticated systems such as the RPA, business travel system, and intelligent operation platform, to improve financial automation and digitalization, fostering a new business model driven by human-computer collaboration. The model significantly enhances team efficiency and enables the transformation of financial personnel. Furthermore, by virtue of big data and intelligent analysis tools, it empowers management decision-making processes and analysis, and bolsters the penetration management, operational analysis, and business-finance integration capabilities of the financial team. All these aspects combine to support the transformation and development of various divisions within the Group.

During the reporting period, GCL Group continued its exploration of digital technology applications. Utilizing the latest digital innovations, such as IoT, RPA, and big data, the Group promoted the SAP ERP and its business travel platform, and further incorporated business elements into its comprehensive budgeting system. Through the employment of financial robots and OCR, the process intelligence level has seen marked improvement. What's more, the mobile business travel cloud platform allows us to implement a "one-stop procurement + corporate payment + cost control" management model, ensuring data traceability and targeted optimization of supply chain operations. What's more, by deploying the GCL Finance System, we have taken strides towards digitizing capital analysis, hence enabling a deep exploration of digital value to empower businesses and boost efficiency.



The "human-computer collaboration" new financial management model empowers management decision-making and analysis, and promotes innovation in organizational management models

Comprehensive Budget Management System

GCL Group has established a comprehensive budget management platform in line with its strategic plan, business models, management and control models, and digitalization plan. Through this inclusive budget system, we have achieved eight primary goals: value guidance, execution of responsibilities, portfolio optimization, resource allocation, establishing closed loops, risk prevention, decision support, and data standardization. The platform harmonizes understandings across business and financial management, offering vertical integration throughout the Group as well as horizontal integration across functions. Also, it redefines the responsibilities of positions related to the integrated business-finance management framework. This comprehensive budget management system helps improve resource efficiency, boost corporate operational results, and achieve the goal of improving core competitiveness at lower costs and higher efficiency—all key to ensuring the accomplishment of corporate strategic goals.

The system stemmed from a nuanced understanding and review of the Group's strategic plan, business models, management and control models, key management aspects related to the comprehensive budget, and the status of the digital platform. Post this comprehensive review, we were able to outline the direction and focus of the comprehensive budget management project and its subsequent development.

	<p>Strategic Plan</p> <p>Created in response to the Group's strategic requirements, the plan discusses how strategic goals guide the Group's intensive business activities, market-oriented operations, and lean management;</p>
	<p>Business Model</p> <p>Under the Strategic Plan, the model explores the Group's resource integration, and defines the focuses and future direction for the Group's holistic budget management;</p>
	<p>Management and Control Model</p> <p>Within the framework of the Strategic Plan, the model probes how to align the management roles, management strategies, and budget-related rights and responsibilities of the headquarters, divisions, and subsidiaries with the Group's management and control requirements;</p>
	<p>Comprehensive Budget Management Model</p> <p>The model enables the replication of best practices, and also gives suggestions on how to address key issues and problems regarding comprehensive budget management to headquarters, divisions and project companies according to the performance.</p>
	<p>Digital platform</p> <p>The platform proposes overall budget information system management plans and their execution approaches.</p>

Focuses of comprehensive budget management

Intelligent Tax Management System

Under the guidance of the "Digital GCL" strategy, GCL Group has constructed an intelligent tax management system to facilitate online automated processing of all tax-related tasks. By integrating internal and external resources, the system enables comprehensive communication with stakeholders. Through this networked platform, the transformation of tax management from a fragmented to a centralized model has been actualized, leading to optimal allocation of tax resources. Innovative technologies, including AI tools like OCR and automation robots, are driving a significant revamp of conventional tax management models. These innovations dramatically enhance our tax management efficiency while simultaneously improving our capabilities in managing and controlling tax-related risks.

"GCL Intelligent Chain" Supply Chain Management Platform

Aligning with the supply chain management improvement requirements, GCL Group has further advanced the digitization of its supply chain by introducing the GCL Intelligent Chain Platform. Rooted in the strategy of "leveraging digital technology to foster collaborative supply chain operations, establishing a visible, traceable, manageable, controllable, and preventable supply chain", the platform interlinks the relevant business and data flows across various systems. To realize "process digitization, data capitalization, and asset financialization", we created a supply chain management model, a management collaboration model, a bidding management model, and the GCL El-Mall. Also, the platform introduces modules such as the supplier management and bidding management modules which offer objective and quantitative evaluations of the quality of each supply chain operation.

In December 2022, the inaugural phase of the "GCL Intelligent Chain" Mall was triumphantly launched, integrating with established ecommerce platforms of JD.com and Zhenkunxing. The platform offers an extensive range of more than 20,000 product categories.

20,000

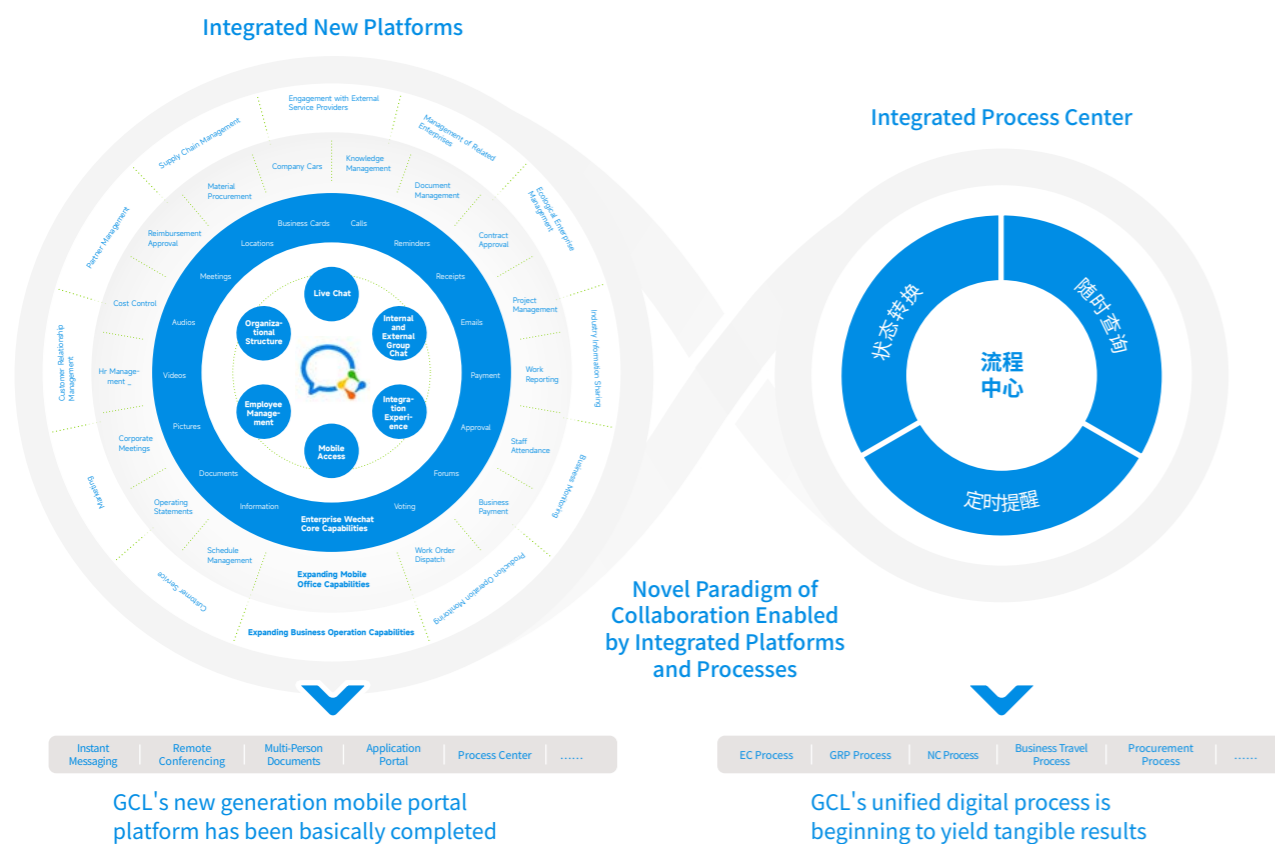
The platform offers an extensive range of product categories more than

<p>E-mall module</p> <ul style="list-style-type: none"> It realizes online procurement of standard products, further simplifies procurement activities, greatly improves work efficiency, and reduces procurement costs; It provides a foundation for realizing transparent procurement. 	<p>Supplier module</p> <ul style="list-style-type: none"> It provides a unified portal and operating platform for the Group's suppliers, with "one database, one platform, and one portal"; It achieves online visualization of a supplier's entire lifecycle, thereby enhancing the sophistication of supplier management practices.
<p>Tendering (sourcing) module</p> <ul style="list-style-type: none"> It integrates a variety of sourcing strategies such as price inquiry and comparison, procurement bidding, sales bidding, opening tendering, and negotiation tendering, all of which are accomplished online within the system; It reduces human intervention in the price comparison and bid evaluation stages, making the bid evaluation fairer and more equitable. 	<p>Collaboration module</p> <ul style="list-style-type: none"> Online collaboration in planning, delivery, reconciliation, and invoicing will be realized between the pilot company and its collaborative suppliers, and the results will be pushed back to SAP.

GCL Intelligent Chain's main modules and their designed functions

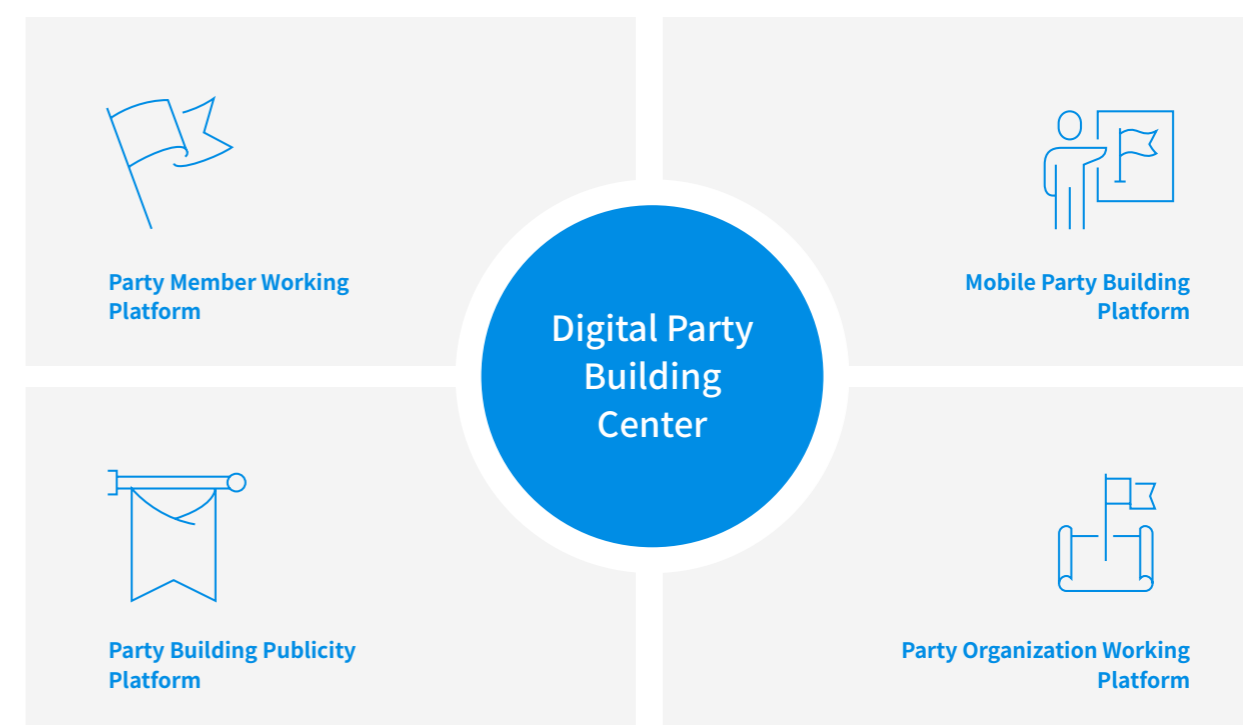
"GCL Coordination" Mobile Office Platform

In 2022, GCL Group introduced the "GCL Coordination" project, a new-generation mobile office platform built based on three major online collaborative software solutions: WeChat Business Account, Tencent Meeting, and Tencent Docs, with the goal of delivering a hyper-efficient mobile platform experience. The platform integrates 54 systems and 13 applications and unifies 17 distinct approval processes into a single application interface. It offers a comprehensive suite of capabilities, from instant and remote communication to process reviews and collaborative applications, thereby amplifying the collaboration efficiency across various offices within the Group. In doing so, it empowers new digital office models to operate effectively within every conceivable scenario, thus shaping a fresh paradigm of collaboration.



Digital Party Building Platform

To proactively answer the Party Central Committee's call for building a "Digital China", and to align fully with the Group's "Digital GCL" strategy, the GCL Group Party Committee initiated the construction of a digital party building platform that operates on both PC and mobile terminals in early 2022. GCL originally proposed the idea of "holistic lifecycle management of party organizations and all-round service and management of party members". For this end, the platform provides organizational and personal point models, and introduces a suite of digital modules including Party Affairs, Double-Training Program, and Party Building. The platform facilitates the full digitalization of the Group's party-building work, with features such as information digitization, online activity organization, quantitative point assessment, visualization of party building outcomes, and party-building publicity. This digital initiative assists the Group and party committees at various levels in bridging informational divides, enabling resource sharing, and enhancing Party organization and management capabilities. These steps allow overall leaps in growth and pave the way for a new era of comprehensive intelligent governance in Party building. The project, an industry example for digital party organization construction in group companies, has applied for multiple national patents.



