

2022

Environmental, Social and Governance (ESG) Report

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弘元绿能

HOYUAN 2022 Environmental, Social and Governance (ESG) Report

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Cleaner Energy, A Better World

HOYUAN Green Energy Co., Ltd.

About this Report

This is the first Environmental, Social and Governance Report (hereinafter referred to as "this Report" or "ESG Report") of HOYUAN Green Energy Co., Ltd. (hereinafter referred to as "HOYUAN", "the Company" or "We") describing environmental, social and governance approach and performance of HOYUAN in 2022.

Report Approval

This report has been reviewed and approved by the Board of Directors. HOYUAN is responsible for the authenticity and validity of the content of the report.

Reporting Boundaries

Organizational Scope:

The principle of determining the organizational boundaries of this report is the operational control method, covering HQ and affiliated units of HOYUAN, which is consistent with that of the consolidated financial statements of the annual report for 2022, as shown in the appendix Breakdown of Reporting Scope of Subsidiaries.

Reporting Period:

January 1, 2022 to December 31, 2022. In order to retain completeness and comparability of the report, some of the contents might refer to records in previous years or be relevant with information in 2023.

Basis for compilation:

The standards, frameworks, principles and related requirements involved in the preparation of this report are shown below:

- Sustainability Reporting Standards of Global Reporting Initiative (GRI) Version 2021
- United Nations Sustainable Development Goals (UN SDGs)
- Ten principles of the United Nations Global Compact (UNGC)
- Shanghai Stock Exchange Self-Regulatory Guidelines No. 1 for Listed Companies-Standardized Operation - Standardized Operation

Data Sources

The information and data disclosed in this report are extracted from internal official documents, annual reports and audit reports of HOYUAN and subsidiaries. Part of the financial data is derived from the Annual Report for 2022, which has been audited by Da Hua Certified Public Accountants (Special General Partnership). Unless otherwise stated, the currency in this report is by default RMB.

External Verification

In order to adequately respond to the requests of stakeholders and ensure that the disclosed content of the report is more substantive, HOYUAN invited TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch to conduct the independent third-party verification and issue the "Limited Assurance" verification opinion. The verification statement is provided in the appendix of this report.

Access to the Report

This report is issued on an annual basis consistent with the financial year. The report is available in simplified Chinese and English versions and can be obtained from the Shanghai Stock Exchange website (www.sse.com.cn) and the official website of HOYUAN (www.hoyuan.com). In case of any doubt about the contents, please refer to the Chinese version.

Contact us

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Message from Chairman

Photovoltaic industry serves as an important engine for global energy change. HOYUAN seizes the opportunity of development in the era of clean energy, devotes itself to pursuing, exploring, manufacturing and creating, and always strives to improve its core competitiveness with entrepreneurship.

The year 2022 was extremely important in the development of HOYUAN. In 2022, against the backdrop of unstable global landscape, and climate, environment and energy crisis, HOYUAN grew against the trend by fulfilling its responsibilities under the guidance of the corporate mission of "Cleaner Energy, A Better World", dedicated itself to the global green energy, and stayed committed to the corporate vision of "Become a Practitioner of Dual Carbon Goal and the Energy Revolution". The company has thus started its long-term layout plan for sustainable development.

Integrating the energy industry ecosystem and expanding the advantages of integrated synergy

Over the past few years, PV industry has developed rapidly with exciting achievements. In 2022, shipment (volume) of HOYUAN reached 31.18GW of monocrystalline silicon wafers, with corporate revenue and profitability hitting a record and growing trust from the society and customers. Of course, clean energy never developed without bumps in the road. In the face of opportunities and challenges, we have actively invested in the integration and construction of the entire industry ecosystem, with investment in Baotou, Xuzhou, Jiangyin and other places for production of silicon, monocrystalline silicon wafers, solar cells, PV modules. We have connected various links throughout the photovoltaic industry chain, and continued to introduce mature and reliable leading products, solutions and services by focusing on customer needs and deepening multi-party collaboration, to increase the strength of integrated and synergistic industrial layout.

Focusing on the transformation of emerging industries to boost innovation vitality

HOYUAN has developed from a high-end intelligent equipment manufacturer to a world-renowned vertical PV industry ecological integrator, striving to make PV energy more affordable and ensure a better and more convenient life for mankind. In this regard, we continue to enhance our independent R&D and innovation capabilities, and accelerate the digital and intelligent transformation of our manufacturing platform. In 2022, the company invested nearly RMB 1 billion in R&D and had 1,038 R&D employees. The self-developed silicon carbide cutting equipment of the company boasts competitive advantage against international counterparts; the company managed to grasp the opportunity of silicon cell technology, utilizing its experience and strength in N-type silicon wafers for the layout of TOPCon high-efficiency battery production capacity, which has been put into operation in June this year, with the mass production efficiency expected up to 25.6%, effectively promoting cost reduction of kWh of electricity on the system side, and providing customers with more innovative and cost-effective green energy products.

Introducing low carbon development strategies to empower green development in future

Along with quality and rapid development, HOYUAN aligns its cultural concept with the global consensus on sustainable development, in line with the same ESG governance and practice requirements. We have introduced green and low carbon philosophy into the core development strategy of the company, formulated the blueprint for low carbon development, and integrated the concept of environmental protection into the product life cycle management of the industrial chain. This year, the company has reduced carbon dioxide emissions by over 40 million tons, and all series of silicon wafers have passed the French ECS certification, with the rank of the certification data topping the world. The company has been recognized as one equipped with PV Manufacturing Standard Condition in China. By means of innovative R&D and intelligent upgrading, the company rolled out energy-saving and emission reduction efforts in all production processes, and accelerated industry transformation toward the zero emissions goal, aiming to become the most trustworthy green enterprise for all stakeholders.

Practicing corporate social responsibility for continuous business growth with joint efforts

As a responsible green energy manufacturer, HOYUAN has always regarded itself a social citizen with its own corporate social responsibilities. Looking back on the past twenty-one years, it was the Employee and the community that moved HOYUAN forward. We care for our employees and are committed to providing them with a diversified, equal and safe working environment. We have formulated a talent development strategy featuring HOYUAN characteristics. We are also committed to fulfilling our social responsibilities, actively participate in public welfare activities, promote employment development and local economy, and endeavor to create more value for the society.

Chairman of HOYUAN

Yang, Jianliang

About HOYUAN

Company Profile

Founded in 2002 with HQ located in Wuxi, Jiangsu Province, HOYUAN Green Energy Co., Ltd. was listed on the main board of the Shanghai Stock Exchange in 2018 (stock code: 603185). The company is a global green energy industry ecological integrator specializing in the innovation and application of new energy industry.

With the mission of "Cleaner Energy, A Better World", HOYUAN practices and promotes global green energy transformation, actively builds a complete photovoltaic industry ecological system, and is now deeply involved in the business fields of high-end equipment manufacturing, industrial silicon and crystalline silicon, monocrystalline silicon wafers, solar cells, PV modules, and the development of new energy power stations, etc. The company deploys its science and technology R&D capacity and deep vertical integration as the driving force for corporate development, committed to providing the society and customers with more efficient, accessible and affordable green energy, ensuring cost reduction and efficiency of PV products, and contributing to achieving dual carbon goal and energy revolution.

Company Name ¹

HOYUAN Green Energy Co., Ltd.

HQ Address

No.158, Nanhu Middle Road, Xuelang
Street, Binhu District, Wuxi City

Date of Establishment

Sep 28, 2002

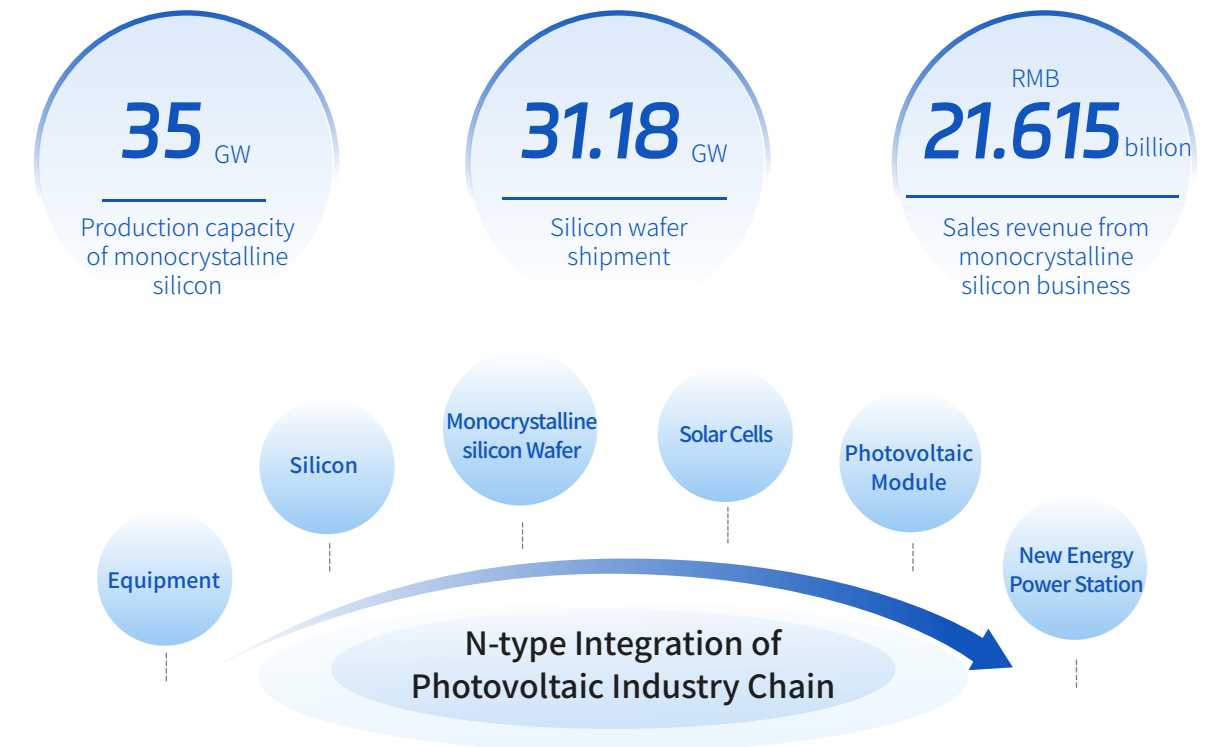
3
Total Number of
Industrial Bases²

7,245
Total Number of
Employees

RMB **21.034** billion
Total Assets

¹ The company was formerly known as "WUXI SHANGJI AUTOMATION CO., LTD." and changed its name to "Hongyuan Green Energy Co., LTD." in 2023.

² HOYUAN has set up three industrial bases in Wuxi (Jiangsu Province), Baotou (Inner Mongolia Autonomous Region) and Xuzhou (Jiangsu Province). Please refer to Regional Distribution for details.



Business Scope

High-end Meta Equipment

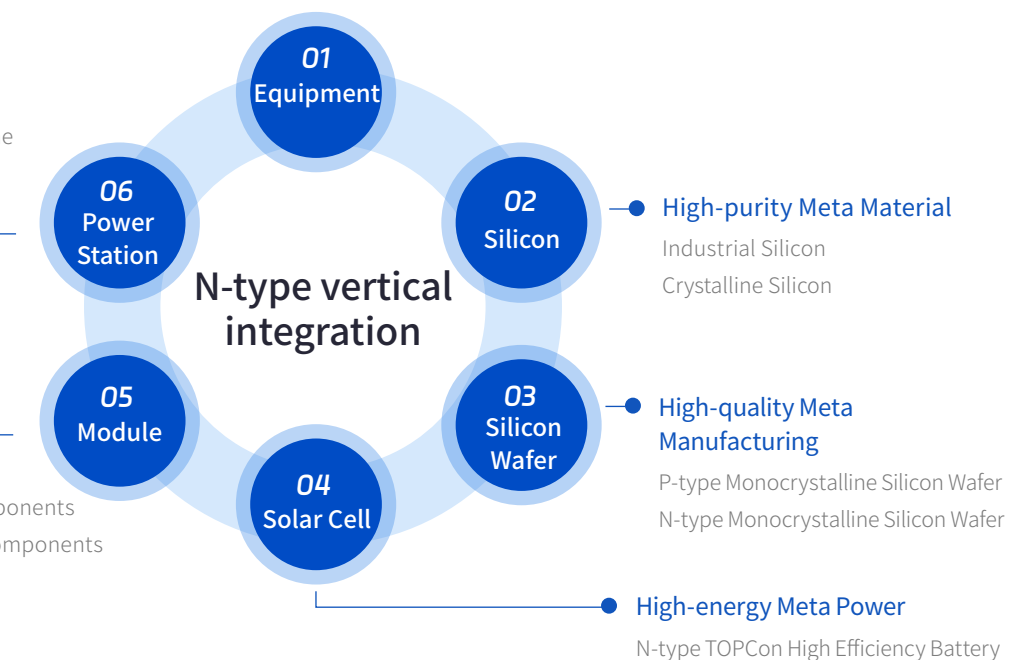
Solar Device
Sapphire Equipment
Semiconductor Equipment
Silicon Carbide Equipment
Cylindrical Grinding Machine

High-efficiency Meta Terminal

Wind Power Station
PV Power Plant

High-efficiency Meta Module

High-efficiency PERC Components
High-efficiency TOPCon Components



Regional Distribution



HOYUAN Industrial Distribution

Our Culture



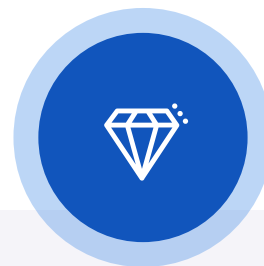
Our Mission

Cleaner Energy,
A Better World



Our Vision

Become a practitioner of
dual carbon goal and the
energy revolution



Core Values

Honesty, Pragmatism,
Dedication,
High-efficiency, Innovation

Awards

HOYUAN Green Energy Co., Ltd.



The Fourth Batch of National Specialized, Refined, Special and New Little Giant Enterprise

Ministry of Industry and Information Technology of the People's Republic of China
Awarded by



First Prize of China Industry-University-Research Cooperation Innovation Achievement Award

China Industry-University-Research Institute
Collaboration Association
Awarded by

Top 50 Forbes China Most Innovative Companies 2022

Forbes China
Awarded by

Top 200 Private Enterprises of Jiangsu Province

Jiangsu Federation of Industry & Commerce
(JSFIC)
Awarded by



Excellent Enterprise with Harmonious Labor relations in Jiangsu Province 2022

Jiangsu Tripartite Committee for
Coordinating Labor Relation
Awarded by

Top 100 Private Enterprises in Manufacturing of Jiangsu Province

Jiangsu Federation of Industry & Commerce
(JSFIC)
Awarded by

Top 500 Listed Companies by Market Capitalization of China

Wind
Awarded by

HOYUAN New Material (Baotou) Co., Ltd.



Top 50 Private Enterprises in Manufacturing Industry of Inner Mongolia Autonomous Region for 2022

Inner Mongolia Autonomous Region
Federation of Industry & Commerce
Awarded by



Top 100 Private Enterprises in Inner Mongolia Autonomous Region for 2022

Inner Mongolia Autonomous Region
Federation of Industry & Commerce
Awarded by

National green factory in 2021

Ministry of Industry and Information
Technology of the People's Republic of China
Awarded by

The Eleventh Batch of Standardized Enterprises for Photovoltaic Manufacturing Industry

Ministry of Industry and Information
Technology of the People's Republic of China
Awarded by



ISO 45001:2018 Occupational Health
and Safety Management System

Expiration Date 2024.12.07



ISO 14001:2015 Environmental
Management System

Expiration Date 2024.12.07

Membership

HOYUAN Green Energy Co.,Ltd.



- China Photovoltaic Industry
Association

Join in 2017



- China Machine Tool & Tool
Builders' Association

Join in 2016

Certification Qualification

HOYUAN Green Energy Co.,Ltd.



ISO9001:2015 Quality Management System
Expiration Date 2024.05.20

HOYUAN New Material (Baotou) Co., Ltd.



ISO9001:2015 Quality Management System
Expiration Date 2025.05.16



ISO 50001:2018 Energy
Management System
Expiration Date 2024.04.06

HOYUAN New Material (Baotou) Co., Ltd.



- Baotou Carbon Neutrality
Industry Association

Join in 2023



- Silicon Industry of China Nonferrous
Metals Industry Association

Join in 2022



- Materials Sub-Technical Committee
of National Technical Committee for
Standardization of Semiconductor
Equipment and Materials

Join in 2021



- Low Carbon Industry Branch of
Baotou Environmental Protection
Industry Association

Join in 2021

Our 2022——Become a N-type Whole Industry Chain Supplier

HOYUAN is committed to accelerating the industrialization process of "silicon-cell-module" on the basis of clean energy and through upstream and downstream extension, in order to effectively improve production supply capacity, and consolidate the competitive advantage of the industrial chain. We strive to accelerate the pace of becoming a strong manufacturing enterprise and strengthen the advantages of domestic replacement by refining our own technology and processes, to provide more efficient, more plentiful and safer clean energy source products.

August

An investment of RMB 15 billion was put into the construction of 25GW annual production capacity of monocrystalline silicon slices and 24GW N-type high-efficiency cell project, providing the layout plan of the downstream PV/solar cell business.

June

An investment of RMB 14.8 billion was put into the construction of 40GW annual output of monocrystalline silicon crystal pulling and ancillary production project, continuously expanding the field of monocrystalline silicon materials.

February

An investment of RMB 11.8 billion was put into the construction of 100,000 tons of high-purity crystalline silicon project, expanding the upstream silicon material security channels.

Figure in 2022

Higher Efficiency

- Operating revenue reached RMB **21.909** billion, up by **100.72%** year on year
- Net profit attributable to shareholders of listed companies reached RMB **3.033** billion, up by **77.23%** year on year
- Basic earnings per share reached RMB **7.824**, up by **72.18%** year on year

Greener Operation

- Listed in **PV Manufacturing Standardized Condition** in China
- All series of silicon wafers passed the French **Carbon Footprint ECS** certification
- Environmental protection capital investment amounted to RMB **84.08** million
- Carbon dioxide emissions reduced by **40,412,398** tons over the year

Greater Harmony

- 160** EHS safety training sessions were provided for a total of **9,700** participants
- Approximately RMB **13.17** million was donated with **3,634** volunteers involved
- 100%** coverage rate of collective contract employees; and **100%** coverage rate of protection agreements on female employees

Greater Reliability

- Independent directors account for **43%** of the board and **67%** of specialized committees
- 0** recall of quality issues with **94%** customer satisfaction
- 1,038** R&D personnel and over RMB **974million** R&D investment.