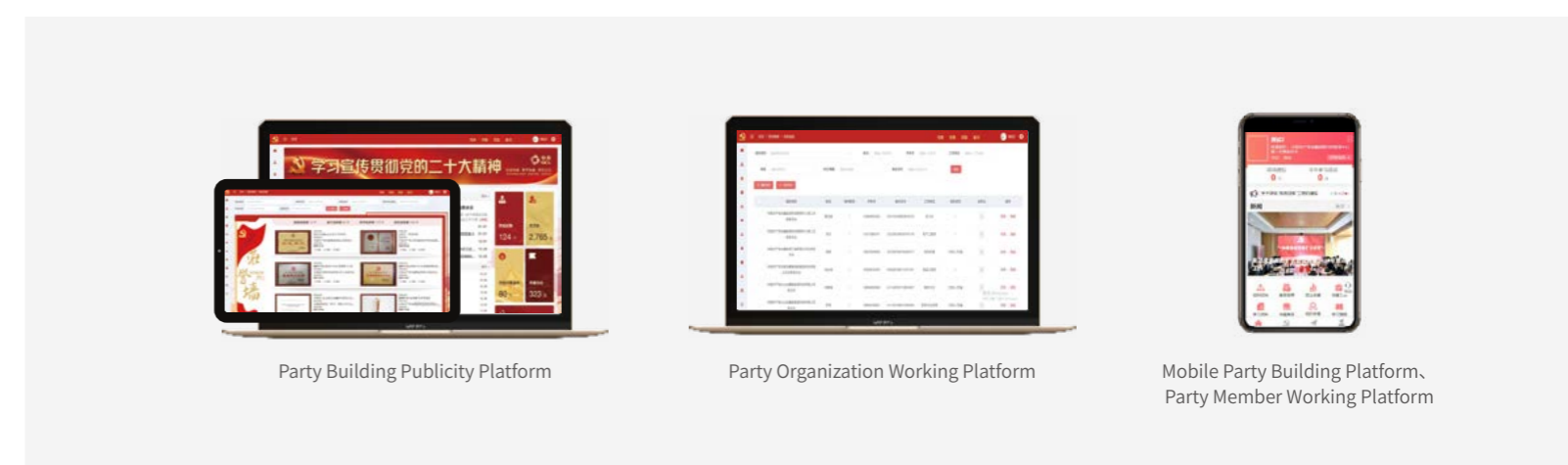
As of the end of the reporting period

30,000 + the "GCL Coordination" platform had registered users

20,000 + with daily active users

More than **15,000** meetings had been held on it

and over **25,000** documents had been uploaded onto it

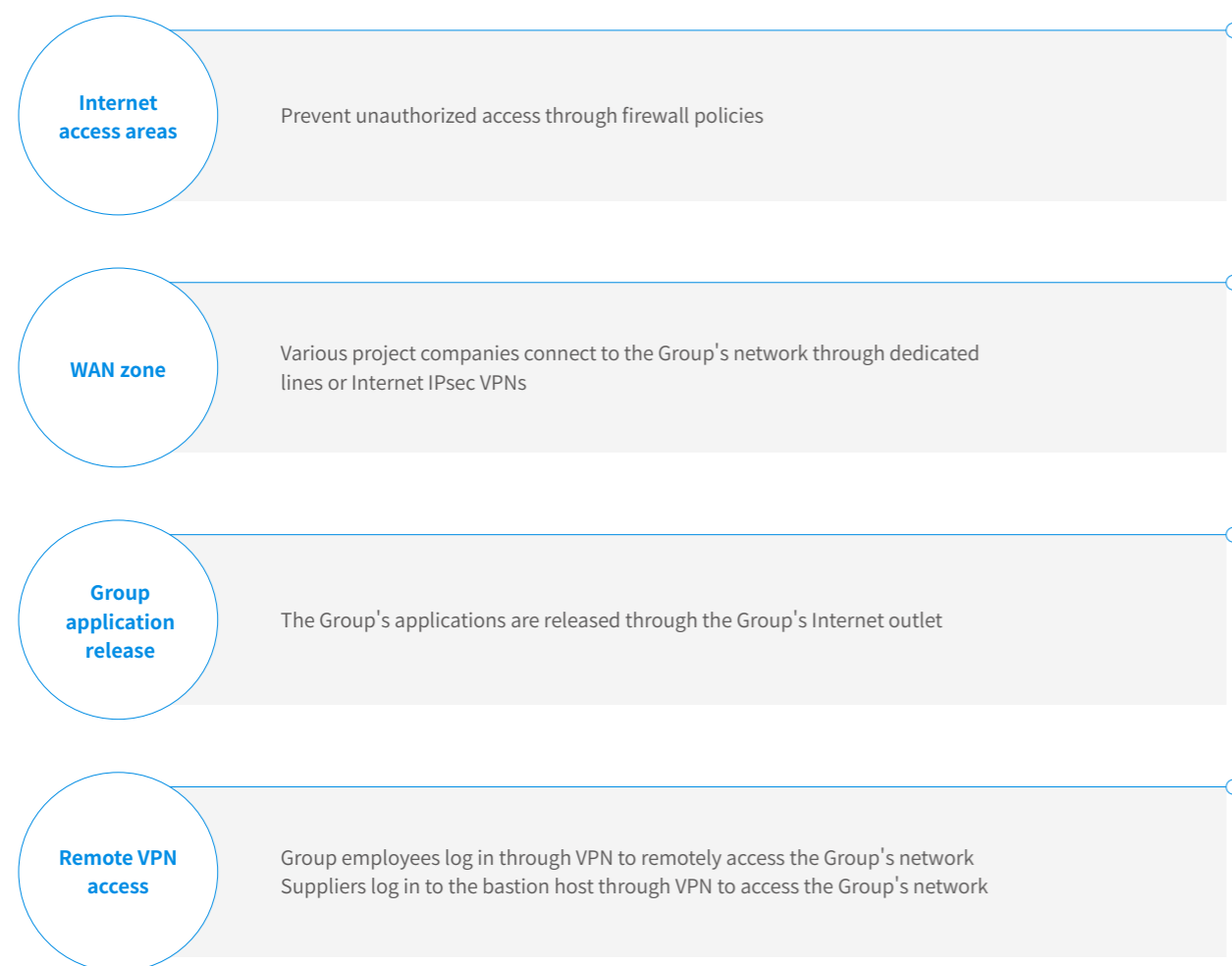


Network Security and Information Security

As the digital transformation of the Group continues to evolve, ensuring network security and safeguarding information is a crucial foundation for the seamless functionality of the Group. We remained steadfast in enhancing network security, organizational planning, and internal management systems, to holistically ensure cybersecurity, and achieve robust and controlled data collection, protection, and processing.

Unified Architecture

In line with the *Cybersecurity Law of the People's Republic of China* and other relevant laws and regulations, the Group has formulated the *GCL Group Network Construction Guide*, the *GCL Group Network System Management Standards*, and several other internal policies, with the purpose of continuously improving network construction based on a unified architecture, ensuring the Group's network security.



GCL Group's network construction is planned and designed by the Group's infrastructure team

Key Measures

The group has formulated the *Information Security Management Standards*, the *Information System Backup and Recovery Management Regulations*, the *E-Mail System Management Standards* and other internal regulations to construct a solid technical defense, comprehensively safeguarding the Group's cyber and data security across operations.

During the reporting period, GCL Group had **no** major network security and information security incidents.

Early warning mechanisms

Potential early warning and detection: We identified potential information security risks through threat intelligence perception, log analysis and other measures. Such risks were promptly reported, and countermeasures were taken.

Situation awareness platform: Given the current network conditions, we've conducted a survey regarding the construction of a situation awareness platform which is expected to be officially launched in 2023.

Prevention and control measures

Desktop management and control system: The China Unicom Terminal Security Guard desktop anti-virus and management app has been installed across the Group to protect the security of terminal operating systems.

"Zero Trust" Inspection: We carried out the "Zero Trust" Inspection on security polices and application release ports across various gateways, enhancing protective measures for access information security.

Red teaming strategy: We marked key subsidiaries with red, yellow, and green labels, and applied the red teaming strategy to them. Besides, we developed network security area isolation plans for subsidiaries like Jiangsu Zhongneng and conducted a red teaming operation to detect information security vulnerabilities, thereby amplifying their information security defense capabilities.

TopAS: Adaptive security defense system TopAS has been deployed across the Group to strengthen the virus protection capabilities of operating systems in server areas.

Emergency response

Information Security Emergency Response Committee: It's responsible for handling information security emergencies that have occurred;

Disconnect the network and activate the backup and restore system: When an information security incident occurs, disconnect the network as soon as possible, and activate the backup and restore system to fully protect business operations.

Information Security Protection Measures

Responsibility

—Aside from Corporate Growth, it's Also about Employee Development and Community Building

Opportunities and Challenges: Value Symbiosis is the Only Way to Sustainable Development

In the context of rapidly evolving global economic integration, the accelerated iteration of supply chain and industrial systems, limited environmental resources and carrying capacity, and the fusion of cultural ideologies worldwide, the role each enterprise plays within the industrial chain is becoming widely apparent. The connections between businesses have significantly tightened, rendering their continuous operation potentially more vulnerable than their counterparts operating under traditional models.

Given this context and growing pressure, a "symbiotic logic" must increasingly replace the prevailing "competitive logic". The pathway to sustainable business development lies in mutual empowerment, the co-creation of value, and shared advancement. At the heart of this symbiosis are the principles of "win-win relationships" and "coexistence". To align with these principles, an enterprise should, at least, be responsible for its stakeholders. Beyond this, it should seek value symbiosis with shareholders through coordinative value creation, creating benefits for itself, its shareholders, and the bigger society.



Our Response

Strong GCL, Well-off Employees, and Good Reputation

What actions should we take to achieve value symbiosis?

版权图

Our response and achievements

Seeking steady development

Strong GCL Thriving through economic cycles while building resilience

The third inspection team of the GCL Discipline Inspection and Supervision Center has been established

We improved the internal culture of integrity and strengthened cooperation with police to promote integrity across the Group

We had nearly
3,000
Party members as of the end of the reporting period

We won the title of "New Era Party Building + Corporate Culture Demonstration Organization"

We've invested
RMB 271.9658 million
in workplace safety

and conducted
1,504
safety emergency drills

Stimulating employees more effectively to unlock their potential

Well-off Employees Striving to ensure employees enjoy both financial prosperity and enriched spirits

We had
37,908
employees as of the end of the reporting period

Average training time per employee was
52.62 hours

We offered online and offline courses
2,100

Making better use of influence

Good Reputation Taking sustainable social development as our own responsibility

We had
3,525
suppliers as of the end of the reporting period

As of the end of 2022, GCL Sunshine Charity Foundation had donated
RMB 281 million

As of the end of 2022, student aid had amounted to
RMB 150 million

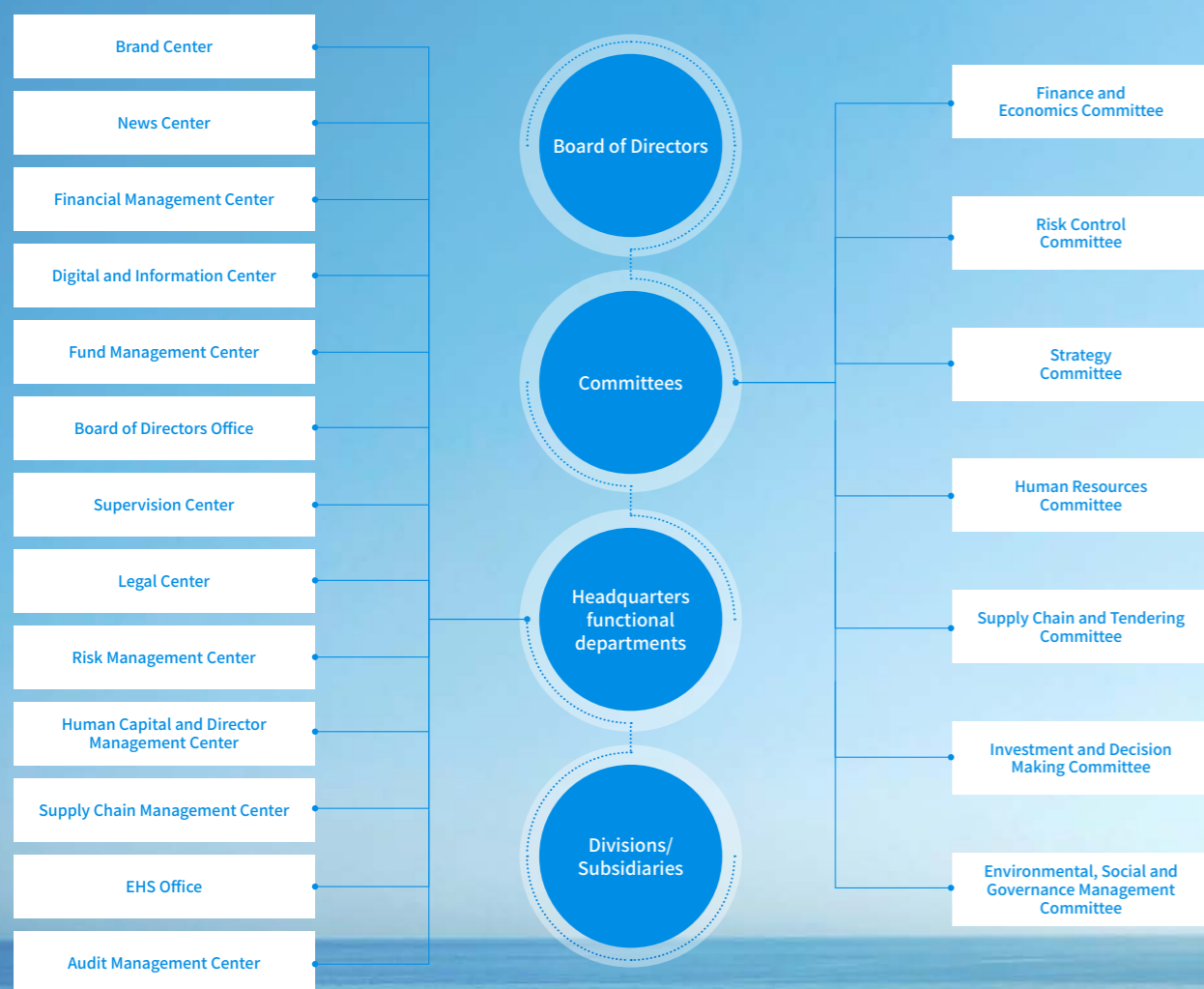
Our Actions

Strong GCL: Thriving Through Economic Cycles With Resilience

Lean Governance

Governance Structure

GCL Group's strong corporate governance serves as a guarantee for our long-term, stable development. We have engineered an elaborate corporate management structure, where the Board of Directors takes on the top-level decision-making authority. Further fortifying this structure are eight specialized management committees, which systematically steer the Group's overall growth trajectory. Such a robust setup lends sustainable strength to our business development endeavors and enhances the caliber of the Group's decision-making process.

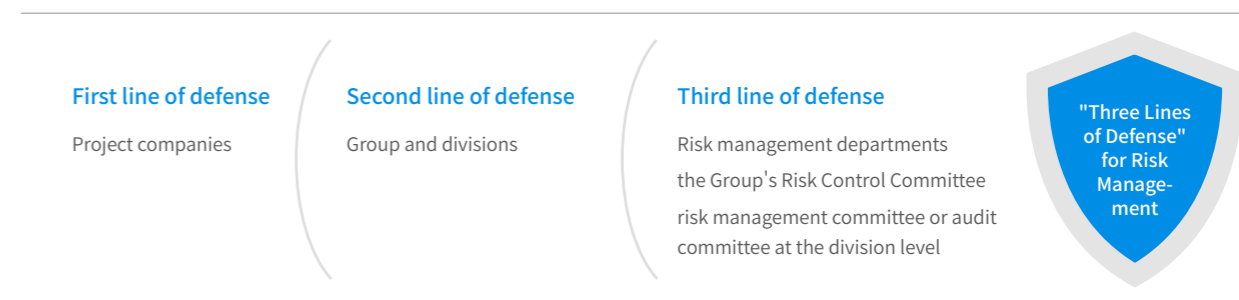


Risk and Internal Control Management

The Group continued to optimize the risk prevention and control system, enhance the risk management framework, and refine operational guidelines. We have amplified our efforts in risk control designing, spanning areas such as internal auditing, internal control, process management, authorization, and more. Furthermore, we've fortified risk mitigation strategies for key operational areas and substantial projects. These collective measures serve to bolster the execution of the "Three GCL Pillars" strategy.

Risk Management

GCL Group places significant emphasis on strategic risk management, and to this end, has developed the *Comprehensive Risk Management Guidelines*. These guidelines delineate the management responsibilities and tasks for the Group and its subsidiaries, creating an integrated "three-tier risk platform" which seamlessly blends various risk management requirements into the Group and its subsidiaries' management and operational processes. For specific implementation, both the Group and its subsidiaries construct risk management work plans, revolving around the current annual business priorities. Moreover, we've instituted a dynamic risk management operation mechanism, readily adaptable to emergent conditions. Each year, we thoroughly monitor the quality of risk management efforts within each industrial sector of the group.



During the reporting period, GCL Group has executed comprehensive risk assessment endeavors that encompass risk identification, risk evaluation, risk response (including design effectiveness evaluation), setting up risk warning indicators, and the assessment of residual risks across the headquarters and various divisions. Using the insights gleaned from these activities, we've constructed a robust risk assessment database, and applied standardized and modular management to ensure a thorough risk identification and a scientific risk assessment process. Furthermore, we devised appropriate response strategies and early warning indicators for major risks.

Internal Control

Under the guidance of the *Principles and Systems of Internal Control Management*, GCL further improved its internal control measures in line with its strategic transformation and development requirements, ensuring comprehensive and effective internal control practices. During the reporting period, we further augmented our internal control system by constructing supplementary authorization and process mechanisms, formulating and implementing the *Implementation Measures for the Key Issue Collective Decision-Making Mechanism*, and learning from Huawei's advanced process reform. Additionally, we conducted inspections, anti-corruption audits, employee effectiveness audits, and performance cross audits to further improve our management efficiency.

<h1>169</h1> <p>Review meetings on major decisions</p>	<h1>18</h1> <p>Internal control assessments</p>	<h1>1,048</h1> <p>New processes added to the annual risk control framework</p>	
--	---	--	--

Business Ethics

GCL Group steadfastly adheres to principles that promote integrity in operation, respect for business ethics, and strict compliance with all relevant laws and regulations. We implemented anti-corruption measures across divisions and subsidiaries, in a bid to build a culture of integrity that fosters a clean GCL.