Sustainable Management

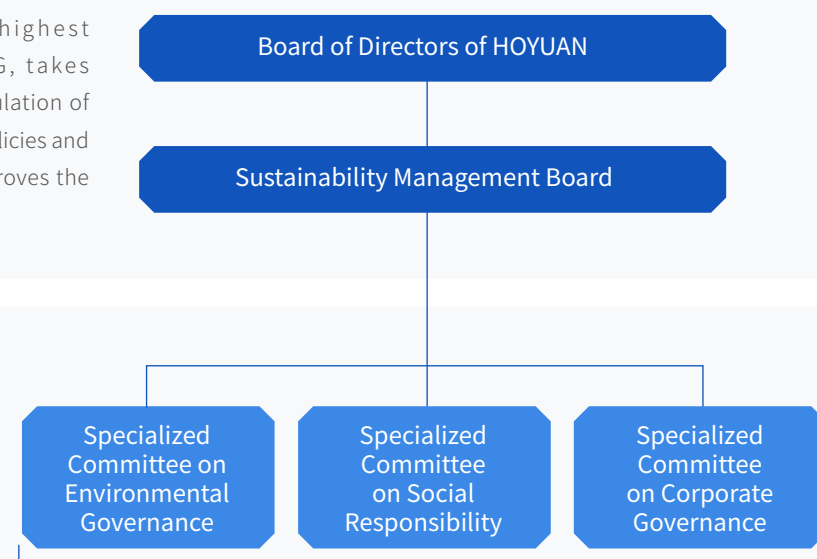
Sustainability Governance

HOYUAN has integrated sustainability philosophy into corporate operation, established a sustainable governance structure, including three specialized committees for environmental governance (E), social responsibility (S) and corporate governance (G), and gradually incorporated sustainable development into the agenda of corporate governance. The aim is to improve ESG management process, and ESG governance of the Group and its subsidiaries.

ESG Leading Group

The Board of Directors, the highest decision-making body for ESG, takes overall responsibilities in the formulation of corporate ESG strategic planning, policies and work plans, and considers and approves the ESG annual report.

Structure of the Sustainable development board

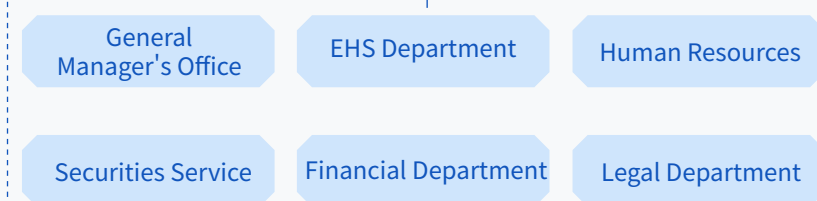


ESG Co-ordination Team

Specialized committees under the board of directors are responsible for setting development goals of environmental, social and governance and helping handle ESG-related tasks.

ESG Working Group

It is composed of various departments of corporate HQ, and is responsible for implementing objectives of the specialized committees, coordinating and promoting the implementation of ESG tasks, preparing annual ESG report, and strengthening the influence of internal and external sustainable development of the company.



The United Nations Sustainable Development Goals



Stakeholders Engagement

We have referred to requirements of GRI Standards and AA1000 SES Stakeholder Engagement Standard, and identified key stakeholders such as shareholders and investors, employees, customers, suppliers, government and regulators, scientific research organizations and industry associations, surrounding communities (including residents) and environment, and companies in the same industry.

We fully realize the impact of corporate operations on stakeholders, keep communication and collaboration with stakeholders, and respond to their expectations and demands in a timely manner, so as to ensure information disclosure on sustainable development and ESG governance.

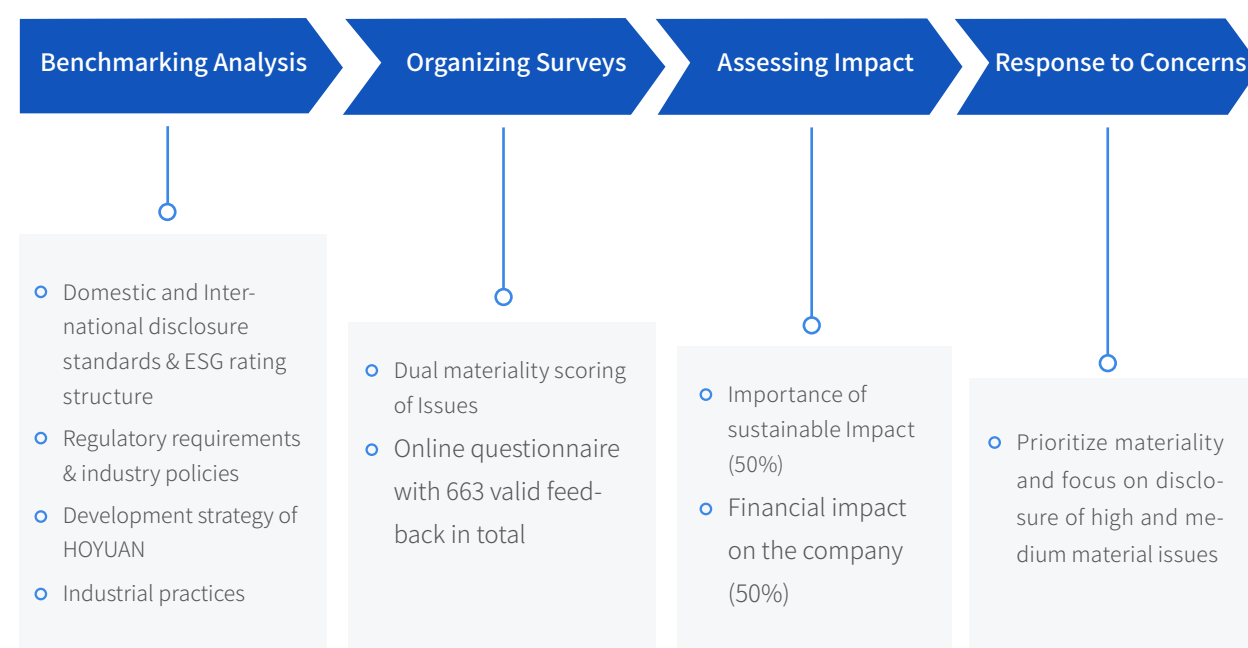
Stakeholders	Topics of Concerns	Communication Mechanism
Shareholders and Investors	Corporate Governance	Periodic Reports & Temporary Announcements
	Business Ethics	Board of Shareholders
	Risk Management	Constant Online and Offline Communication (Investment Seminars, Performance Presentation, E-interaction with Shanghai Stock Exchange, Investor Mailboxes, Hotlines)
	Investor Relations	Media Communication
Employees	Employee Rights	Employee Activities, Workers' Congress, Training Activities
	Employee Training and Development	Employee Handbook
	Occupational Health and Safety	Voice of HOYUAN
	Equality, Diversity and Inclusiveness	Internal Email Office Automation System Notice Board
Customer	Product Quality and Safety	Daily Online and Offline Communication Customer Satisfaction Survey
	Customer Service	
	Technology Innovation	
	Creating Green and Low-carbon Products	
Supplier	Sustainable Supply Chain	Regular Supplier Training
		Exchange Visit
		Supplier Review
		Feedback from Monitoring Channels

Stakeholders	Topics of Concerns	Communication Mechanism
Government and Regulators	Corporate Governance	Regulatory Meeting Physical Inspection Information Disclosure
	Risk Management	
	Environmental Compliance Management	
	Energy Management	
	Water Management	
	Waste Management	
Scientific research organizations and industry associations	Responding to Climate Change	Industrial Seminars Product Exhibitions
	Technology Innovation	
	Creating Green and Low-carbon Products	
Surrounding Communities (including residents) and Environment	Responding to Climate Change	Open Day Community Volunteering Activities Public Service Activities Media Communication
	Water Management	
	Waste Management	
	Community Relations	
Public Media	Corporate Governance	Press Release Company Monthly Magazines Activity Participation Questionnaire survey Social Welfare Projects
	Product Quality and Safety	
	Charity and Public Welfare	
Companies in the Same Industry	Technology Innovation	Industrial Seminars Product Exhibitions

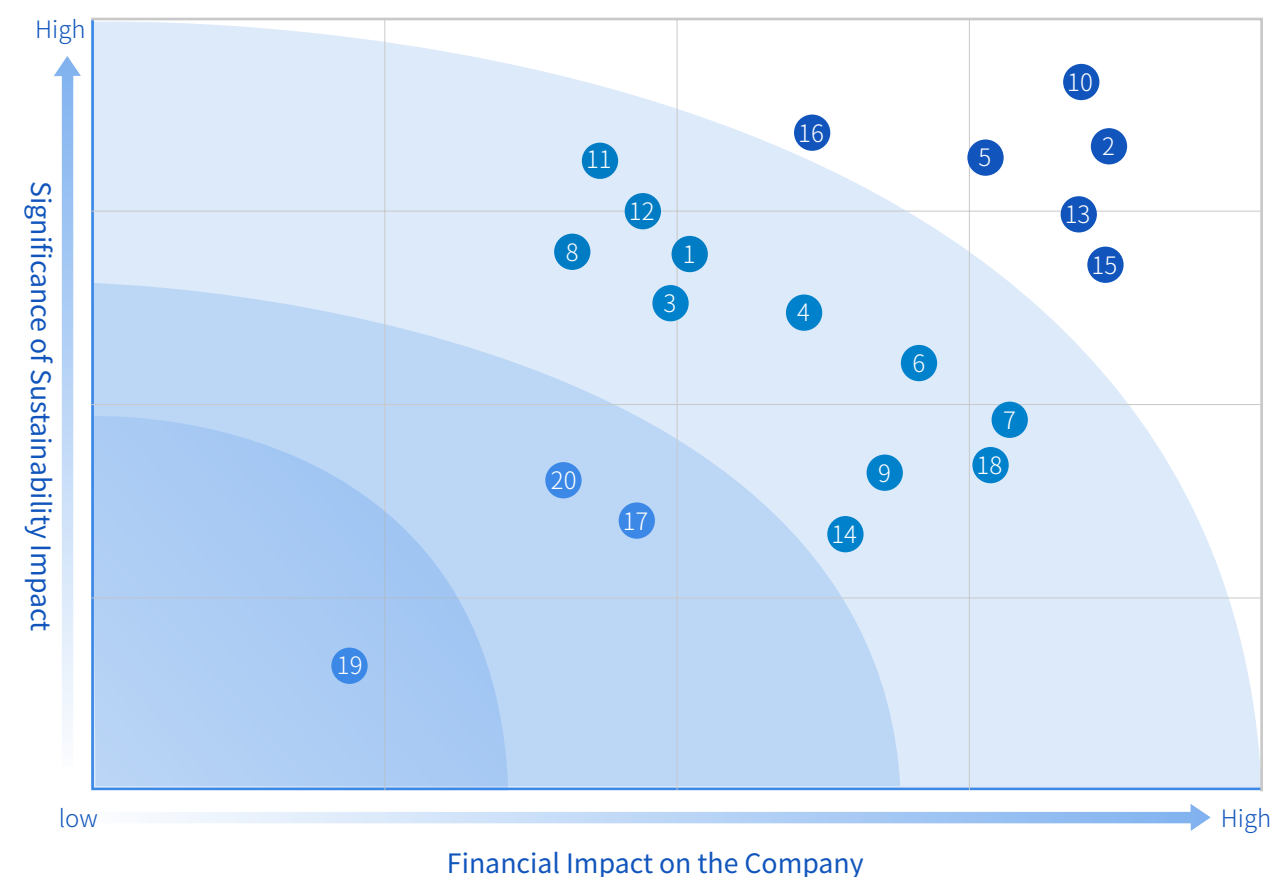
Materiality Analysis

Through industry benchmarking analysis and stakeholder research, in line with the three AA1000 SES principles of inclusiveness, materiality, and responsiveness, we assess the risks and opportunities that have an impact on corporate development, economy, environment, and society, and identify and screen Materiality of sustainable development, and disclose key points in the report.

Identification Process of Materiality



Materiality Matrix



High Materiality

- 2 Business Ethics
- 5 Product Quality and Safety
- 10 Energy Management
- 13 Creating Green and Low-carbon Products
- 15 Employee Training and Development
- 16 Occupational Health and Safety

Medium Materiality

- 1 Corporate Governance
- 3 Risk Management
- 4 Investor Relations
- 6 Customer Service
- 7 Technology Innovation
- 8 Responding to Climate Change
- 9 Environmental Compliance
- 11 Water Management
- 12 Waste Management
- 14 Employee Rights
- 18 Sustainable Supply Chain

Low Materiality

- 17 Equality, Diversity and Inclusiveness
- 19 Community Relations
- 20 Charity and Public Welfare

Special Feature

Advocate who supports co-prosperity and sharing, green and low-carbon



*Energy is the cornerstone for survival and
development of the modern society.*

At present, global energy is undergoing a green and low-carbon transformation, and China has clearly proposed the goals of achieving "carbon peaking" by 2030 and "carbon neutrality" by 2060.

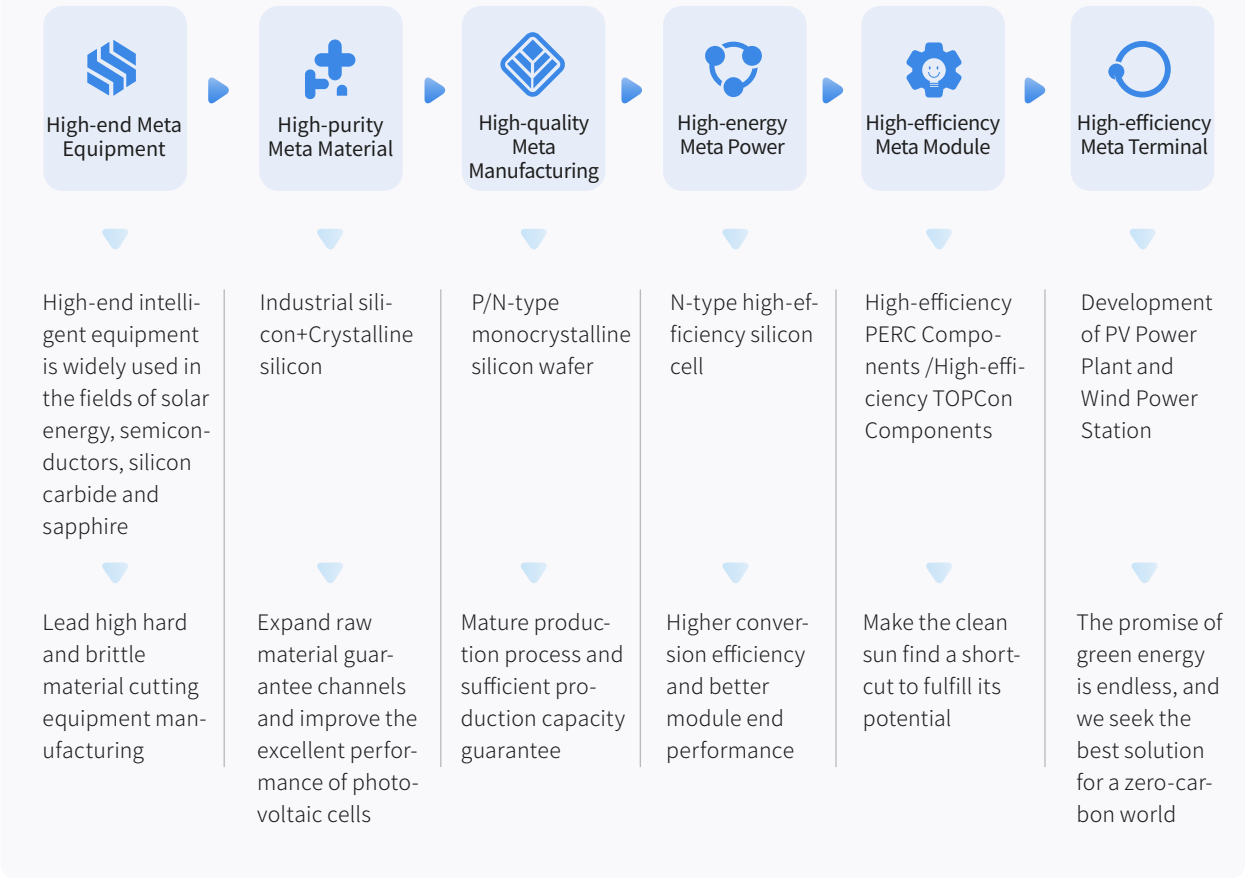
The deep vertical integrated photovoltaic industry layout of Hongyuan Green Energy has realized the transformation from the full capacity scale of photovoltaic manufacturing to the N-type integration of the industry. Our three major industrial manufacturing bases, seven wholly-owned subsidiaries and a global marketing center fully guarantee the efficient linkage of the whole process from equipment, silicon materials, silicon wafers, high-efficiency batteries and photovoltaic modules, power station development and services, making each unit of electricity cleaner, more efficient and greener, and promoting the green transformation of energy.





As an ecological integrator of global green energy industry, HOYUAN takes "Cleaner Energy, A Better World" as mission, and ensures in-depth practice and promotion of the global green energy transformation. With the rapid growth of the company, we have in-depth knowledge of the evolution and changes of the photovoltaic industry, always take healthy and sustainable development as our business objectives, move forward with industrial ecology, share value with customers, ensure mutual prosperity with partners, and build a more harmonious world all along.

Meta Strategy: Empower a Carbon-free Future, Lead and Innovate Green Energy



Crystalline silicon	Monocrystalline silicon wafer	N-Type Cell	PV module	Development of New Energy Power Station
1 hundred thousand tons	75 GW	24 GW	16 GW	5.5 GW
Capacity Planning	Capacity Planning	Capacity Planning	Capacity Planning	Capacity Planning



The purpose of all refined development in the Photovoltaic industry is to reduce the cost of electricity generation, ensure everyone can afford clean energy, and ultimately build a zero-carbon world.



—Hao Yang, General Manager of HOYUAN

Low-carbon Traceable Products

HOYUAN New Material (Baotou) stays committed to leading green development with science & technology as well as intelligent manufacturing. In 2021, HOYUAN New Material (Baotou) was awarded as the national green factory, and in 2022 was recognized as one equipped with PV Manufacturing Standard Conditions in China in terms of process technology, comprehensive utilization of resources and energy consumption, intelligent manufacturing, green manufacturing, and environmental protection.