Anti-corruption

GCL Group maintains a zero-tolerance policy towards corruption. We have set the "Clean GCL" benchmark and implemented an integrity efficiency assessment and accountability mechanism encompassing the entire Group. Moreover, we deployed inspection personnel and conducted rigorous inspections, and enhanced the oversight of crucial projects and steps. Our measures aimed to vehemently strike against and deter corrupt practices like embezzlement and bribery.

During the reporting period, we revised the *GCL Anti-Corruption Regulations*, among other related policies, and further polished operational rules for surveillance and case management. On April 29, 2022, we inaugurated the third inspection team under the Discipline Inspection and Supervision Center. The center actively immersed itself into the complete process of operation and management, providing real-time tracking and dynamic adjustments, solving workplace issues, and guaranteeing the Group's healthy progression.

In terms of resource integration with external organizations, the center actively engaged with the Enterprise Anti-Fraud Alliance and Trust and Integrity Enterprise Alliance. Leveraging the Internet, we collaboratively combated corruption, fraud, counterfeiting, and information security crimes, and elevated the anti-corruption management level of alliance members. By fostering a synergy of honesty and integrity, we instigated a positive circle of stalwart ethical conduct.



Enterprise-police collaboration: GCL-Suzhou Municipal Public Security Bureau Sangtian Island Police Workstation settled in GCL Neighborhood

Report Handling and Protection

GCL Group has explicitly defined the incident reporting system and handling procedure in the *GCL Anti-Corruption Regulations*. To create an all-encompassing oversight and reporting network, we have launched various reporting channels, including the "Clean GCL" WeChat public account (online complaint portal), reporting hotline, email, and traditional mail. These channels create a comprehensive reporting system that enables employees and partners jointly supervise business behavior, creating a just, fair, honesty-based business environment.

Reporting channels

E-mail

jubao@gcl-power.com

Reporting online

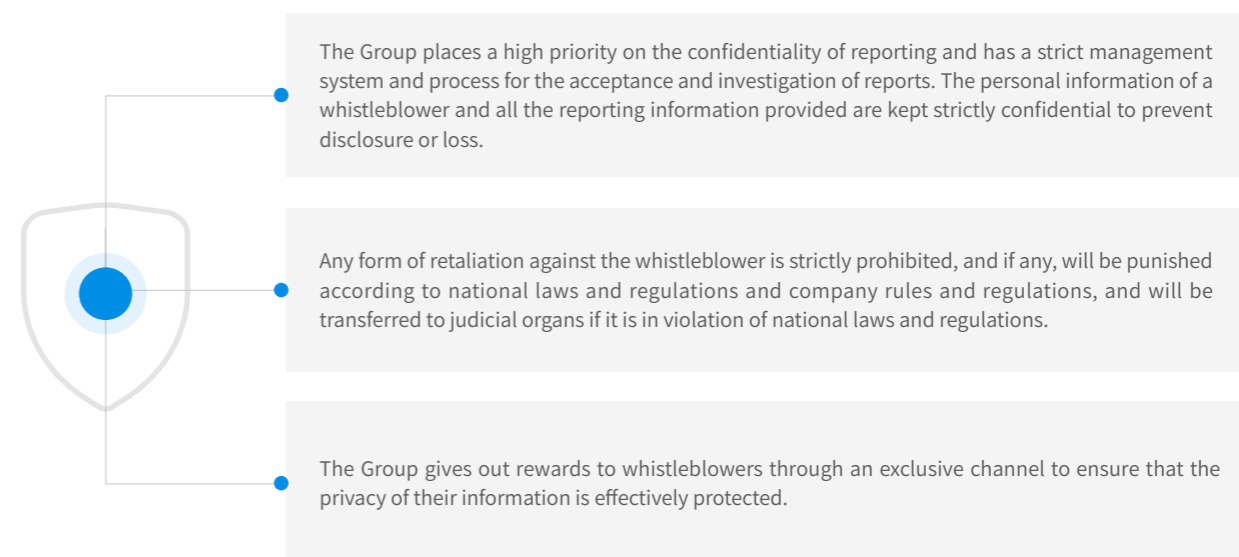




Complaint hotline

0512-68538110

We cautiously handled every report from the GCL Community, placing significant emphasis on whistleblower protection. We've formulated the *Confidentiality Management Standards* and specifically highlighted the security of whistleblowers in the *GCL Anti-Corruption Regulations*, in a bid to prevent any retaliation or prejudice against whistleblowers due to potential information leaks during named or anonymous reporting. For reports confirmed to true, we protected and rewarded whistleblowers in accordance with the *Measures for Rewards for Reporting*, so as to encourage relevant parties to jointly participate in the Group's integrity building.



GCL Group Whistleblower Protection Measures

Integrity Culture Building

GCL Group conducts a range of legal education and thematic training activities to bolster employees' integrity awareness, improving the culture of integrity across the Group. During the reporting period, we prepared a new version of training materials for 2022 and set up theme courses such as "Corporate Criminal Compliance", "Integrity Culture and GCL's Ten Commandments", and "Integrity and Compliance Training". We creatively combined courseware with widely viewed anti-corruption videos to enhance training and publicity efficacy. Additionally, we delivered nine integrity lectures and training sessions to divisions and subsidiaries in Leshan, Baotou, Nantong, and other locations.

"Clean GCL" publicity and training



GCL Leshan training session

In May 2022, the Group conducted a training session on laws, regulations, Party rules, and disciplines for newly appointed lower-level managers and key employees at Leshan GCL. During the session, topics like "Trade Secret Crime" were discussed in detail around the innovative application of granular silicon, to improve employees' intellectual property awareness.

In 2022, the Discipline Inspection and Supervision Center collaborated with the Suzhou Industrial Park Public Security Bureau, Inner Mongolia Economic Investigation Team, and Suzhou Dushu Lake Science and Education Area to carry out anti-corruption and anti-fraud propaganda and other activities. Such collaborations helped improve employees' integrity awareness, enhancing integrity building inside and outside the Group.

Enterprise-police collaboration activities

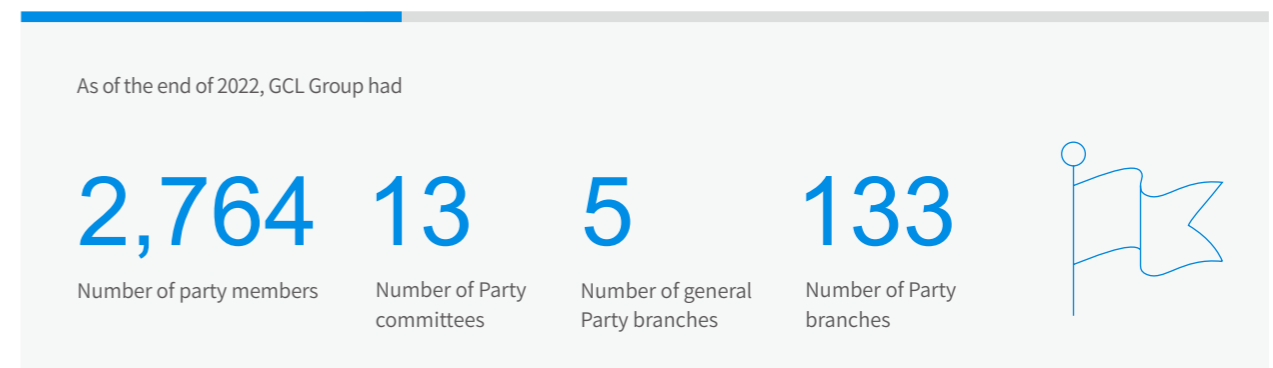


Enterprise-police collaboration — Suzhou Industrial Park Public Security Bureau gave lectures themed on "Economic Crime Prevention and Anti-Fraud"

On September 7, 2022, the Group's Party Committee and the Discipline Inspection and Supervision Center invited the Suzhou Industrial Park Public Security Bureau to the Group to give lectures themed on "Economic Crime Prevention and Anti-Fraud". The activity effectively improved the legal and compliance awareness of employees.

Party Building

GCL Group is committed to pursuing Party-guided high-quality green development which aligns business operations with excellent Party building. We have established a standard, enduring mechanism for Party history study and education. Under the frame of collaborative Party building, we launched the Double-Training Program and the Party Member and Community Building Program and built a digital Party building platform. These measures aim to promote the Group's high-quality development and contribute to the strategic goals of "Technical GCL", "Digital GCL", and "Green GCL".



Party history Study and Education

Under the guidance of the GCL Yan'an Spirit Research Association, the Group built the GCL Party Building Museum, the Corporate Party Building Base, and an online Party building platform, to showcase Party building outcomes, and conduct comprehensive, multi-layer Party history study and education activities in a regular manner. Under the guidance of the GCL Yan'an Spirit Research Association, the Group built the GCL Party Building Museum, the Corporate Party Building Base, and an online Party building platform, to showcase Party building outcomes, and conduct comprehensive, multi-layer Party history study and education activities in a regular manner. In addition, the Group's Party Committee visited key project sites and manufacturing bases in Xuhou, Leshan, Baotou and Hefei to engage with front line Party members and non-member employees, helping them have a better understanding of new Party building concepts, while encouraging them to dedicate themselves to corporate growth under the leadership of the Party.



In January 2023, GCL Group participated in a symposium themed on "Propagating the Great Spirit of Building the Party, Embodying the Yan'an Spirit, and Contributing to the Realization of the Second Centenary Goal" held by the Zhongyan Conference, as the only company representative invited to give a speech.

Learning spirit of the 20th CPC National Congress

In 2022, GCL Group prioritized studying the spirit of the 20th CPC National Congress as the crux of its Party and mass building work. The Group's Party Committee requested all regions and divisions to conduct various forms of Party history study activities under unified requirements. These activities promoted Party building at the ideological and theoretical levels and built GCL's reputation in Party building.

"20th CPC National Congress" activities

To profoundly study Xi Jinping's Thought on Socialism with Chinese Characteristics for a New Era and commemorate the successful assembly of the 20th National Congress, the Group's Party Committee proactively orchestrated and executed a rich assortment of activities in alignment with the themes of the 20th National Congress.



The Group orchestrated a Party Day event themed "Embracing the 20th National Congress: Embarking on a New Journey"



The Group organized employees to sing the song "Pilot" and produced related a MV

Collaborative Party Building

GCL Group has consistently upheld the cultural principle of fostering open communication. We utilize the GCL Party Building Museum as a hub for cultural exchange in Party building matters, and a platform to explore innovative models of Party building together with local organizations and enterprises. In the network of collaborative Party building, multi-party collaboration not only took place in Party building and education, but also in industry development and governance.

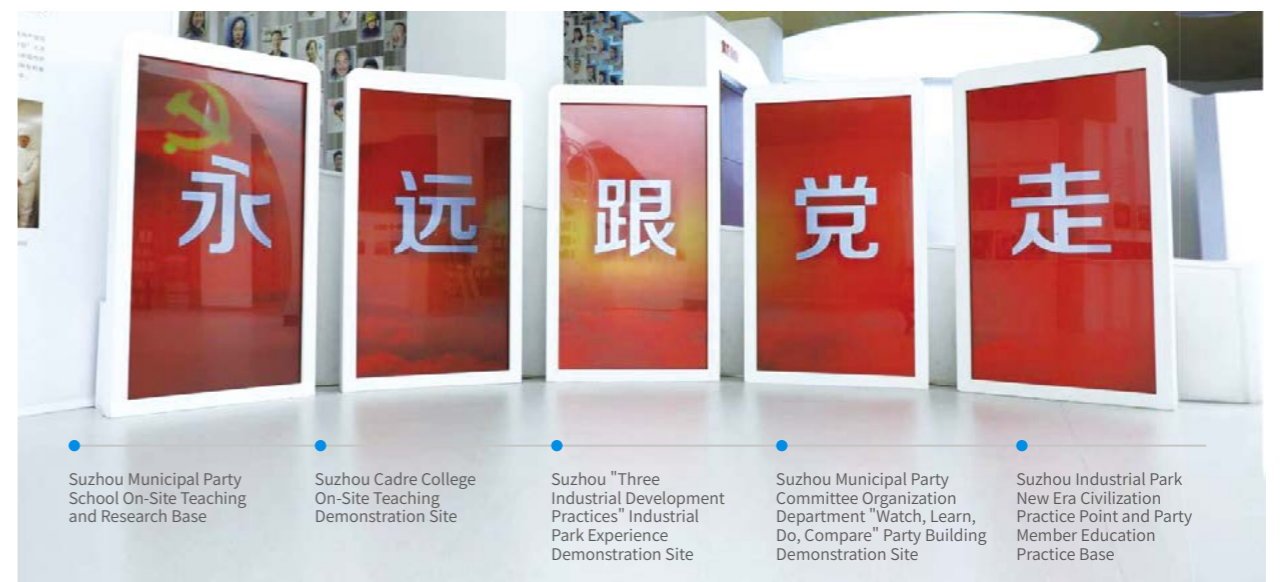
GCL Party Building Museum

Established in July 2018, the GCL Party Building Museum spans an area of 1,000 square meters. It serves as the principal venue for GCL Group's Party building and cultural activities. Moreover, the museum represents an important window through which GCL Group projects its corporate image, fosters its Party building brand, and facilitates external engagements.

The museum has attracted governmental bodies and non-public Party building inspection groups from all over the country. Nearly 10,000 people visited the museum every year for inspection and exchange.



In September 2022, the Dabieshan Leadership Academy inspected GCL's Party building outcomes



Creating a network of collaborative Party building

In 2022, GCL Group has collaborated with the Suzhou Cadre College, Suzhou Industrial Park Public Security Bureau, SIP Group, Kunshan High-tech Group, Deheng Law Offices, among others in Party building.



GCL Group and SIP Group signed a SOE-private enterprise collaborative Party building agreement



GCL Party Committee and Suzhou Cadre College unveiled the base and signed a collaborative Party building agreement

2022 Awards and Honors in Party Building

GCL is dedicated to implementing the "Party-Guided Green Development" strategy. In 2022, our Party building efforts were recognized by several awards and honors, cementing our dedication towards creating a mutually beneficial relationship between Party-building and corporate development.

Awards and honors in 2022

GCL Group

2021 National Influential Party Building Enterprise in the Electric Power Industry

Exemplary Non-SOE Enterprise in the Party-Guided Labor Union Building "Three Targets and Two Improvements" Program in Suzhou

New Era Party Building + Corporate Culture Demonstration Organization



GCL Group Party Branch

Suzhou Industrial Park Model Party Organization

GCL Group Youth League Committee

Suzhou Communist Youth League Advanced Organization in 2021

Suzhou "May 4th Red Flag Youth League Committee"

Corporate Culture

GCL fosters innovation, learns from heritage, and gains both experience and vigor from ongoing evolution. We persistently refined our corporate culture system, established a robust networks for corporate culture management, and utilized corporate culture as the primary, enduring link for building unity, gathering strength, and supporting the implementation of the "Three GCL Pillars" strategy.

In 2022, in line with the *Guiding Opinions on the Construction of Corporate Culture of GCL Group (2021-2023)*, we renovated the GCL Corporate Culture Exhibition Hall and identified the inaugural spirits in GCL's corporate spirit framework. We also created seven corporate culture contact points throughout the Group, enhancing the coherence of our corporate culture promotion via unified *Corporate Culture Construction Training Handouts* and the organization of a GCL Corporate Culture Propaganda Instructor Training Camp. During the reporting period, GCL Group won three accolades from the China Cultural Management Association: "New Era Party Building + Corporate Culture Demonstration Organization", Second Prize for "Enterprise Green Development Innovation Achievements", and 2022 "Most Beautiful Brand Voice" Representative Case-Silver Award, which amplified our cultural visibility.

2022 GCL Day Themed Cultural Activities

The "GCL Day", celebrated on October 28, is a shared festival for all associates. It aims to promote corporate culture across the Group, improving employees' sense of belonging. The 2022 GCL Day is designed to inspire all GCL associates to learn about the spirit of resilience through a range of thoughtfully organized and innovative cultural activities. These include reliving the journey of GCL's history, showcasing achievements in digital intelligence, and unveiling the corporate culture exhibition hall. With enduring strength, unwavering ideals, and a sense of inspired responsibility, we will indomitably advance toward the realization of the "Three GCL Pillars" strategy.



The GCL Corporate Culture Exhibition Hall was renovated to display the history, achievements and culture of GCL Group in an all-round and multi-angle manner.



The inaugural spirits in GCL's corporate spirit framework were officially released, contributing to the development of a more coherent and enriched corporate culture.



GCL showcased digital achievements through modules such as the Product Holographic Display Cabinet and the Digital Factory.



"Learning from Excellent Enterprises" interview Some Group executives discussed the combination of GCL's practical experiences with technological advancement, team building, and brand management, and how should GCL learn from exemplary companies like Huawei.

Workplace Safety

GCL Group firmly underscores the integral role of environmental, health, and safety (EHS) management in organizational foundation. Our commitment to continuous improvement shines through in these key domains as we enhance workplace safety through controlling and managing associated risks. We ventured deep into uncovering potential hazards and improving emergency management, employing innovative technological solutions to augment our efficiency in safety management, and protect the occupational health and safety of employees. By instilling a safety-first culture, we fostered a stable and secure production environment, contributing to ensuring the realization of business goals and significant tasks.

Strengthening Safety Management

In strict accordance with the *Law of the People's Republic of China on Work Safety*, and our EHS management philosophy of "safety-first, benefit-oriented, and eco-friendly" manufacturing, we conducted safety management across the Group in line with the goal of "zero damage, zero accident, and zero pollution". Besides, we improved the employee safety and production accountability systems, and promoted standard safety measures, to build a solid safety infrastructure that ensures manufacturing safety.

The headquarters EHS Office operates on a hands-on approach, responsible for formulating annual EHS inspection plans, and carrying out meticulous monthly surveys and evaluations in line with the plans. During the reporting period, the EHS Office improved EHS assessment criteria, and organized inspections and assessments to detect perfunctory behavior in manufacturing safety training and reinforce safety management of high-risk operations. These measures collectively ensured safe manufacturing across the Group.

Improving the safety management system

In 2022, we revised the *Safety, Health and Environment Management Regulations*, the *Safety, Health and Environment Emergency Response Plan*, and several other safety management regulations. Safety management systems were created at the division and subsidiary levels.

Defining the manufacturing safety responsibilities of all employees

We believe that everyone plays a starring role in workplace safety, with no room for passive bystanders. We engaged every level of our organization through the signing of safety responsibility letters, ensuring a shared commitment to manufacturing safety.

Promoting standard manufacturing safety management

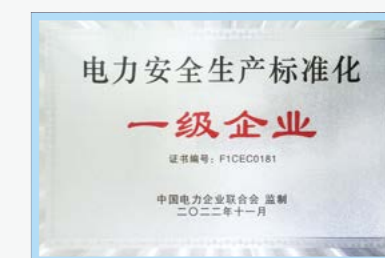
We requested all subsidiaries to improve standard manufacturing safety management and to ambitiously seek out higher levels of safety standardization.

Strengthening production team safety management

The emphasis of our workplace safety efforts lies within team engagement. We requested divisions and subordinate companies to build exemplary production teams in standard safety management, and standardized basic management processes covering safe manufacturing, work and operation tickets, and safety management ledgers.

Enhancing the safety management of external personnel

We included all outsourced projects in the comprehensive safety management system and ensured strict review and inspection on Workplace Safety qualifications, individual safety qualifications, and on-site operation.



In November 2022, Wuxi Blue Sky won the title of "First-level Enterprise for Electric Power Safety Production Standardization"



Nanjing Gas Turbine Production Management Department No. 1 Production Team won the title of "2022 Safety Production Demonstration Team"

GCL Group's Key Workplace Safety Measures

Building a Line of Safety Defense

Improving the dual prevention mechanism for safety risks

At GCL Group, we decisively acknowledge that "managing safety equates to managing risks". Consistent with this understanding, we continued to encourage our divisions and subsidiaries to further enhance the dual prevention mechanism which encompasses hierarchical safety risk management and meticulous investigation of potential hazards, designed uniquely for industry traits. In line with the principle of "comprehensive horizontal surveillance and thorough vertical control", we implemented systematic methods to identify safety risks, performed stratified management of these risks, and clearly defined the risk management responsibilities across various hierarchical levels, including enterprise, workshops, and teams. This enables us to execute specific risk control measures that fit the associated potential hazards. Safety hazard inspections are a cornerstone of our operations. We conducted regular daily assessments, performed specialized surveys and holiday checks, and executed quarterly safety inspections. By promoting a closed-loop management system, we ensured a virtuous cycle for risk identification.

During the reporting period, the EHS Office responded dynamically to the 15 essential workplace safety measures proposed by the National Video and Telephone Conference on Workplace Safety. Based on our actual safety conditions, we worked out a workplace safety inspection plan to enhance safety supervision.

Workplace safety Emergency Management

Our divisions and subordinate companies established emergency response plans that align with their operational necessities. These include comprehensive, specific, and on-site disaster response strategies. Additionally, they crafted annual emergency protocol drill programs, keeping in mind the seasonal peculiarities and potential risks associated with their production sites. They conducted emergency drills in various scenarios such as confined space emergencies, hazardous chemical leakages, typhoon and flood prevention, and firefighting. These exercises effectively enhanced the emergency response capabilities of both management and front-line staff.



Nanjing Niggard GCL's first natural gas pressure regulating station leakage emergency drill



Taoyuan Photo voltaic Power Station conducted an emergency drill to prevent geological disasters



Xinjiang GCL polycrystalline silicon purification project 113B -A rough separation tower hand valve front flange leakage drill

During the reporting period

RMB **272.6072** million

was invested in workplace safety

1,504

workplace safety emergency drills were conducted

Workplace Safety Digitalization

Steered by the "Digital GCL" strategy, we proactively progressed workplace safety digitalization, exploring the incorporation of digital technologies into workplace safety management. For instance, Nanjing GCL independently developed an EHS management platform, and Guangzhou Blue Sky applied inspection QR codes to main and auxiliary equipment at all production sites, to increase inspection efficiency. Some subsidiaries have established the integrated "Five-in-One" intelligent enterprise safety management platform, which significantly enhanced the efficiency and quality of workplace safety management.

The "Five-in-One" intelligent enterprise safety management platform comprises modules for comprehensive real-time workplace safety monitoring, functional hazard analysis, smart safety administration, collaborative emergency command, and training and education evaluation. It employs a range of information technologies such as visual production site safety management, flammable and toxic gas alarming system, temperature and pressure sensors, and video surveillance, ensuring comprehensive monitoring of operations for optimal safety.



Xinhua Semiconductor was recognized by the Jiangsu Provincial Emergency Department as an outstanding enterprise in operating the "Double Prevention Mechanism Information System Platform"

Xinhua Semiconductor completed the construction of the Dual Prevention Mechanism Information System Platform in October 2022. Centered around the digitalization of security risk hierarchical management and potential danger detection, the platform integrates online and offline information systems, allowing for data interconnection between enterprises and government systems. Xinhua Semiconductor was recognized as an outstanding enterprise in operating the "Double Prevention Mechanism Information System Platform" by the Jiangsu Provincial Emergency Department. In addition, the company has launched an electronic job ticket information system, effectively improving the efficiency of specialized operation management.

Taicang Port Power Plant upgraded the EAM-based production management model, further improving workplace safety management

From 2021 to 2022, seizing the opportunity of EAM upgrading, the company added and upgraded some EHS management functions, including safety incident management, potential risk detection and handling, dual-measures management, emergency response, outsourced project management, specialty equipment management, special operation personnel management, among others. Additionally, new workplace safety management policies were applied to further elevate the standardization, compliance, and enforceability of occupational safety management.

Promoting the Workplace Safety Culture

GCL Group prioritizes cultivating a robust culture of workplace safety. Through programs like the "Workplace safety Month" and "119 Fire Protection Awareness Month", we disseminated safety concepts among employees, using varied channels and perspectives. We aimed to enhance the safety awareness of employees, while improving their safety skills and standardizing their safety behaviors. These measures effectively improved the workplace safety awareness of employees.

The Group organized "Workplace Safety Month" activity themed "Being the First Person Responsible for Workplace Safety According to Law"

On May 31, 2022, under the overall arrangement of the Group's EHS office, GCL Group launched the 2022 "Workplace Safety Month" campaign. During the event, in accordance with the Group's deployment requirements, the "First Person Responsible for Workplace Safety Initiative" was signed at various levels. In addition, workplace safety inspections, workplace safety consulting and education activities, and emergency response drills were conducted across the Group, in a bid to improve the workplace safety awareness of employees and encourage them to actively participate in workplace safety management.



2022 "Workplace Safety Month" campaign launching ceremony



Leshan GCL held the "Health Cup" knowledge competition during the Workplace Safety Month



"Fire Protection Awareness Month" campaign: Wuxi Blue Sky carried out a fire protection inspection based on the fire prevention characteristics of autumn and winter



Xinhua Semiconductor "Workplace Safety" Comic Exhibition

Occupational Health and Safety

GCL Group adheres strictly to pertinent laws and regulations like the *Law of the People's Republic of China on Work Safety* and the *Law of the People's Republic of China on the Prevention and Control of Occupational Diseases*, as well as the *Regulations on Work-related Injury Insurance*. Meanwhile, we have established an occupational health and safety management system, and formulated the *Occupational Health Management Standards* to ensure that various divisions and subsidiaries effectively conduct occupational health and safety management, creating a safe working environment for employees. As of the end of the reporting period, many subsidiaries had obtained the ISO 45001 occupational health and safety management system certification.

During the reporting period



100%
Employee physical examination coverage was

100%
Employee occupational health and safety registration rate was

130,525
Workplace safety training covered employees

0
The number of occupational disease cases was

Identification, notification and label management of occupational hazard factors

Identify, regularly monitor and inform about occupational hazards;
Pay attention to the marking of equipment and facilities, and clearly mark dangerous areas, emergency exits, etc.

Occupational health surveillance

Construct occupational health and safety management files;
Conduct occupational health examinations for employees exposed to occupational hazards, ensuring that examinations are carried out before employment, during tenure, and before employment termination.

Prevention of occupational hazards

Develop preventive measures, such as optimizing processes, installing ventilation equipment, etc.;;
Provide employees with qualified labor protection supplies, such as labor protection shoes, safety helmets, work clothes, eye masks, etc., and supervise and regularly replace such supplies;
Place emergency medicine kits (medicines), cleaning facilities, etc. in work areas, and provide restrooms and educational supplies for employees.

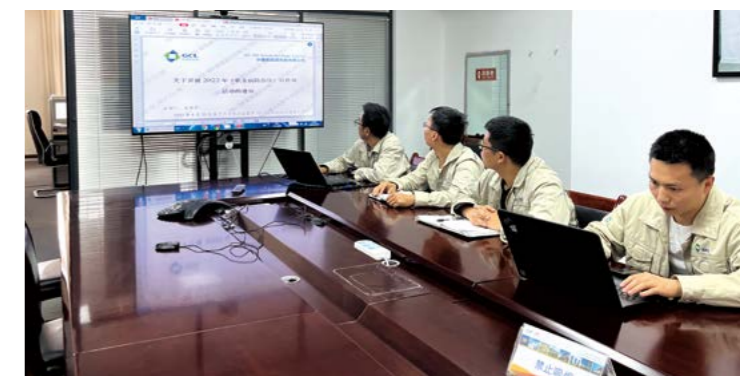
Improvement of occupational safety awareness

Conduct occupational safety training programs;
Carry out targeted training and certification for personnel in different positions, such as level 3 safety training, fire protection training, special safety training, etc.;;
Carry out activities such as the "Law on Prevention and Control of Occupational Diseases" Week.

Major occupational health and safety management measures

"Law on Prevention and Control of Occupational Diseases" Week

From April 25 to May 1, 2022, GCL New Energy launched the "Law on Prevention and Control of Occupational Diseases" Week, carrying out diverse publicity activities both online and offline. The program aims to popularize knowledge about occupational disease prevention and control, and improve employees' occupational safety awareness and ability, protecting their occupational health rights.



GCL New Energy occupational disease prevention and control publicity activity

Well-Off Employees: Striving to Ensure Employees Enjoy Both Financial Prosperity and Enriched Spirits

GCL regards talent as primary productive force, the most valuable strategic resource, and the lifeblood of corporate capital. We are devoted to forging a highland of talent, making a constant endeavor to attract top-tier professionals. As part of our commitment, we endeavor to build an employment system that values diversity and equality, while paying careful attention to a balanced talent structure. We place high importance on continuous investment in human capital, focusing on enhancing our multilevel talent team, while providing opportunities for career advancement and platforms for realizing personal value. We uphold the principle of "unifying as one family", persisting in fostering a "family" culture that creates a team rooted in solidarity, professionalism, and genuine warmth. Our aim is to ensure our employees benefit both in terms of personal fulfillment and material rewards.

Amassing Exceptional Individuals

Talent stands as the cornerstone of GCL's sustained development, continually enabling the forward momentum needed for our evolutionary leaps and industry-shaping transformations. GCL commits to the principle of aligning business growth with talent acquisition, with a particular emphasis on inducting professionals and international expertise. We continuously optimize the composition of our talent pool, robustly supporting our talent development initiatives. All these efforts are aimed at best serving the comprehensive implementation of the Group's strategic objectives.

"Over the past 33 years, we have built a team of skilled talents, with over 70% of them joining GCL directly from their academic institutions. These employees have grown exceptionally fond of GCL, fostering a kinship that unites them as a family, and propelling their collective efficacy."

— Zhu Gongshan

Talent Acquisition

We have formulated the *Employee Recruitment and Employment Management Regulations* to normalize the overall standards for employee recruitment and employment, allowing each division to optimize and revise this in line with its unique business characteristics. Under the guidance of the "Digital GCL" strategy, we took GCL-ET as a pilot to build an integrated digital HR management platform. Through integrating the recruitment system and ensuring seamless connectivity of personnel data, we are creating a digital platform supporting recruitment, selection, training, employment, and retention, and encompassing onboarding, transfer, mobilization, resignation, and renewal processes.

We constantly explore diverse avenues for talent recruitment, amassing exceptional individuals through methods such as off-campus recruitment, campus recruitment, management trainee programs, and internal transfers. During the reporting period, we launched the "Return Home" program to selectively recruit outstanding former employees.

"Start Your Dream Journey at GCL" Campus Recruitment

Campus recruitment has always been a key channel for GCL to acquire talents. Between September and October 2022, we initiated a series of online recruitment drives themed "Start Your Dream Journey at GCL". These drives targeted both domestic and international college graduates, presenting avenues into our business with five primary campus recruitment programs spanning seven major industries. In excess of 13 functional areas and over 40 roles were promoted, providing a multifaceted employment landscape across our eight operational locations.

Management Trainee Programs

GCL Group, along with its divisions, taps into the pool of outstanding graduates through campus recruitment. At both the Group and division levels, we tailored management trainee programs and training programs geared towards fostering the backbone of GCL's continuous development.

Group level: "GCL Star" Management Trainee Program

In line with the principle of providing "diversified, people-centric, up-to-date" training, we have created a range of training modules encompassing intensive training, mentorship training, cyclic empowerment, two-way job rotations, and assessment-oriented training, in a bid to attract more talent to join and grow with GCL.



"鑫之星" 大学生训练营

Division level: GCL TECH launched the first "Starlight Plan" Global Management Trainee Program

The "Starlight Plan" is GCL-ET's globally orientated management trainee program. Specifically designed to align with strategic goals and accommodate international business requirements, this program addresses the urgent demand for dynamic young talents for the future. The inaugural "Starlight Plan" welcomed a cohort of 26 trainees, hailing from leading universities both domestically and internationally, meticulously chosen from nearly 10,000 applicants.