With the business foundation of new energy manufacturing equipment and core materials, the company has managed to produce low-carbon traceable products. The production line design and equipment selection adhere to the principles of "advanced, energy-saving, high efficiency", so as to improve comprehensive utilization of materials, reduce production costs, build a digital and intelligent factory with comprehensive digitalization and intelligent manufacturing for efficient and smooth operation, and ultimately mitigate environmental risks of the company in general. In terms of raw materials, we have adopted a new generation of more low-carbon granular silicon materials to reduce carbon footprints of our products. In addition, barcode system is used to identify each silicon crystal rod for traceability of the whole production process.



HOYUAN' s full series of silicon wafers have passed the French ECS certification.



In May 2023, full series of wafer products of the company once again passed the French Carbon Footprint ECS certification, covering the entire life cycle of wafer, including crystal pulling, square opening, slicing, recycling, etc. This carbon footprint certification provides HOYUAN with sufficient market competitiveness and gives us a strong impetus to develop overseas markets and establish a globalized layout.

In the future, HOYUAN will continue to engage in the R&D field of product technology, practice green development philosophy, build a green manufacturing system, accelerate the intelligent and digital transformation of factories, utilize the strengths of vertical integration of the industrial chain, continue to promote the cost reduction and efficiency of the photovoltaic industry, and contribute to a carbon-free future.



New Energy Mmanufacturing Equipment

HOYUAN has been engaged in the field of high-end intelligent equipment manufacturing for many years, and its specialized processing equipment for highly hard and brittle materials is widely applied in photovoltaic, semiconductor, silicon carbide and sapphire sectors. Amongst all, solar energy equipment covers the opening, truncation, grinding, rounding, chamfering, slicing of solar silicon wafers.

In 2022, the company rolled out a number of process improvement projects to reduce material loss and damage rate for better crystal pulling efficiency and better slicing efficiency in the wafer production process.

Major Equipment Improvement Projects Rolled out in 2022

Renovating and upgrading self-made water-cooling screen of the equipment, applying a new type of infusion tube structure to improve the speed and stability of crystal pulling, and improving the production efficiency while reducing the breakage rate by about 10%;

Refining PV slicer cutting steel line, improving high-speed performance for better wafer rate;

Automating PV slicer cleaning, replenishing and draining;

Improving axis swing of silicon carbide slicing machine workpiece;

Optimizing silicon carbide slicer cutting nozzle and mortar cylinder;

Renovating circulation line of silicon carbide slicer cutting fluid;

semiconductor cutting machine.

Monocrystalline Silicon Wafer

Based on the mature production process and stable and traceable product supply chain, HOYUAN continuously optimized equipment and innovated slicing technology, with significantly increased yields and production of 182/210 monocrystalline silicon wafers, as well as significantly reduced costs. By means of process optimization, the energy intensity of single crystal decreased by 4.1% in 2022 as compared with that of 2021. In addition, we have also carried out industrial cooperation to promote the "large size, thin wafer" process of monocrystalline silicon wafer, whereby the company planned to establish a zero-carbon industrial chain in the future.

In 2022

shipment (volume) of corporate monocrystalline silicon wafer products reached

31.18 GW

It is estimated that after all installation and operation of the power station, which is equivalent to reducing the emission of

26.67 million tons of carbon dioxide equivalent

equivalent to saving tons of standard coal

5.75 million tons

equivalent to planting

1.33 billion trees²

² The carbon emission calculation factor comes from the latest national power grid average emission factor published by the State Bureau of Ecological Environment.

High-efficiency Cells

In August 2022, HOYUAN Xuzhou New Energy Industry Park project was kicked off for N-type high-efficiency silicon cell capacity. TOPCon technology has applied to cell production, with higher conversion efficiency and better module end performance.

In June 2023, the first 16GW N-type TOPCon high-efficiency cell was successfully rolled out on the production line, and the efficiency of mass production could reach 25.6%, leading the industry.

Technical Advantages



TOPCon
purification
contact
technology



Cell conversion
efficiency of up
to 25.6%+



Customized
production with
thickness of
110~150um



Introduction
of the whole
process quality
control system



Chip-level tracking
to significantly
improve product
quality



"Large size and thin
sheet" to reduce
cost and increase
efficiency

Product Advantages



High conversion
efficiency



High bifaciality



High reliability



Low attenuation
rate



Low
temperature
coefficient



Good low light
effect

N-type TOPCon 182 16BB Bifacial Solar Cell



High conversion
efficiency



High bifaciality



Bifacial design



Excellent anti-PID
performance



Low temperature
coefficient



Zero LID versus
low LeTID



Strict grading
standard



Strict appearance
standard



30-year power
generation guarantee



Excellent low light power
generation features.



High capacity for
electricity generation

High-efficiency Module

In 2023, we launched HT series of TOPCon efficiency modules, which utilize multiple main gates and non-destructive cutting technology for mass-produced modules with output power up to 710W and conversion efficiency up to 23%. HT series modules boast the advantages of low attenuation, -0.3%/°C low temperature coefficient, 85% high bifaciality ratio, and 2% comprehensive gain for weak light power generation. Meanwhile, the module is available with a 12-year warranty on materials and process as well as a 30-year warranty on power, providing users with a safer, more efficient and reliable product experience.

Ultra-efficient Photovoltaic Modules



TOPCon
technology



Non-destructive
cutting model



Half-slice
technology



MULTI-BUSBAR
(MBB)



High density
package

New Energy Power Station

With excellent supply chain security, intelligent design, efficient construction and high-quality service, HOYUAN is able to develop and execute new energy power stations. During the reporting period, the 5.5GW wind power and photovoltaic power plant project has been steadily pushed forward, which serves not only as an affirmation of corporate product manufacturing capability and industrial systematic operation capability, but also an active practice of zero-carbon transformation of the industry.

In the future, we will aim at becoming a **"global green energy industry integration service provider"**, take **"Cleaner Energy, A Better World"** as our corporate mission, and rely on deep vertical integration and breakthroughs in new technologies as our driving forces to push forward industrial ecology, share values with customers, and ensure mutual prosperity with partners and harmony across the world. We will also provide the society and users with the ultimate standard green energy that is more efficient, accessible, affordable, and applicable at scale, practicing and promoting the global green energy transformation.

Practitioner of Scientific Operation for Long-term Development

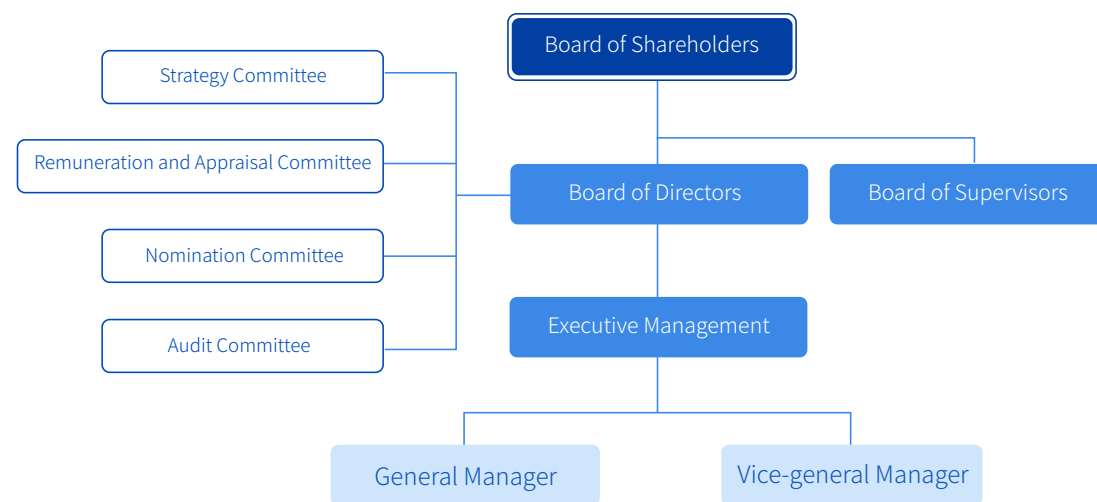
Corporate Governance	/	29
Legal Compliance	/	32
Investor Relationship	/	36



Corporate Governance



A sound and modern corporate governance structure and a well-developed corporate governance system are key pillars for sustainable value creation in a company. HOYUAN strictly abides by laws, regulations, normative documents and guidelines, including the Company Law of the People's Republic of China, the Securities Law of the People's Republic of China, the Code of Corporate Governance for Listed Companies, and the Guidelines for the Articles of Association of Listed Companies, etc. The company constantly optimizes its corporate governance structure, updates its organizational governance norms in a timely manner, strengthens internal control measures, safeguards the interests of its stakeholders, and fosters a transparent, honest, and accountable corporate governance culture.



The company has set up a modern organization system and operation mechanism composed of board of shareholders, board of directors, board of supervisors, and executive managers. The board of shareholders serves as the supreme authority and the board of directors oversees group governance and is accountable to the board of shareholders. The board of directors is composed of a number of committees for daily work. Each committee is allocated clear governance responsibilities, with clearly defined management roles and demarcation.