"Starlight Plan" Global Management Trainee Program

Green GCL and Nanjing University saw another cooperation

Since 2006, GCL Group has launched several projects in partnership with Nanjing University (NU), including the NU-GCL Research Institute, the GCL Building, and the Zhu Gongshan Building, all aiming to cultivate the dreams and ambitions of the next generation.

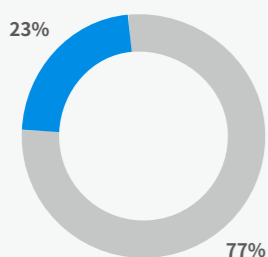
In June 2022, coinciding with the 120th anniversary of NU, GCL made a significant scholarship donation to the institution. The contribution aims at nurturing talents and team-building endeavors in the spheres of energy, earth sciences, and the environment, and supporting the Frontiers Science Center for Critical Earth Material Cycling.



At the donation signing ceremony, the two sides jointly unveiled the "NU-GCL Sincere Scholars Fund" project

In 2022, the Group had a total of 37,908 employees, including 2,879 ethnic minority employees. The number and proportion of employees by gender, age, and rank are as follows:

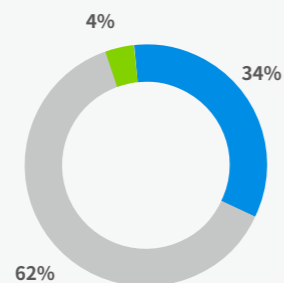
Number of employees by gender



Male
29,008

Female
8,900

Number of employees by age

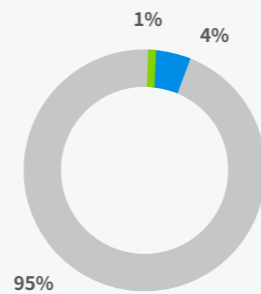


< 30
12,839

30-50
23,545

> 50
1,524

Number of employees by rank



Senior management
532

Middle-level management
1,484

Lower-level management
35,892

Protection of Employee Rights and Interests

GCL Group abides by the *Labor Law of the People's Republic of China*, the *Labor Contract Law of the People's Republic of China*, and all other relevant laws and regulations in its operating jurisdictions. Through implementing a set of internal policies and systems, we uphold legal employment practices and sign labor contracts with our employees in compliance with the law. We respect and protect the rights and privileges of our employees, ensuring that there are no discriminations based on gender, geographical location, ethnicity, religion, age, pregnancy or marital status, disability, or political persuasion during the processes of recruitment or promotion. We are stringent in our resistance to any form of child labor and forced labor. We maintain a zero-tolerance policy towards harassment, mistreatment, or any forms of inappropriate behavior within the work environment. Upon discovery of any violations, we ensure they are dealt with decisively in accordance with pertinent laws, regulations, and the Group's internal regulations.

During the reporting period

100%

the employee labor contract signing rate and social insurance coverage rate both reached



Human Capital Development

GCL Group places a strong emphasis on employee career advancement and planning. We have established clear, streamlined, and diverse avenues for career progression. Furthermore, we've optimized talent training regimes and models to guarantee resource allocation appropriately services talent development, empowering their dreams.

Career Development

To drive employee growth, realize individual potential, and foster a shared value system aligned with corporate development, GCL has put considerable efforts into enhancing career development pathways. We've established a partnership system and advanced a professional and technical skills grading system to provide ample developmental space, subsequently empowering our talent to thrive.

During the reporting period, we created a "5-layer, 16-grade" professional capacity model, in line with the principles of "skill-based grading, grade-based payment, evaluation-employment separation, and position-oriented staffing". This model forms the backbone of a "dual channel" for employees' career progression, laying the foundation for an effective mechanism for horizontal talent mobility. GCL has conducted professional competency assessments across the Group. The results not only form the basis for employee motivation, manpower structure adjustment, and manager promotion, but are also utilized as a selection criterion for business partners, talent development partners, and technology partners.

Talent Development

As a trailblazer in the new energy sector, GCL believes that "talent development is at the heart of management". Relying on GCL University—our think tank for talent enhancement—and its division-level branches, we've constructed a comprehensive training network focusing on the development of specialized capability and general leadership. The network offers training programs across the entire career growth lifecycle, fostering "combat troops" propelling growth at the Group and division levels, and future leaders of the new energy sector.

Leading Training System

Throughout the reporting period, GCL University introduced the "3M + 1D" training mode in line with the principle of "delivering knowledge and skills required by the development of GCL". Fully leveraging the capabilities of branch campuses, GCL University offers courses in line with the Group's strategies, aiming at reinforcing talent pools and promoting the corporate culture of GCL. We launched the "Project-Specific Training" program, ensuring that training precisely meet project needs. We set up the Inner Mongolia Campus as part of GCL University's Northwest Branch, which underpins launch of a series training programs at key bases in Leshan, Inner Mongolia, Xuzhou, Beijing, and Hefei. Totally 28 programs were launched, covering 1,652 staff in key roles. This significantly propelled the transformation and development of various divisions.

Following an extensive phase of continuous refinement, optimization, and practical validation, GCL Group has carved out a talent training system abounds with comprehensive, practical content, boasting broad coverage that effectively unleashes the fullest potential of our talents.

At key bases in Leshan

28

programs were launched

1,652

staff in key roles

Enriched curriculum system

The courses fall into eight categories: corporate culture, industrial research, management skills, vocational skills, industrial skills, occupational improvement, and management standards;

Premium courses developed in 2022 include: GCL Corporate Culture (2022 edition), 101 Questions on Intellectual Property (e-version), engineering construction courses developed by GCL TECH's Infrastructure Department, module manufacturing courses developed by Hefei GCL.

As of the end of 2022, approximately

2,100

courses had been offered online and offline.

Special training programs

"GCL Eagles", "GCL Stars", and "Starlight Plan" were designed for management personnel from off-campus recruitment, management trainees from campus-recruitment, and undergraduates, respectively.

"GCL Management Force" program focusing on developing general leadership: The program is composed of four modules of GCL Hope, GCL Future, GCL Dynamics, and GCL Elites, working as an important channel for the selection of management personnel.

Special skill empowerment programs: These programs focus on developing business-related professional skills. An example is the "Operation Drives Value Creation" CFO training camp.

In 2022, there were a total of 13 training sessions with

596 participants

As of the end of 2022, the program had trained eight batches of nearly

1,600 management personnel.

In 2022,

97

professionals from administrative departments, financial departments, and other functional departments jointed empowerment programs.

Exclusive trainer empowerment programs

Trainer team building: Events such as Corporate Culture Trainer Training, International Professional Trainer Certification for Copyright Courses, and "Good Trainer" Course Competition were organized.

Curriculum construction: We expanded our curriculum through internal construction and external introduction.

Nearly

80

newly certified trainers have been included in the database.

Digital learning platforms

"GCL Sea of Knowledge" training management platform: We optimized platform functions, and strengthened functions such as administrator training, course recommendation, and online activities.

"One-on-One" support to infrastructure project companies and key industrial companies: Technical supports were provided to help subsidiaries such as GCL Leshan develop online courses.

"GCL Sea of Knowledge" offers

880

selected online courses.

The 8th "Good Trainer, Good Courses" Competition Award Ceremony and "Teacher's Day" Commendation Event

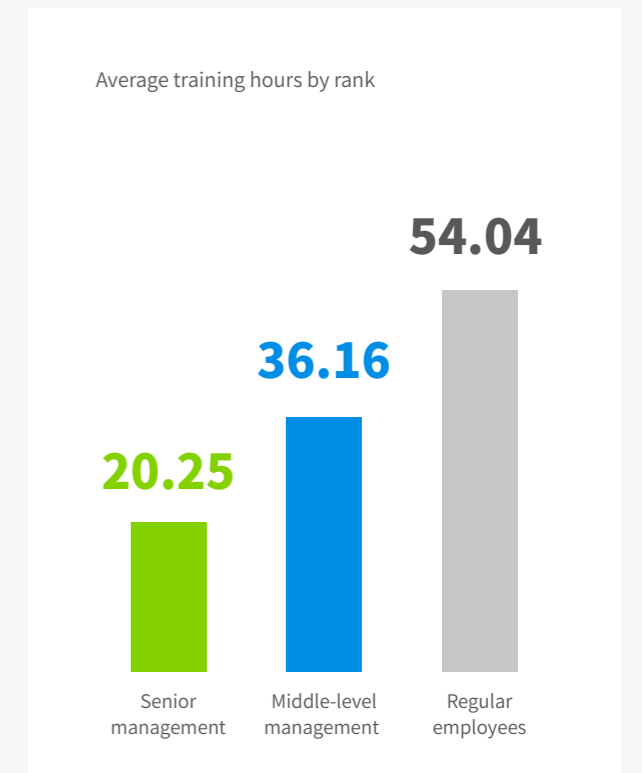
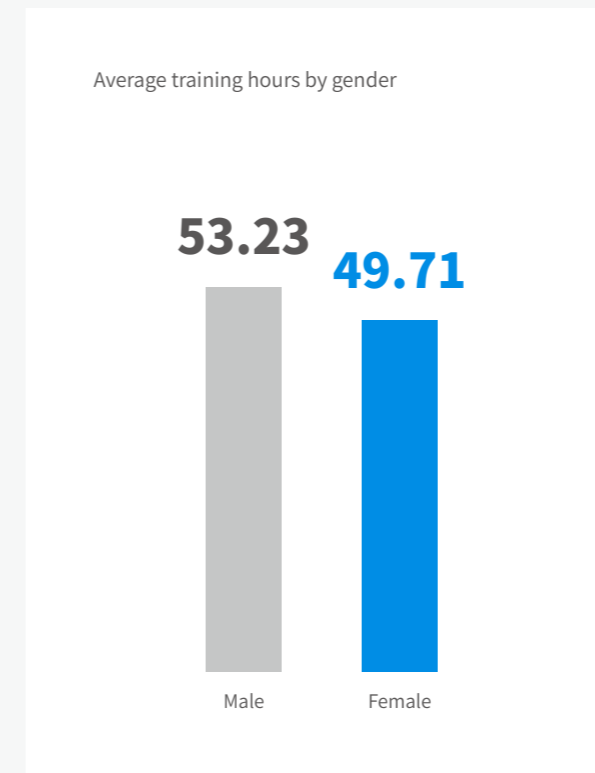
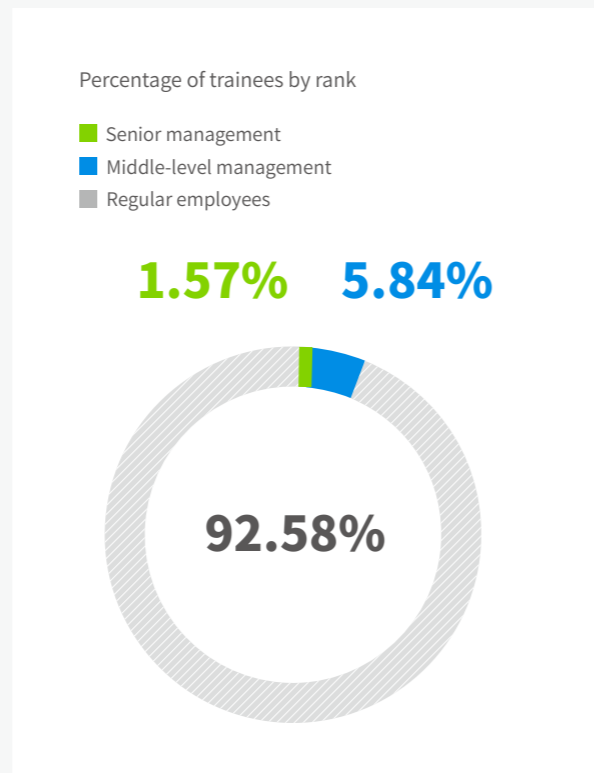
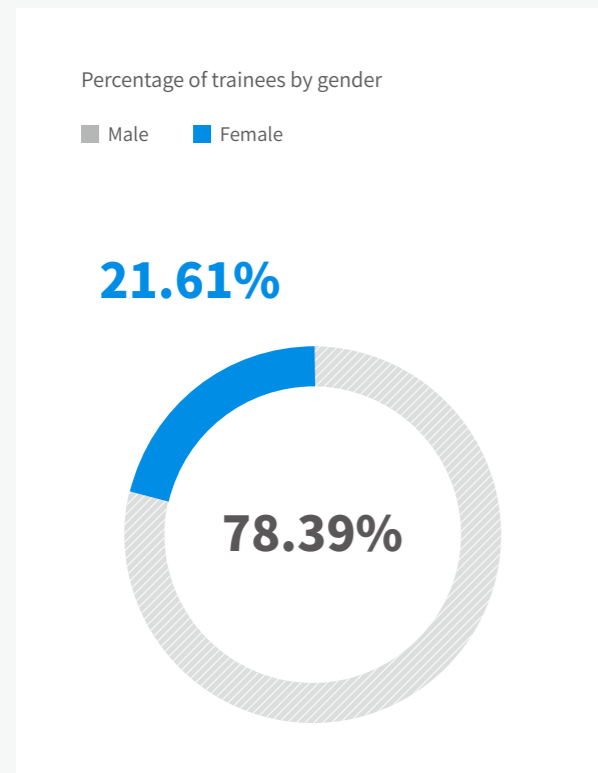
The event attracted nearly one hundred internal trainers. Through application, division-level selection, course revision, and expert review, we identified nine outstanding trainers and selected five exceptional courses. The event has recognized a total of 91 remarkable trainers and highlighted 224 outstanding courses.



The First GCL Corporate Culture Trainer Training Camp



During the reporting period, the average training time was 52.62 hours⁷. The details are as follows:



⁷ Employee training data covers: CGL headquarters, GCL-ET, GCL S.I., GCL New Energy, GCL TECH, Xinhua Semiconductor, and GCL Optoelectronic

Compensation, Benefits and Care

GCL Group has always maintained a steadfast commitment to a "people-first" ethos, routinely organizing themed events encompassing cultural festivals and birthday celebrations. Our aim is to foster a vibrant, inclusive working environment that continually bolsters employees' sense of belonging, fulfillment, and joy.

Compensation and Benefits

At GCL, we convene the best minds, working collectively towards advancements in the new energy industry. We firmly believe that every GCL employee should see the fruits of their hard work. We're committed to acknowledging effort with deserved recognition, sharing the rewards of corporate growth, and ultimately actualizing a vision of "shared prosperity".

We've developed an all-encompassing compensation system that includes a fixed salary, performance-based salary, fringe benefits, and long-term incentives that offer our employees competitive pay. With a systematic and comprehensive employee welfare system in place, which includes "five insurance schemes and a housing fund", supplemental commercial insurance such as additional critical illness coverage, as well as a range of allowances and subsidies, we ensure the welfare of our employees. Our long-term incentive plan involves stock and option allocations and enables employees to participate in project investments within the GCL network, granting them a share in the long-term benefits of corporate progress and fostering mutual growth between the employees and the organization. Adhering to a performance-driven compensation approach, we conduct performance appraisals for all employees in compliance with the *Salary Appraisal and Adjustment Management Standards*. Evaluation outcomes are tightly tied to promotions, demotions, and performance-based salary alterations. During the reporting period, we further stimulated human resources initiatives and foundational competitiveness by promoting our "Performance Package" value distribution project.

Wealth for Employees Plan

The plan includes potential roles of "Business Partner", "Excellent Partner", "Technology Partner", and "Team Partner". An employee may assume more than one type of role concurrently or becomes a partner across divisions or organizations. In recognition of partnership, the company offers rewards like restricted stocks, stock options, and virtual shares, promoting a relationship that shares efforts, responsibilities, resources, and wealth. Through this partnership mechanism, our dedicated contributors will guide everyone at GCL towards shared abundance.

Family Worry-free Initiative

This thoughtful, innovative initiative provides health management and worry-free insurance for employees' families, offers education supports for employees' children, and practices caring actions for employees' immediate relatives.

Employee Development Plan

"Lifelong Learning for All Employees" is the core of the "Employee Development Plan". The plan creates an all-round and multi-dimensional training mechanism covering the entire career cycle of employees, from joining, development, to becoming an integral part of the Group.