Governance Functions

Board of Shareholders

In strict accordance with the Articles of Association and Rules of Procedure for Board of Shareholders, the company hosted one annual general meeting and seven temporary meetings during the reporting period, and passed 32 motions, including the stock incentive plan, profit distribution and the appointment of auditor, etc to safeguard shareholders' rights to information, participation and voting and fulfill its responsibilities and obligations for information disclosure as a listed company.

Board of Directors

The current board of directors consists of seven members, including three independent directors. The board of directors is composed of four specialized committees, namely, the Audit Committee, the Nomination Committee, the Remuneration and Assessment Committee and the Strategy Committee, which provide advice and recommendations in terms of strategy formulation, internal control and major investments in accordance with corresponding rules and procedures, so as to ensure that the board of directors' deliberation and decision-making are efficient and scientific.

During the reporting period, the company successfully renewed the board of directors and hosted 21 board meetings, where board members attended in person and performed their duties.

Board of Supervisors

The current board of supervisors is composed of three members, including one employee supervisor. The board of supervisors is responsible for overseeing the duties and behaviors of the board of directors and senior management, checking financial status of the company and safeguarding the legitimate rights and interests of shareholders.

During the reporting period, 14 board meetings were convened, and the procedures for convening and voting at the meetings were in compliance with the Rules of Procedure of the Board of Supervisors.

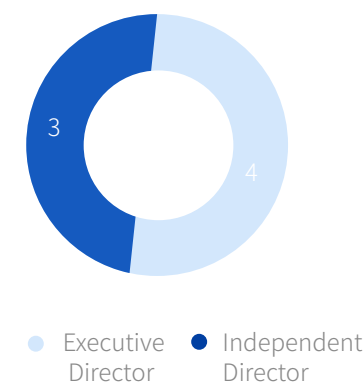
Executive Managers

The company appoints one general manager and several vice-general managers. During the reporting period, executive managers performed the authority delegated by the board of directors and implemented the resolutions adopted by the board of shareholders.

Independence

In order to strengthen the independence and professionalism of the board of directors, 3 independent directors are invited, accounting for 43% of the Board. Meanwhile, the independent directors account for a majority of the Audit Committee, the Nomination Committee, and the Remuneration and Assessment Committee and serve as convenors; besides, the independent directors do not hold shares of the Company in any form or have other positions in the Company.

Independence of the Board (Unit: seat)



Organization of the Specialized Committee

	Proportion of Independent Directors(%)	Hosted Meetings (number)	Attendance (%)
Audit Committee*	67	7	100
Nomination Committee*		1	
Remuneration and Assessment Committee*		2	
Strategy Committee		2	

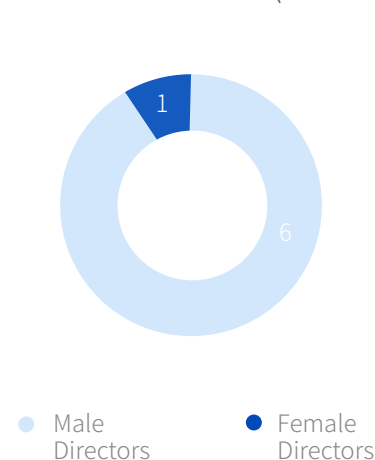
*indicates that the convenor is an independent director, while the Audit Committee includes one professional accountant.

Diversity

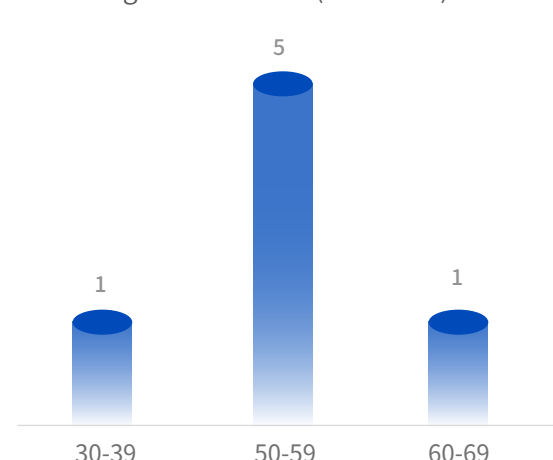
The board of directors is selected regardless of gender, age, nationality, educational background or professional skills. Current members of this organization boast rich industry-university backgrounds, management experience and skills, with a mindset for diversity and inclusiveness.

Diversity of Directors

Gender of the Board (Unit: seat)



Age of the Board (Unit: seat)



Skill Matrix of the Board of Directors



Legal Compliance



Integrity Management

Integrity and pragmatism are core values of the company and serve as cultural philosophy that motivates continuous upgrading of internal control and management. We comply with laws and regulations, industry policies, service norms, and the Group's Code of Conduct across the globe. The group has set up a Legal Department to coordinate the management and handling of legal affairs of the group, and our subsidiaries have set up Audit and Supervision Department to collaborate in business activity inspection for business divisions and compliance assessment during the execution process.

In the expansion of international business, we strictly comply with local laws and regulations together with regulatory requirements, and we will gradually improve our management system to boost the development of our international business. In addition, we have updated and issued internal control norms such as the Integrity Management System and the Anti-Unfair Competition Management System in accordance with the requirements of laws, regulations and rules for listed companies; we retain regular communication with our subsidiaries and track the compliance with norms on major matters such as connected transactions and asset disposal.



During the reporting period, the company was not subject to significant sanctions or fines for violation of laws or regulations in the social, environmental and economic fields.



Featured Lecture on Prevention of Job Crime and Contractual Risks



Anti-corruption and Commercial Bribery

The company always insists on zero tolerance attitude towards corruption and fraud. In this context, the company has formulated the Basic Standard for Corporate Internal Control, Anti-commercial Bribery Management System, Integrity Management System, Measures for the Management of Hospitality Business Costs, Announcement of Strengthening the Management of Gifts Surrendered and other rules and regulations, in order to improve the anti-corruption and commercial bribery system and gradually form an institutionalized and process-oriented corruption risk prevention, monitoring and elimination mechanism.

We insist on conducting all business activities on the basis of trust and honesty, frankness and integrity, including but not limited to procurement, sales, R&D, foreign investment, etc., and integrate the spirit of fairness, impartiality, integrity and honesty into business transactions to protect and safeguard the legitimate rights and interests of both parties.

Every employee of HOYUAN is committed to integrity practice and takes integrity and honesty as their professional ethics. The Employee Handbook explicitly prohibits acts that violate business ethics, such as accepting benefits, duty encroachment, abuse of power for personal gains and frauds, and requires avoidance of special relationships to prevent conflicts of interest. Meanwhile, employees are required to sign the Integrity Practice Commitment Letter to acknowledge and abide by corporate systems and regulations, so as to act correctly.

In addition, we have specified anti-commercial bribery clauses, integrity covenants and corresponding penalties in contracts, so as to prohibit the provision of gifts and hospitality that are not in line with business practices or social etiquette, and provide suppliers with a channel of complaint filing to show corporate intention of severely punishing corruption behaviors and ensure that third-party partners are conform with corporate values and compliance philosophy as well.

During the reporting period, the company completed its annual internal audit and no significant design or operational deficiencies were identified. Refer to [the Internal Control Assessment Report](#) for more details.

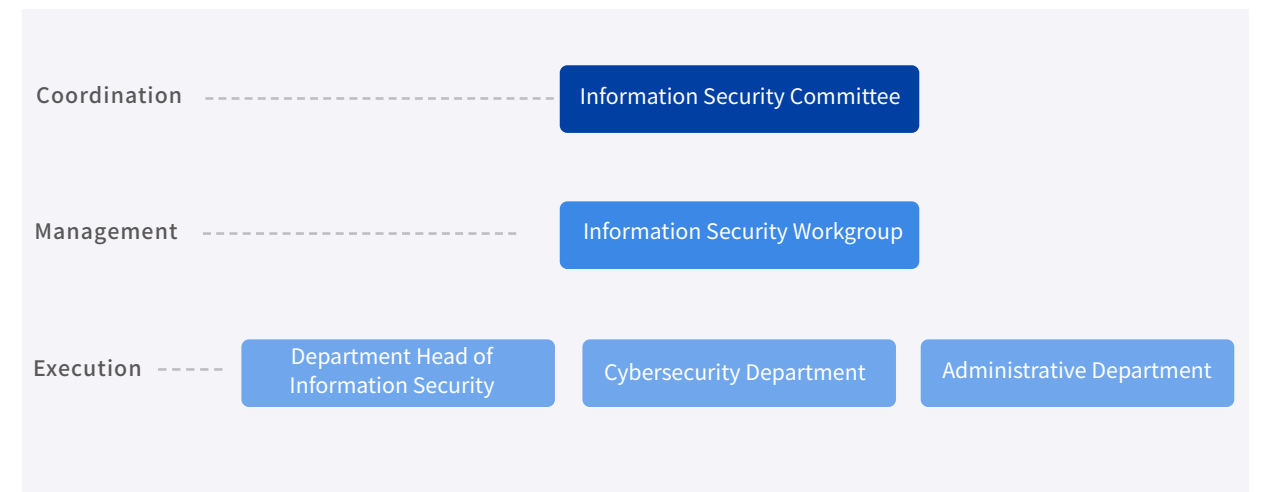
Anti-Unfair Competition

The company has issued the Management System for the Prevention of Unfair Competition in accordance with the Anti Unfair Competition Law of the People's Republic of China and the Anti-Monopoly Law of the People's Republic of China, and for the purpose of corporate business development, maintained publicity, and fostered the concept of healthy competition within the company; the legal department has synchronized the implementation of the requirements for the prevention of unfair competition via model contracts and contract audits, conforms with the requirements for trade compliance requirements at operation locations, and strive to become a responsible enterprise that advocates fair market competition.