The "Action Program for Common Prosperity of Strivers" encompasses three initiatives

GCL TECH implemented equity incentive

In 2022, GCL TECH introduced a medium and long-term equity incentive for its core R&D and frontline employees. The plan engages approximately 233 individuals, distributing an estimated total of 290 million shares. This move underscores our commitment to sustainable technological innovation while buttressing the company's quick-paced, quality-driven growth. Additionally, GCL TECH is looking to broaden the scope of the equity incentive program across more departments, covering a greater number of outstanding employees from various roles, thereby holistically elevating work enthusiasm and fostering an energetic workforce.

Employee Engagement

GCL has instituted a three-tier worker congress structure at the Group, division, and subsidiary levels. In line with the *GCL Constitution*, we've clarified the extent of employee involvements in decision-making, management, and collaboration mechanisms, striving to make democratic management more standardized. Moreover, we canvas employees' opinions and suggestions using a blend of online and offline channels, dutifully accommodating their needs and concerns.

Offline channels

- Worker Congress
- GCL University Management Trainee Symposium

Online channel

- Employee "Blue Letters" to senior executives

GCL TECH — "Face-to-Face, Heart-to-Heart" team leader exchange meeting

On April 21, 2022, Tuning GCL hosted a team leadership meeting titled "Face-to-Face, Heart-to-Heart". The event was held in the training classroom and engaged over 40 participants, ranging from process supervisors to team leaders.



GCL TECH — "Face-to-Face, Heart-to-Heart" team leader exchange meeting

Employee Care

At the heart of GCL's corporate ethos lies our "Family Culture", an element we proudly vest and perpetuate. Throughout the reporting period, GCL Group, along with its divisions and subsidiaries, actively orchestrated a range of cultural and sporting events, birthday celebrations, retirement parties, festival activities specifically for our female staff, and parent-child initiatives. These endeavors enabled every GCL employee to genuinely embrace the warmth of the GCL family, enhancing their sense of joy and belonging within our community.

Diverse Cultural and Sports Activities for Employees



"Making Friends in Badminton" — Employee badminton competition hosted by GCL-ET Trade Union's Badminton Club



"Pray for Good Health" — Handmade sachet making activity designed to promote traditional Chinese culture.



"GCL is Always Your Home" — The retirees were showered with flowers, gifts, and heartfelt blessings



2022 "GCL Day" Calligraphy Exhibition

Care for Female Employees

The GCL Group is committed to safeguarding the legal rights and interests of female employees, including ensuring maternity and breastfeeding leave, arranging maternal and child rooms in office areas, and providing maternity allowances.



Haimen Xinyuan Environmental Protection Thermolectric Co., Ltd. organized female employees to make cakes and taste delicious food on the Women's Day

Care for Employees in Need

At GCL, we believe in the importance of supporting our employees in times of need and empathetically assisting them through their challenges. For this end, the GCL Sunshine Charity Foundation created a special fund, GCL One Day Donation - Employee Care. This initiative includes an internal "One Day Donation" activity designed to aid employees and their families who are facing hardships due to illness or disaster. Moreover, several of our subsidiaries have established comprehensive support systems for needy employees from ethnic minorities. Management personnel take a hands-on approach, offering one-on-one aid to these individuals.

In 2022

72 employees

GCL Sunshine Charity Foundation assisted

805,000

with RMB



Employee Mutual Aid Fund Program

Good Reputation: Taking Sustainable Social Development as Our Own Responsibility

As a company deeply aware of its mission and responsibilities, GCL Group consistently intertwines social responsibility with our organizational growth. Living true to our corporate mission of "focusing on green development and continuously improve the living environment of human beings", we insist on forging connections with customers, partners, and all societal sectors. Determined to co-create and foster shared growth, we seek to steadily fulfill the people's aspiration for a better life while harnessing GCL's resources to contribute significantly to the advancement of both the industry and society.

Customers: Excellent Services

The GCL Group is unwaveringly dedicated to enhancing customer satisfaction. Based on a comprehensive customer service system, we have been constantly expanding engagement channels, optimizing customer services, and improving brand influence, in a bid to generate enduring value for our customers.



GCL TECH

GCL TECH has implemented a set of procedures and standards, such as the Customer Complaint Handling Standards and the Product Quality Feedback Procedure.

In 2022, GCL TECH handled customer complaints within one working day on average, achieving a complaint resolution rate of 100%.

GCL New Energy

GCL New Energy has established six regional operation and maintenance service centers nationwide, managed by over 600 professional operation and maintenance personnel.

It launched the "GCLinkage" intelligent platform, ensuring a prompt response to customer demands.

GCL S.I.

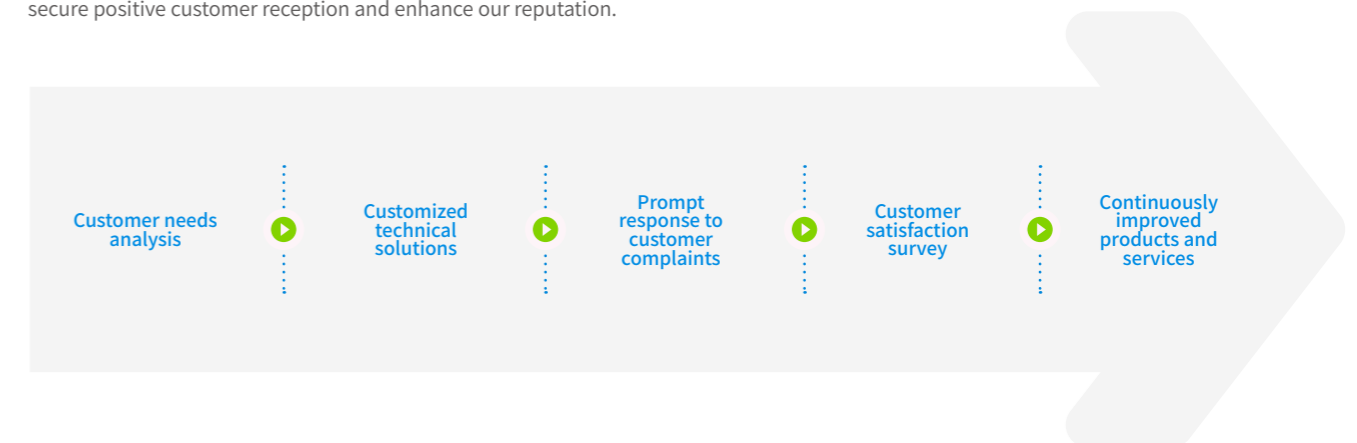
By the end of 2022, GCL S.I. had extended customer services to nearly a hundred customers across five countries around the globe.

It has established immersive online and offline customer engagement channels, which utilize various platforms like official email, telephone, sales representatives, distributors, and official WeChat accounts as touchpoints.

In 2022, GCL S.I. attained a customer complaint resolution rate exceeding 90%.

Guided by our commitment to customer satisfaction, we strive to balance our operational efficiency with our social image. Our aim is to maximize the resolution of customer complaints and practical issues, always striving to meet their needs. Upon receipt of any complaint, we stand firm on the principles of fairness and impartiality during the handling process. Our refined management approach encompasses three central aspects: timely responses, meticulous handling processes, and effective methods for providing the final results and feedback. We pledge to fully implement a customer-centric ethos across all our operations.

Our divisions or subsidiaries regularly conduct satisfaction surveys, tailored to assess the operational context, to gain deeper insight into customer feedback and recommendations. This input aids in the refinement and optimization of our business operations and services. Furthermore, through diligent training of our customer service staff and implementation of in-person follow-up visits, we continue to secure positive customer reception and enhance our reputation.



Partners: Collaborative Development

We unwaveringly uphold our tenet of fostering collaborations rooted in equality and transparency. To create a sustainable supply chain, we reinforce supply chain management, optimize supplier structure, and work with high-quality partners, in hope of jointly fostering a healthier and more sustainable climate of value creation.

Supply Chain Management

We have formulated ten internal policies including the *Supply Chain Management Regulations*, *Procurement Management Regulations*, *Warehouse Management Guidelines*, *Logistics Management Guidelines*, *Guidelines for the Use of Bid Evaluation Methods*, among others, to clarify supplier onboarding, hierarchical supplier management, assessment, and removal from the full lifecycle management processes and related standards. These improvements improved our supply chain management system, enabling us to manage the supply chain more effectively.

In 2022, in line with the "carbon neutrality and peaking" strategic goals, we specifically revised the *Supplier Management Regulations* and *Management Methods for Bidding and Negotiation*, to intensify supplier management process. Moreover, we continually promoted the "GCL Intelligent Chain" digital platform to boost supply chain management efficiency, thereby further driving digital transformation within the Group.

Supplier onboarding, evaluation and removal management processes



Supplier Onboarding

Suppliers apply for a partnership through our dedicated portal, and then be added to our supplier database upon approval.



Supplier Evaluation

Suppliers will undergo a performance rating system which categories them into Grade I, II, III and IV suppliers. Those rated within the range of 70-80 are requested to improve their performance.



Supplier Removal

Suppliers rated below 70 (Level IV) will be removed from our database on a regular basis. Suppliers failing to improve their performance as required will be automatically removed from the database.

Supplier Management Regulations

Under equivalent conditions, preference will be given to suppliers holding the ISO 14067 carbon footprint product certification.

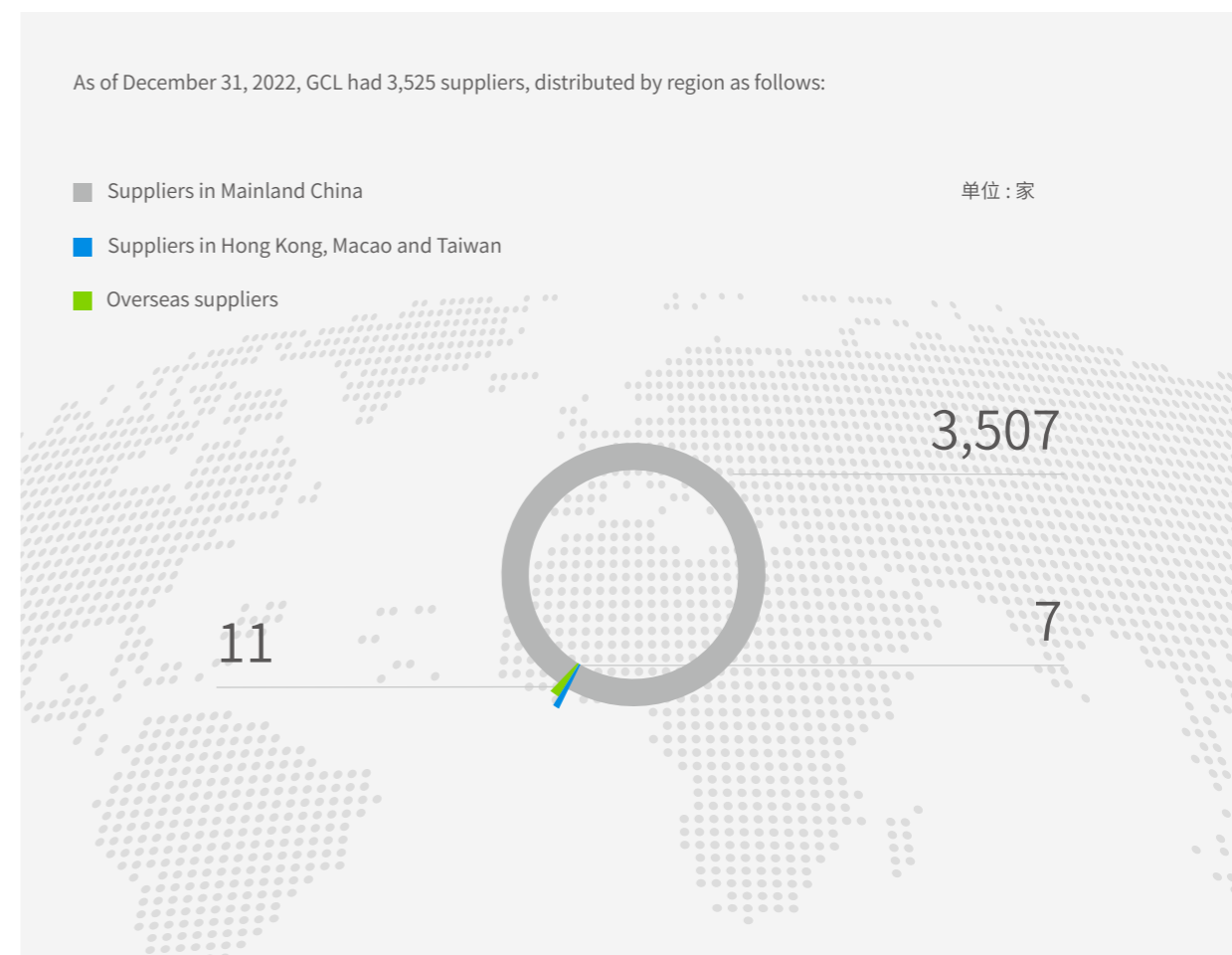
Companies possessing the carbon footprint product certification or similar low-carbon product certificates secure a higher priority to the supplier database.

Extra credit will be given to suppliers who include the carbon footprint product certification or similar low-carbon product certificates in their Supplier Investigation Report, and possess certifications for their quality or technical capabilities.

Management Methods for Bidding and Negotiation

In the bidding document template provided in the Guidelines for Bidding and Negotiation Management, add "Provide Carbon Footprint Certification (if any)" to "Composition of Bidding Documents - Commercial Bids" in Chapter II of the Bidding Documents.

In case the comprehensive bid evaluation method is applied, in the part of "Commercial Bid Rating Rules", "carbon footprint certification" should be added, accounting for at least 10% of the total score.



Clean Supply Chain

The Group places significant emphasis on business ethics within the supply chain, demonstrating zero tolerance towards corruption. We remain dedicated in our stance against commercial bribery and have enacted internal policies, such as the *Anti-Corruption Regulations* and *Anti-fraud and Tip-off Management Standards*. Also, we requested successful bidders to sign the *Supplier's Commitment to Anti-Bribery and Anti-Fraud* and the *Non-Disclosure Agreement*. Additionally, we conducted integrity training for suppliers to engender a corruption-free environment. For effective oversight, we provided a variety of channels for reporting and supervising, including telephone, email, letters, WeChat, and physical address. The GCL Discipline Inspection Committee and the GCL Supervision and Legal Center are responsible for management and supervision. Any supplier found engaging in fraudulent activities or violation of regulations during the bidding process and subsequent cooperation will be thoroughly examined. If verified, they will be classified in the "Untrustworthy Suppliers" list and will be barred from future collaboration.

Responsible Supply Chain

We mandate our suppliers to implement eco-friendly manufacturing processes without violating any relevant national laws and regulations, and encourage them to use high-quality, eco-friendly raw materials and auxiliary substances to minimize environmental pollution. Concurrently, we request them to abide by pertinent national labor protection laws, prioritizing the safety and rights of their employees.

In 2022, the Group revised the *Supplier Management Regulations* and the *Management Methods for Bidding and Negotiation*. "Carbon footprint certification" was added as a rating item to the bidding process of commercial bids, aiming to fortify our commitment to environmental stewardship within our supplier network.



Conflict Minerals

As a responsible enterprise, GCL continually enhances the management of conflict minerals. We have implemented robust policies and systems to avoid involvement in the mining, trading, processing, or exporting of resources such as tin, tungsten, tantalum, and gold, from conflict-affected and high-danger zones. Concurrently, we are forging collaborative strategies with both upstream and downstream partners to resolutely confront any activities that visibly harm the environment, breach human rights, or incite armed conflict, thereby compromising business ethics. We remain steadfast in our pursuit of a supply chain that is unequivocally free from conflict minerals.

Ecological Partners

Embodying the principles of mutual benefit and shared development, GCL is committed to engaging with partners throughout the value chain, cultivating a high-quality industry ecosystem that fuels sustainable growth. In recognition of our initiatives, we were honored to participate in several key industry events and forums in 2022. These included the APEC Business Leaders' China Forum, AESIEAP CEO Conference, Sina Finance 2022 Annual Meeting and the 15th Golden Kirin Forum. These platforms provided an opportunity for profound dialogue and discussion within the industry, creating opportunities for cooperation.