Responsible Information Management

With more focus on data security and personal information protection, strengthening information security control and personal privacy handling is conducive to enhancing brand value and building customer trust. HOYUAN Solar Firmly Implemented ISO 27001 Information Security Management System (ISMS) Standard Requirements , Information Security Incident Management Procedures, and Customer Privacy Protection Management System, compiled a list of information assets, assessed asset values and potential risks, based on requirements of ISO 27001 information security management system standard as well as PDCA circulation and implementation of Information Security Management Systems (ISMS); defined self-restraints on data security compliance, and set three-tier information security objectives for the company, departments, and projects; establish institutionalized third-party information-handling principles and security requirements for data collection, processing, transmission, storage, and deletion.

Information Security Committee



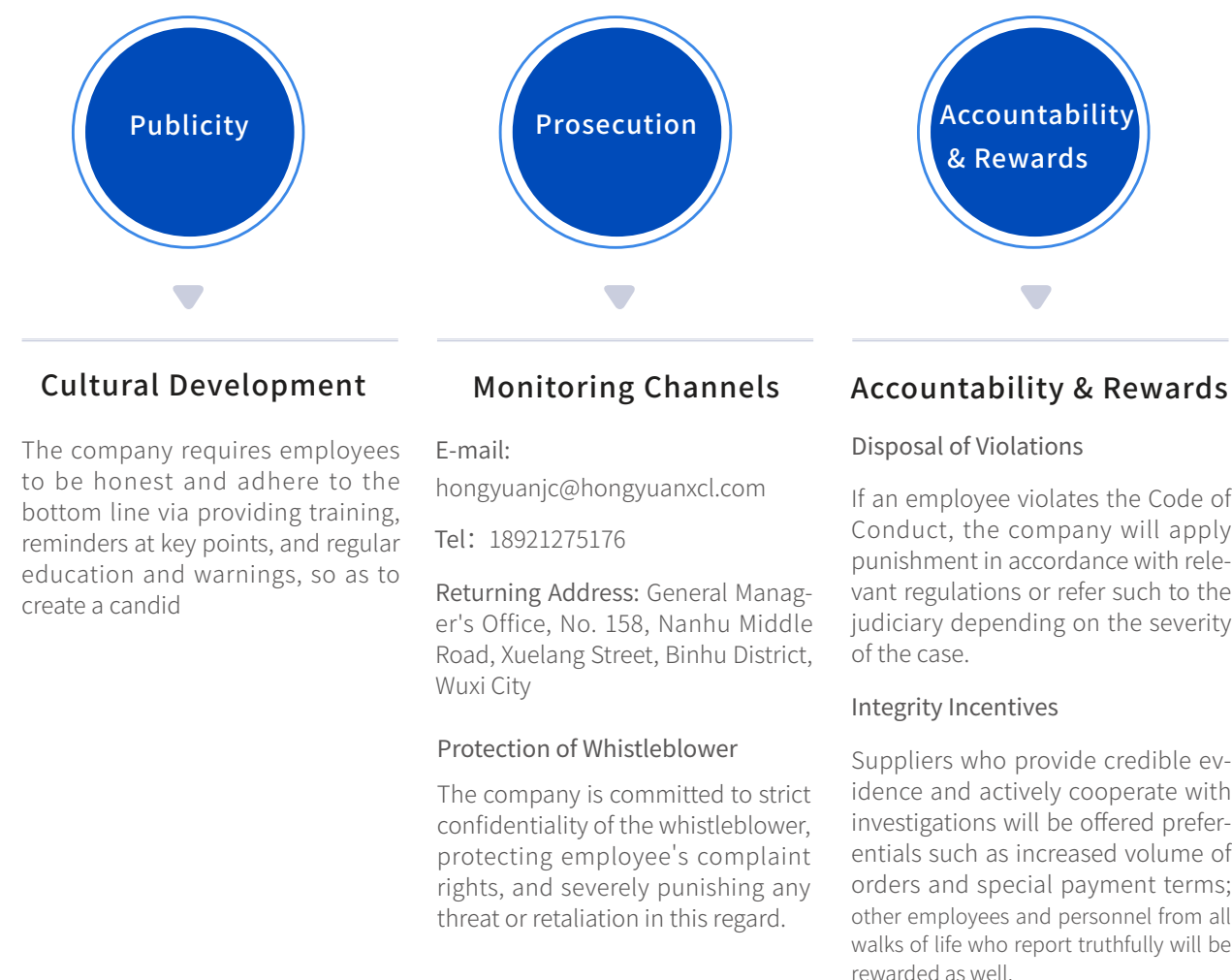
The company promises that the business secrets and privacy information obtained due to business activities will only be used for project promotion, prevent unauthorized and irrelevant personnel from accessing the data, reduce the risk of data leakage, and avoid disruption of business activities.

In addition, ISMS reviews shall be chaired by the General Manager at least once a year. We provide vocational and technical education and skills training for all employees with ISMS management responsibilities, so as to raise the management awareness of relevant personnel and to ensure employees are qualified for their current positions with the right skills.

Information Security Management Strategy

Focus of Management	- The general manager serves as the highest person responsible for information security, and head of each department shall be responsible for information security management respectively - The Information Security Management (ISM) Committee assists the general manager in coordinating information security management matters of the company;
Full Engagement	All employees are required to sign a commitment letter of confidentiality agreement and participate in information security education and training.
Risk Management	Annual ISMS internal audits are performed to review the reasonableness and effectiveness of control objectives, control measures, processes and procedures.

Internal Control and Compliance Enforcement Mechanism



Business Ethics Key Performance During the Reporting Period

Coverage of Anti-corruption and Anti-commercial Bribery Training for All Employees

100 %

Signature Rate of Employee Integrity Agreement

100 %

Lawsuits on Unfair Competition and Antitrust Practices

0

Confirmed Proceedings of Corruption and Bribery

0

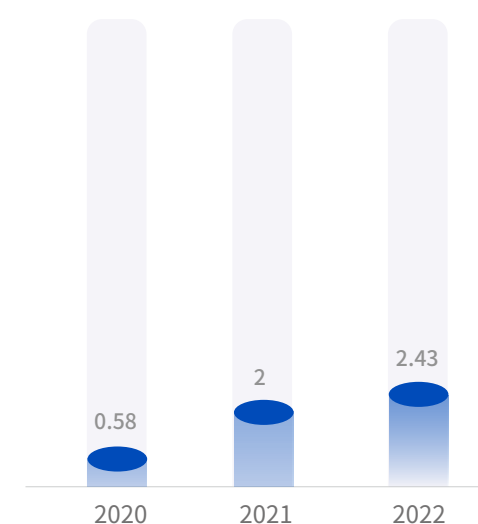
Investor Relationship



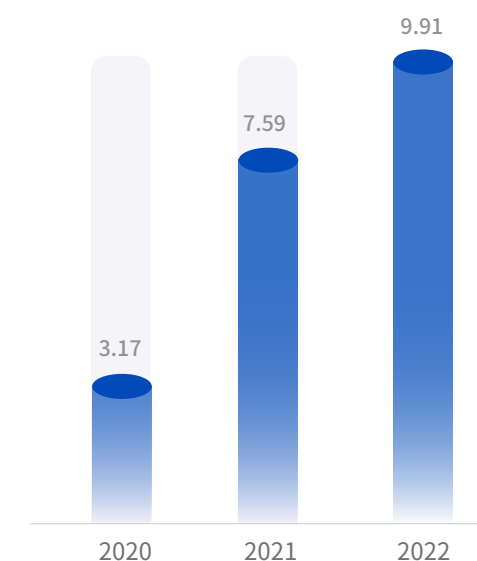
HOYUAN is committed to building a smooth, diversified and convenient communication channel for investors so as to improve the efficiency and quality of information disclosure and communication. We keep constant communication with investors through interim announcements, periodic reports, e-interactions with Shanghai Stock Exchange, exclusive hotlines and mailboxes for investors, investment exchange meetings hosted by brokerage organizations, and performance briefings, etc. In 2022, we issued 189 periodic reports and various interim announcements, 4 performance briefings, responded 126 times (100%) via e-interactions with Shanghai Stock Exchange, and were awarded as Grade B in the information disclosure assessment of the Shanghai Stock Exchange for 2021-2022.