2022 GCL Bank-Enterprise Cooperation & Exchange Meeting: Crafting a novel summit for the pioneering development of a "zero-carbon" industry in line with the "carbon neutrality and peaking" goals



GCL Bank-Enterprise Cooperation & Exchange Meeting

On November 8, representatives from 50 banks and other financial institutions converged in Suzhou, adding vigor and vitality to the 2022 GCL Bank-Enterprise Cooperation & Exchange Meeting.

During the meeting, GCL introduced the structural layout, strategic plan and its implementation at the division level. This showcased the Group's determination to leverage core technologies to establish a global-leading green enterprise aligned with the "carbon neutrality and peaking" goals. At the meeting, Bank of China Suzhou branch and China CITIC Bank Suzhou branch signed strategic agreements with GCL Group, respectively.

GCL joined hands with Landspace to create a new era of aerospace energy



Zhuque-2 Y2 carrier rocket successfully launched

Since 2022, GCL has been striving to integrate its distinctive strengths into China's satellite networking. In July 2023, our unwavering support led to the successful launch of the world's first liquid oxygen methane carrier rocket, the Zhuque-2 Y2 independently developed by Landspace. On August 17 the same year, GCL entered into a strategic cooperation agreement with Landspace and Shanghai Blue Arrow Hongqing Technology Co., Ltd. on jointly establishing the GCL-Landscape SPACE Joint Innovation Center. Our collaboration will focus on the development of space solar power stations, and the use of perovskite products and energy storage systems in satellites. Our dedication not only promises to deliver comprehensive "space solutions" to new energy systems and power infrastructures, but also to establish exemplary "private models" contributing to the evolution of China's aerospace and new energy industries.

GCL-ET collaborated with Baidu to pioneer the evolution of the autonomous driving-shared travel industry

In November 2022, GCL-ET entered a strategic partnership with Baidu Apollo, which marks a commitment to spearheading the development of the autonomous driving-shared travel industry. Joint efforts will be made to develop unmanned premium travel solutions and Apollo RT6 battery swapping solutions in different scenarios.

Jiangsu Zhongneng signed a 441,400-ton polysilicon purchase agreement with LONGi and TCL Zhonghuan, promoting decarbonization across the PV industry

Thanks to growing market trust and customer recognition of FBR granular silicon, GCL is witnessing an increased influx of long-term orders. Since 2021, Jiangsu Zhongneng has secured polysilicon purchase agreements with seven subsidiaries of LONGi and a subsidiary of TCL Zhonghuan. These agreements, which extended through 2022, encompass a larger share of granular silicon products. Our granular silicon can satisfy customers' needs for monocrystalline process enhancement, as well as green and intelligent manufacturing requirements, contributing to the decarbonization across the PV industry.

Community: Gratitude and Contribution

Promoting Regional Development

GCL Group has made demonstrable strides in facilitating coordinated regional development. We have solidified a large number of strategic cooperation agreements with local governments, aiming at fostering the seamless amalgamation of photovoltaic, mobile energy, and carbon neutrality solutions with local resources and advantages, empowering local economic growth.

Polishing the "pearl" in the Yellow River basin with green energy

GCL and Dongyuan Sci-tech reached a strategic cooperation framework, focusing on PV downstream business, hydrogen energy, mobile energy, high-end manufacturing in Wuhai, a "pearl" in the Yellow River basin. A range of projects, such as granular silicon products, and zero-carbon industrial parks, will decorate the Ulan Buh Desert with more green elements.



Wuhai Municipal Government of Inner Mongolia Autonomous Region and GCL Group held a signing ceremony for a strategic cooperation framework

GCL empowered Sichuan's green economic, social and environmental improvements

In line with China's strategic "dual carbon" goals, GCL is leveraging its extensive experience of 33 years in the green energy sector. Relying on our technical, talent and market advantages and resources, we've launched a range of projects around the "dual carbon" goals, "Electric Sichuan" strategy, rural revitalization initiative, and shared prosperity initiative, in line with our "14th Five-Year Plan". These projects mainly focus on "new infrastructure" areas, including silicon materials, lithium materials, carbon materials, core semiconductor materials, and mobile energy infrastructure. We vigorously incorporate our cutting-edge green, zero-carbon solutions into the development of Sichuan, forging a pioneering zero-carbon model for enterprises in Sichuan in the context of "dual carbon" goals.

Promoting Rural Revitalization

In line with spirit of the 20th CPC National Congress and China's national strategies, GCL is committed to empowering rural revitalization and economic growth with new energy solutions. Utilizing local resource endowments, we expanded business in decentralized wind power, distributed energy, and comprehensive energy services, and embedded new energy technologies into a myriad of scenarios including agricultural cultivation, livestock farming, rural transportation, and rural households.

"New energy has emerged as a dynamic catalyst in the process of rural revitalization. Incorporating new energy solutions into the rural economic growth represents a significant approach to spur rural resurgence and enable agricultural advancement through scientific and technological innovations."

—Zhu Gongshan, Chairman of GCL Group

GCL-ET leveraged new energy technologies to empower rural revitalization and economic growth

In 2022, GCL-ET embarked on initiatives promoting "new energy + rural revitalization" in collaboration with a large number of districts and counties in Henan, Anhui, Xinjiang, Guangxi, Jiangxi, and other regions. In Hezhou City in Guangxi Province, for example, GCL-ET will build distributed wind power and energy projects in phases over a four-year cooperation period. It will also bring new energy solutions to greenhouse fruit and vegetable farming bases, contributing to the construction of intelligent green countryside.

GCL S.I. applied various new energy solutions to rural revitalization

In 2022, GCL S.I. explored the use of a range of new energy solutions such as installing PV panels in farmlands, pastures and fisheries. It also built distributed PV power stations across rural areas, pushing forward rural revitalization.



Guangxi Qinzhou Farmland PV System Project

Carrying out Charitable Activities

With our social responsibilities firmly entrenched in our ethos, we continually engage in a range of charitable activities in collaboration with our employees, communities, and other stakeholders. Our philanthropic efforts span diverse sectors, including educational support, disaster relief assistance, and volunteer activities. As of the end of 2022, the Sunshine Charity Foundation reported RMB 281 million of external donations.

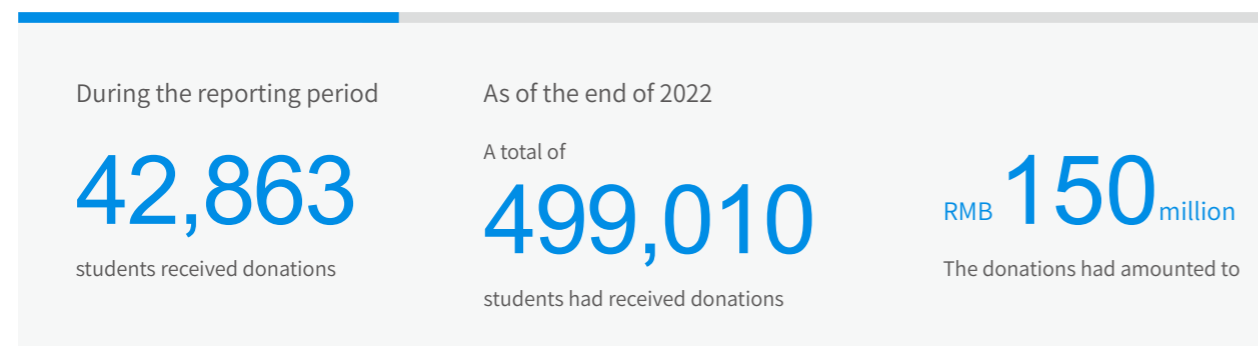
As of the end of 2022, the Sunshine Charity Foundation reported

RMB **281** million

of external donations

Supporting Education

We firmly believe that promoting education is one of the most impactful forms of charity. GCL Group, along with divisions and subsidiaries, adhere to synchronizing industrial development with welfare initiatives. Our diverse charity projects, such as "Safe Harbor for Children", and "Hand in Hand, Heart to Heart", witnessed our charity and voluntary efforts. Our objective is to support underprivileged students and leftover children, illuminating their futures with compassion and care.



Our education assistance trip:

Review: The sincere gratitude from students fuels our commitment to continue making a difference.



Letters of thanks from aided students in recent years



Actions in 2022:

GCL launched "Safe Harbor for Children" charitable program, assisting leftover children in rural areas

The program, a collaboration between GCL Group, Baotou City Youth League Committee, and Baotou Make-A-Wish Charity Association, has a planned duration of three years. In the first year, the GCL Sunshine Charity Foundation generously contributed RMB 200,000 to the project funds. Funds will be allocated to providing multifaceted support to leftover children in three schools, offering practical and efficient aid to these children.



"Safe Harbor for Children" charity program that aims to assist leftover children

GCL spread love in the journey of "Hand in Hand, Heart to Heart"

"Hand in Hand, Heart to Heart" is a flagship charitable program founded by GCL-ET, aimed at alleviating poverty and championing educational aid. For six consecutive years, this program has extended its reach across provinces such as Yunnan, Guizhou, Shaanxi, Guangxi, and Sichuan, significantly improving the lives of thousands of underprivileged students. Its impact has steadily grown over the years, and in 2021, it was recognized as an "Excellent Case of Social Responsibility in the Electric Power Industry in 2021" by the China Electricity Council.

On the annual "GCL Day" in 2022, the fundraising campaign for "Hand in Hand, Heart to Heart" student aid program successfully concluded. The initiative was enthusiastically embraced by employees at GCL-ET, with active participation and generous contributions. In December 2022, "Hand in Hand, Heart to Heart" made a significant contribution to Lengshui Town Primary School, donating RMB 100,000 worth of educational materials and supplies. Furthermore, two students exhibiting high moral standards and outstanding academic performance were each awarded a RMB 2,000 scholarship.



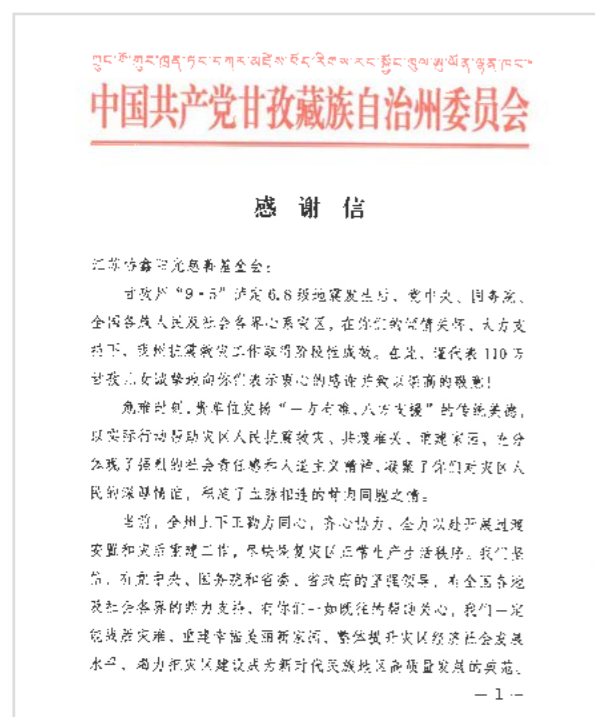
GCL-ET Student Aid Group interacted enthusiastically with the children

Disaster Relief

The essence of humanity lies in standing together through trials and tribulations, supporting one another, and fostering unity. Disaster relief has always been a primary focus of GCL Group's charitable activities. Whenever a disaster strikes, GCL Group promptly mobilizes and consolidates resources for relief efforts, striving to help affected areas restore normalcy as swiftly as possible.

We are Together - GCL Group donated RMB 20 million worth of money and materials to aid post-disaster reconstruction in Garze, Sichuan

On September 5, 2022, a devastating 6.8-magnitude earthquake struck Luding County in Garze Prefecture, Sichuan, resulting in severe casualties and deeply affecting hundreds of millions of hearts nationwide. Immediately upon occurrence of this disaster, GCL Group Chairman Zhu Gongshan, Party Secretary, and President Zhu Yufeng swiftly made resolute decisions, rallying the entire Group's support and resources for reconstruction efforts. By September 7, GCL Group in collaboration with the Jiangsu GCL Sunshine Charity Foundation had made a generous donation of RMB 10 million to the Red Cross Society of Garze Tibetan Autonomous Prefecture. Additionally, a "GCL Sunshine" distributed photovoltaic power generation system worth RMB 10 million was donated, specifically designated to aid in earthquake relief efforts and post-disaster reconstruction within Garze Prefecture, Sichuan Province.



Letter of thanks from the Garze Tibetan Autonomous Prefecture Committee of the Communist Party of China to GCL Group and GCL Sunshine Charity Foundation



Volunteer services

We champion the spirit of volunteering, anchored in dedication, friendship, reciprocity, and advancement. We actively engage with our employees in organizing a diverse range of volunteer initiatives, thereby sharing our business outcomes with the broader community. This approach not only conveys our commitment to civic engagement in action, but it also aligns corporate values with societal needs. For the year of 2022 alone, we relished the opportunity to facilitate 278 employee-led volunteering ventures, attracting 30,024 participants and aggregating a total of 60,048 volunteered hours.

Jiangsu Zhongneng launches Sunshine Care Action

In September 2022, Jiangsu Zhongneng Sunshine Care Action mobilized over 40 volunteers to engage with the Zizhuang Town Elderly Care Service Center. They distributed "Sunshine Care Gift Packs" and offered their companionship to over 50 senior citizens. This gesture sought to extend societal care and warmth to the elderly.



Jiangsu Zhongneng Sunshine Care Action

GCL-ET "Kids' Energy Journey" Children's Day event



On June 1, 2022, the GCL-ET Trade Union hosted the fifth the "Kids' Energy Journey" event. They visited Boai School, extending support and care to the exceptional children studying there.

Appendix

Report Writing Instructions

Overview

Golden Concord Limited (Group) Holdings Co., Ltd. (also known as "GCL Group", the "Group", or "we") has maintained a consistent practice of publishing social responsibility reports or sustainable development reports since 2013. Beginning in 2021, we have initiated the publication of the ESG Report, in line with our commitment to offering detailed and accurate information to all stakeholders, fostering our engagement in sustainable development.

This document represents GCL Group's second ESG Report. Upholding the principles of objective, standard, transparent and comprehensive disclosure, we've detailed our ESG concepts, actions, and outcomes in 2022 herein.

Basis of Preparation

Important standards referenced in the preparation of this Report include:

GRI Standards issued by the Global Reporting Initiative

Listing Rules Appendix 27 Guidelines on Environmental, Social and Governance Reporting issued by the Stock Exchange of Hong Kong Limited

Recommendations for Climate-Related Financial Disclosures released by the Task Force on Climate-related Financial Disclosures (TCFD)

SASB Standards

United Nations Sustainable Development Goals (SDGs)

Reporting Period

This Report covers the period from January 1, 2022 to December 31, 2022 (the "reporting period"), and partially covers previous years.

Scope of Reporting Entities

This Report encompasses Golden Concord Limited (Group) Holdings Co., Ltd. and its subsidiaries. For ease of reading and comprehension, Golden Concord Limited (Group) Holdings Co., Ltd. will be referred to as "GCL Group", the "Group", or "we" throughout this document. Abbreviations for the subsidiaries mentioned herein can be found in the appendix. The environmental indicators cover four of our listed subsidiaries: GCL TECH, GCL S.I., GCL New Energy, and GCL-ET. However, due to distinct product categories and unique production processes, certain information may only pertain to some subsidiaries, and not all.

Selection of Indicators

This Report mainly considers the quantification, materiality, balance and consistency of each specific indicator related to performance disclosure on major topics.

Information Sources and Report Approval

The qualitative and quantitative information provided herein comes from public information, internal documents and relevant statistical data of GCL Group. Unless otherwise specified, the monetary amounts involved in the Report are expressed in RMB. With the confirmation of management, this Report was approved by the GCL ESG Committee on October 31, 2023.

Review and Respond to This Report

This Report is made available online, and can be reviewed and downloaded from GCL Group's official website at <http://www.gcl-power.com>.

For any queries, suggestions or feedback pertaining to our ESG management or this Report, please reach out to us at:

Address: 28 Xinqing Road, Suzhou Industrial Park, Jiangsu Province (GCL Energy Center)

Tel.: 86-512-6853 8285

E-mail: branding@gcl-power.com

GRI Index

Instructions	GCL reported the information cited in this GRI content index with reference to GRI standards from January 1 to December 31, 2022
GRI 1 applied	GRI 1: Basics 2021








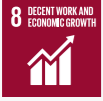
GRI standards	Disclosures	Location
GRI 2: General Disclosure 2021		
2-1	Organization details	GCL Overview
2-2	Entities included in an organization's sustainability report	Report Writing Instructions
2-3	Reporting period, frequency and contact point	Report Writing Instructions
2-4	Restatements of information	No restatements of information
2-5	External assurance	N/A
2-6	Activities, value chain and other business relationships	ESG Governance
2-7	Employees	Amassing Exceptional Individuals
2-8	Workers who are not employees	Amassing Exceptional Individuals
2-9	Governance structure and composition	Lean Governance—Governance Structure
2-10	Nomination and selection of the highest governance body	Lean Governance—Governance Structure
2-11	Chair of the highest governing body	Lean Governance—Governance Structure
2-12	Role of the highest governance body in overseeing the management of impacts	Lean Governance—Governance Structure
2-13	Delegation of responsibility for managing impacts	Lean Governance—Governance Structure
2-14	Role of the highest governance body in sustainability reporting	ESG Governance—ESG Governance Structure
2-15	Conflicts of interest	—
2-16	Communication of critical concerns	ESG Governance—ESG Governance Structure
2-17	Collective knowledge of the highest governance body	ESG Governance—ESG Governance Structure
2-18	Evaluation of the performance of the highest governance body	ESG Governance—ESG Governance Structure
2-19	Remuneration policies	Compensation and benefits
2-20	Process to determine remuneration	Compensation and benefits
2-22	Statement on sustainable development strategy	President's Statement
2-23	Policy commitments	Business ethics
2-24	Embedding policy commitments	Business ethics
2-25	Processes to remediate negative impacts	Business ethics

GRI standards	Disclosures	Location
2-26	Mechanisms for seeking advice and raising concerns	Business ethics
2-27	Compliance with laws and regulations	Risk and Internal Control Management
2-28	Membership associations	Brand Value
2-29	Approach to stakeholder engagement	ESG Governance—Stakeholder Engagement
GRI 3: GRI 3: Material Topics 2021		
3-1	Process to determine material topics	ESG Governance—Materiality Analysis
3-2	List of material topics	ESG Governance—Materiality Analysis
3-3	Management of material topics	ESG Governance—Materiality Analysis
GRI 201: Economic Performance 2016		
201-2	Financial implications and other risks and opportunities due to climate change	Climate Change Risks and Opportunities
201-3	Defined benefit plan obligations and other retirement plans	Compensation, Benefits and Care
GRI 203: Indirect economic impacts 2016		
203-1	Infrastructure investments and services supported	Application of Research Outcomes
203-2	Material indirect economic impacts	Promoting regional development
GRI 205: Anti-corruption 2016		
205-1	Operations assessed for risks related to corruption	Lean Governance—Business Ethics
205-2	Communication and training about anti-corruption policies and procedures	Lean Governance—Business Ethics
205-3	Lean Governance—Business Ethics	Lean Governance—Business Ethics
GRI 301: Materials 2016		
301-2	Recycled input materials used	Strict Environmental Management—Material Management
301-3	Reclaimed products and their packaging materials	Strict Environmental Management—Material Management
GRI 302: Energy 2016		
302-1	Energy consumption within the organization	Strict Environmental Management—Energy Management
302-3	Energy intensity	Strict Environmental Management—Energy Management
302-4	Reduction of energy consumption	Strict Environmental Management—Energy Management
302-5	Reductions in energy requirements of products and services	Strict Environmental Management—Energy Management
GRI 303: Water and Effluents 2018		
303-1	Interactions with water as a shared resource	Strict Environmental Management—Water Resources Management
303-2	Management of water discharge-related impacts	Strict Environmental Management—Wastewater Discharge
303-3	Water withdrawal	Strict Environmental Management—Water Resources Management

GRI standards	Disclosures	Location
303-4	Water discharge	Strict Environmental Management—Wastewater Discharge
303-5	Water consumption	Strict Environmental Management—Water Resources Management
GRI 305: Emissions 2016		
305-1	Direct (Scope 1) GHG emissions	Climate Change Risks and Opportunities
305-2	Energy indirect (Scope 2) GHG emissions	Climate Change Risks and Opportunities
305-4	GHG emissions intensity	Climate Change Risks and Opportunities
305-5	Reduction of GHG emissions	Climate Change Risks and Opportunities
305-7	Nitrogen oxides (NO _x), sulfur oxides (SO _x), and other significant air emissions	Strict Environmental Management—Emissions Management
GRI 306: Waste 2020		
306-1	Waste generation and significant waste-related impacts	Strict Environmental Management—Waste Management
306-2	Waste generation and significant waste-related impacts	Strict Environmental Management—Waste Management
306-3	Waste generated	Strict Environmental Management—Waste Management
GRI 308: Supplier Environmental Assessment 2016		
308-1	New suppliers that were screened using environmental criteria	Supply chain management
308-2	Negative environmental impacts in the supply chain and actions taken	Supply chain management
GRI 401: Employment 2016		
401-1	New employee hires and employee turnover	Amassing Exceptional Individuals
401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees	Compensation, Benefits and Care
GRI 403: Occupational Health and Safety 2018		
403-1	Occupational health and safety management system	Workplace Safety—Occupational Health And Safety
403-2	Hazard identification, risk assessment, and incident investigation	Workplace Safety—Occupational Health And Safety
403-3	Occupational health services	Workplace Safety—Occupational Health And Safety
403-4	Worker participation, consultation, and communication on occupational health and safety	Workplace Safety—Occupational Health And Safety
403-5	Worker training on occupational health and safety	Workplace Safety—Occupational Health And Safety
403-6	Promotion of worker health	Workplace Safety—Occupational Health And Safety
403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	Workplace Safety—Occupational Health And Safety
403-8	Workers covered by an occupational health and safety management system	Workplace Safety—Occupational Health And Safety
403-9	Work-related injuries	Workplace Safety—Occupational Health And Safety

GRI standards	Disclosures	Location
403-10	Work-related ill health	Workplace Safety—Occupational Health And Safety
GRI 404: Training and Education 2016		
404-1	Average hours of training per year per employee	Human Capital Development
404-2	Programs for upgrading employee skills and transition assistance programs	Human Capital Development
404-3	Percentage of employees receiving regular performance and career development reviews	Human Capital Development
GRI 405: Diversity and Equal Opportunity 2016		
405-1	Diversity of governance bodies and employees	Amassing Exceptional Individuals
405-2	Ratio of basic salary and remuneration of women to men	Amassing Exceptional Individuals
GRI 406: Non-discrimination 2016		
406-1	Incidents of discrimination and corrective actions taken	Amassing Exceptional Individuals
GRI 408: Child Labor 2016		
408-1	Operations and suppliers at significant risk for incidents of child labor	Amassing Exceptional Individuals
GRI 409: Forced or Compulsory Labor 2016		
409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labor	Amassing Exceptional Individuals
GRI 413: Local Communities 2016		
413-1	Operations with local community engagement, impact assessments, and development programs	Promoting regional development Promoting Rural Revitalization
GRI 414: Supplier Social Assessment 2016		
414-1	New suppliers that were screened using social criteria	Supply chain management
414-2	Negative social impacts in the supply chain and actions taken	Supply chain management
GRI 416: Customer Health and Safety 2016		
416-1	Assessment of the health and safety impacts of product and service categories	Continuous Quality Improvement
416-2	Incidents of non-compliance concerning the health and safety impacts of products and services	Continuous Quality Improvement
GRI 417: Marketing and Labeling 2016		
417-1	Requirements for product and service information and labeling	Customers: Excellent Services
417-2	Incidents of non-compliance concerning product and service information and labeling	Customers: Excellent Services
GRI 418: Customer Privacy 2016		
418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	Network Security and Information Security

Response to Sustainable Development Goals

Sustainable Development Goals	Our Actions	Corresponding Chapter
	<ul style="list-style-type: none"> Actively empowered rural revitalization and economic growth with new energy solutions; Promoted regional economic development, creating jobs. 	Community: Gratitude and Feedback
	<ul style="list-style-type: none"> Mobilized and consolidated resources across the Group for relief efforts, striving to help affected areas restore normalcy as swiftly as possible. 	Community: Gratitude and Feedback
	<ul style="list-style-type: none"> Strengthened workplace safety management, improved the occupational health and safety management system, and intensified workplace safety training; Protected employees' rights and interests such as maternity leave and paternity leave and set up maternal and child rooms for female employees. 	Workplace Safety Compensation, Benefits and Care
	<ul style="list-style-type: none"> Leveraged the GCL University to establish a robust, comprehensive, and diverse employee training system and launch various training programs, promoting the career development of employees; Strengthened GCL University's cooperation with subsidiaries, helping them cultivate talents in the new energy field; Conducted a series of charitable activities such as the "Safe Harbor for Children" event, and "Hand in Hand, Heart to Heart" event to provide educational assistance to leftover children or poor students. 	Human Capital Development Carry out public welfare and charitable activities
	<ul style="list-style-type: none"> Promoted gender equality, insisting on equal pay for equal work for male and female employees; Eliminated gender discrimination, ensuring that female employees enjoy equal career development channels and promotion opportunities. 	Amassing Exceptional Individuals
	<ul style="list-style-type: none"> Adopted water-saving technologies or processes, such as using reclaimed water as industrial water in many places, promoting the recycling of water resources; Ensured that wastewater is discharged in compliance with regulations. 	Practicing the Concept of Green Development
	<ul style="list-style-type: none"> Led the technological transformation in the energy industry to drive cost reductions and efficiency improvement across the industry chain as the "Chain Leader"; Achievements include the large-scale mass production of FBR granular silicon which provides affordable PV solutions with a lower carbon footprint; cutting-edge perovskite technology; and affordable lithium-based energy storage solutions; Completed the transition from a clean energy producer to a comprehensive clean energy service provider, leading the industry in terms of clean energy installed capacity; Increased the use of renewable energy in operations, demonstrated by installing PV panels in some factories and utilizing 100% green electricity in Leshan factory; Further integrated clean energy into scenarios like transportation, buildings, and industrial parks, contributing to the construction of a new power system by boosting the share of renewable energy use. 	Special Topic: Reshaping the Zero-Carbon Ecosystem as the "Chain Leader" Building a Green Industrial Cluster Empowering the Zero-Carbon Industry Ecosystem Practicing the Concept of Green Development
	<ul style="list-style-type: none"> Built a comprehensive remuneration system which offers competitive payments; Forbade child labor and forced labor. 	Rights protection Compensation, Benefits and Care

Sustainable Development Goals	Our Actions	Corresponding Chapter
	<ul style="list-style-type: none"> Took technology as the "primary energy source", with continuous efforts on R&D investment, leading the industry's technological iterations; Promoted the industrialization of FBR granular silicon and cathode materials; Created a green energy ecosystem integrating the functions of power generation, power storage and computing. 	Technological Renovation Application of Research Outcomes Business Digitalization
	<ul style="list-style-type: none"> Built an equal, diverse, and inclusive working environment that ensures equal opportunities. 	Amassing Exceptional Individuals
	<ul style="list-style-type: none"> Further incorporated clean energy into the transportation sector to reduce carbon emissions; Promoted the application of digital technologies in different scenarios to facilitate energy digitalization; Donated money and materials worth RMB 20 million to assist in post-disaster reconstruction in Ganzi, Sichuan. 	Empowering the Zero-Carbon Industry Ecosystem Business Digitalization Community: Gratitude and Feedback
	<ul style="list-style-type: none"> Improved the efficiency of resource, energy and materials; continued to increase the proportion of renewable energy in operations; Disposed of waste compliantly to reduce waste; Implemented a full-process quality control system; Actively built a responsible supply chain where priority is given to suppliers with the ISO 14067 carbon footprint product certification under equivalent conditions. 	Practicing the Concept of Green Development Supply chain management Quality Control
	<ul style="list-style-type: none"> Identified climate risks and opportunities; established a climate risk response mechanism which focuses on sustainable supply chain management and improving resilience against climate disasters. 	Climate Change Risks and Opportunities
	<ul style="list-style-type: none"> Strengthened wastewater and solid waste management in strict accordance with relevant regulations. 	Practicing the Concept of Green Development
	<ul style="list-style-type: none"> Managed waste generated during operations and ensured compliance with disposal requirements; Actively conducted environmental protection activities such as "Arbor Day" events. 	Practicing the Concept of Green Development
	<ul style="list-style-type: none"> Improved the risk management system and cultivated the culture of integrity in line with the principle of lean governance, for the purpose of creating a clean GCL. 	Lean Governance
	<ul style="list-style-type: none"> Established transparent and accountable partnerships for sustainable development; Promoted collaboration across the industry for shared development. 	Partners: Collaborative Development

Company Names Included in the Report

Company Name	Abbreviation
Golden Concord Limited (Group) Holdings Co., Ltd.	GCL Group
GCL Technology Holdings Limited	GCL TECH
GCL Energy Technology Co., Ltd.	GCL-ET
GCL System Integration Technology Co., Ltd.	GCL S.I.
GCL New Energy Holdings Limited	GCL New Energy
Jiangsu Xinhua Semiconductor Materials Technology Co., Ltd.	Xinhua Semiconductor
Jiangsu GCL Silicon Material Technology Co., Ltd.	Jiangsu GCL
GCL Huidong Rudong LNG Terminal Co., Ltd.	GCL Huidong
Wuxi Blue Sky Gas Turbine Thermal Power Co., Ltd.	Wuxi Blue Sky
Kunshan GCL Blue Sky Distributed Energy Co., Ltd.	Kunshan Blue Sky
Jiangsu Zhongneng Polysilicon Technology Development Co., Ltd.	Jiangsu Zhongneng
Suzhou GCL Photo voltaic Technology Co., Ltd.	Suzhou GCL
Leshan GCL New Energy Technology Co., Ltd.	Leshan GCL
Ninetta GCL Crystal Technology Development Co., Ltd.	Ninetta GCL
Kunshan GCL Optoelectronic Materials Co., Ltd.	GCL Optoelectronic
Nanjing GCL Gas Turbine Thermal Power Co., Ltd.	Nanjing Gas Turbine
Nanjing GCL New Energy Development Co., Ltd.	Nanjing GCL
Nanjing Niggard GCL Gas Turbine Thermal Power Co., Ltd.	Niggard GCL
Suzhou Industrial Park Blue Sky Gas Thermal Power Co., Ltd.	Suzhou Blue Sky
Suzhou Industrial Park Northern Gas Turbine Thermal Power Co., Ltd.	Northern Gas Turbine
Tuning GCL S.I. Technology Co., Ltd.	Tuning GCL
Guangzhou GCL Blue Sky Gas Thermal Power Co., Ltd.	Guangzhou Blue Sky
Guangzhou GCL Gas Distributed Energy Co., Ltd.	Guangzhou Gas Turbine

Reader Feedback Form

Dear readers:

Thank you for taking the time to read this Report. We value and greatly anticipate your feedback so we can continuously optimize and enhance our ESG efforts, and increase our capacity and competence in responsibility fulfillments. We eagerly await your thoughtful feedback!

1. Your overall evaluation of this Report is:

Excellent Good Fair Poor Bad

2. What do you think of the quality of the ESG information disclosed in this Report?

Excellent Good Fair Poor Bad

3. What do you think of the structure of this Report?

Excellent Good Fair Poor Bad

4. What do you think the readability of this Report is?

Excellent Good Fair Poor Bad

5. What do you think of the layout design and presentation of this Report?

Excellent Good Fair Poor Bad

6. What additional information would you like to know?

7. If you have any suggestions for our future sustainability efforts and ESG report release, please feel free to share:

Contact us: branding@gcl-power.com