Shareholder Returns

Cash Dividend per Share (including tax)



Social Contribution Value Per Share*



*[Calculation formula] Social contribution value per share = Earnings per share + (Total tax payments + Employee expenses + Interest expenses + Total public welfare amount - Social costs) / Total equity at the end of the period



02

Leader of Clean Energy through Collaboration



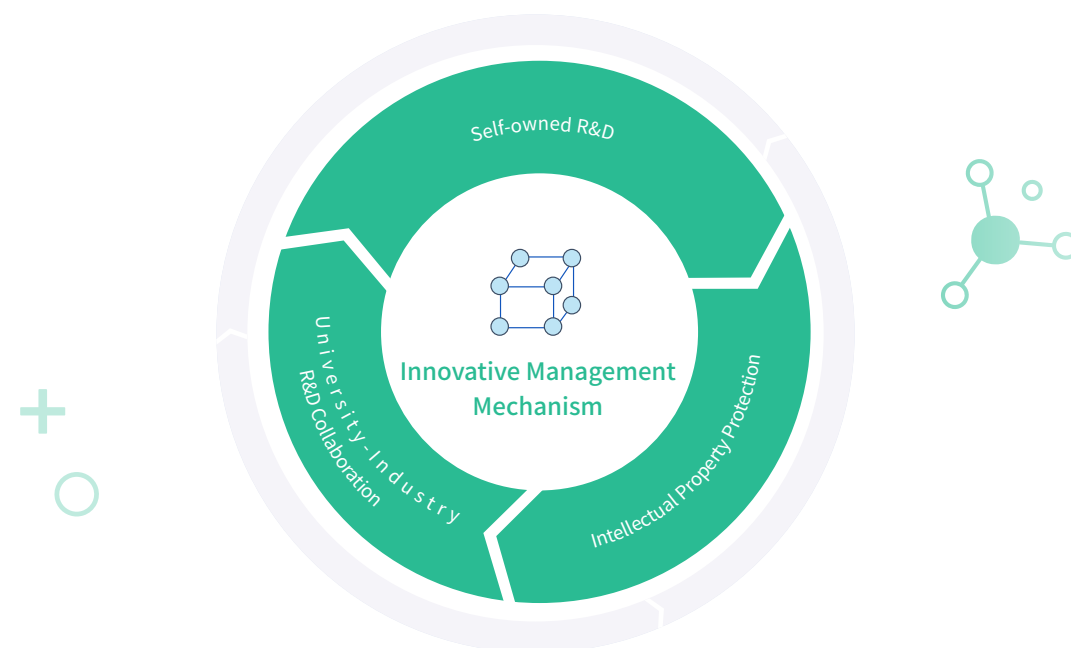
Scientific and Technological Innovation	/	39
Product Quality and Safety	/	41
Customer Relationship Management	/	42
Sustainable Supply Chain	/	43



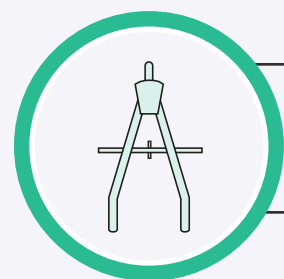
Scientific and Technological Innovation



As a new energy enterprise equipped with the entire PV industry chain, HOYUAN has been increasing its R&D investment, engaging in the fields of high-end equipment manufacturing, industrial silicon and crystalline silicon, monocrystalline silicon wafers, solar cells, PV modules, new energy power stations, etc. for a long time, promoting the transformation of global green energy industry with "meta-power" through technological innovation empowerment, and providing more intelligent and cleaner green energy solutions based on corporate technology and capacity.



High-quality Interaction between Monocrystalline Silicon Business Technology and Production Process



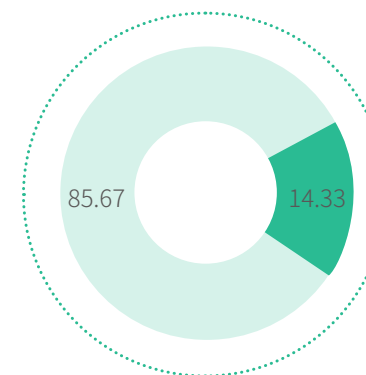
Monocrystalline Crystal Pulling

- Increased Unit Production
- Increased Crystal Pulling Rate

Monocrystalline Silicon Wafer

- Thinning Sheets
- Reduced Processing Time
- Reduced Wire Diameter
- Size Diversity
- Increased Qualification Rate

R&D Team Strength (Unit: %)



- Other Positions
- R&D Position

Postgraduate

1.45

Undergraduate

21.19

Others

77.36



R&D Investment

974 million

Year-on-year Growth

152 %

Number of Intellectual Property Patents

Software Copyright
Registration

16

Total Domestic Patents

187

including: **6**

Invention Patent

Utility Model

180

Exterior Design

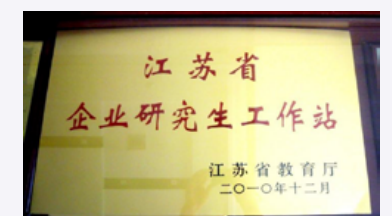
1

Deepen Industry-university-research Cooperation and Expand Talent Pool



Since 2010, HOYUAN has actively cooperated with colleges and universities to carry out exchanges and practical teaching, provide relevant education based on students' capabilities, deeply participate in the talent training process, provide proper guidance, training and practical opportunities for students at different stages, and comprehensively improve their practical ability and innovation ability. Besides, we have also focused on scientific and technological collaboration with research institutions for joint research on technical approaches, accelerated the transformation of scientific and technological achievements, and removed obstacles in the "last mile" of industry-university-research collaboration.

By the end of the reporting period, we had collaborated with five universities, including Zhejiang University, Southeast University, Jiangnan University, Nanjing Institute of Technology, Baotou Institute of Vocational Technology, etc. and had become the Engineering Technology Research Center for High Hardness and Brittle Material Processing Equipment in Jiangsu Province, the Enterprise Technology Center recognized by Jiangsu Province, the Post-doctoral Innovation and Practice Base in Jiangsu Province, the Post-graduate R&D Cooperation Center in Jiangsu Province, and the R&D Cooperation Center for High-end Intelligent Equipments of Siemens in Germany.

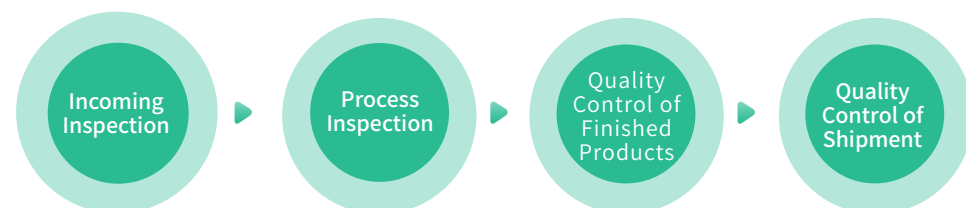


Product Quality and Safety



Quality Management

We continue to pursue quality excellence, create a quality management system in line with the characteristics of the photovoltaic industry, and enhance the effectiveness of product quality and safety management with quality management requirements of "assigning experts on professional tasks". The production of solar monocrystalline silicon and silicon wafers has been certified by ISO 9001 quality management system certification. In terms of product certification, all series of wafers have passed the French ECS certification, covering the entire chain of wafer production, including crystal pulling, square opening, silicon wafers and recycled materials.



The company has formulated Incoming Material Inspection Management Regulations, IPQC Inspection and Assessment Management Specifications, FQC Management Regulations, Control Procedures for Non-conformity and Corrective and Preventive Measures, Recycled Material Flow Control Standards, Process Abnormality Handling Workflow and other quality management system documents, with incoming materials, production, packaging, pallet, warehousing and other processes well under control. The company also practiced 5M1E on-site quality control standards including man, machine, material, method, environment, and measurement to ensure all-around quality control management, so that incoming materials and products could satisfy design requirements, avoid major quality abnormalities, and no nonconforming products would be dispatched. The company constantly improves corporate quality management system, maximizes product reliability and stability, building an industry-leading high-value brand boasting high quality of HOYUAN.

Nonconformity Management



If defective products are identified within the factory or received by sales, the workshop shall serve as a contact point in handing, and QC department shall inspect such in accordance with relevant quality management systems, indicating the reasons for product downgrading, the reasons for product scrapping or sales, and put qualified products in the warehouse, etc., so as to ensure closed-loop management of mark, identification, inspection, handling, and improvement. In order to reduce product defect ratio, reduce return ratio to the warehouse, each responsible unit shall put forward long-term countermeasures for timely introduction, and the engineering Employee shall track the effectiveness as such until the case is closed; if the countermeasures are ineffective, then new ones shall be worked out and applied.

Customer Relationship Management



Customer Service

HOYUAN has engaged in photovoltaic industry for over two decades, featuring quality service. We keep observing the development of the era and changes in the marketplace to enhance corporate delivery capacity and provide highly effective and efficient services for customers. In order to better understand actual needs and expectations of customers, the company rolled out customer satisfaction surveys from the perspectives of product quality, service quality, price and delivery, etc., analyzed and evaluated survey results, took corrective measures to address identified problems, improved control procedures, enhanced user experience, and provided timely, professional and high-quality after-sales services.

We have made it a rule that initial communication should be kicked off with the customer within 24 hours upon complaint for resolution deadline, remedy measures and future preventive measures. After obtaining customer approval of the corrective scheme, relevant departments shall address the matter in a timely manner for a permanent resolution, keep tracking product improvement status, and compose a monthly customer complaint analysis report based on facts and data.

During the reporting period, no batch recall occurred due to quality related matters of the company.

Content of Survey

Performance, Size, Appearance, Package,
Service Timeliness, Service Effectiveness,
Service Attitude, Product Sales Price,
Delivery Timeliness, Delivery Reliability

Questionnaire
Response Rate

75 %

Customer
Satisfaction*

94 %

*[Calculation formula] Customer satisfaction = (total score of items ÷ number of questionnaires response) ÷ full score of single items x 100%

Responsible Marketing

In order to ensure that the company is in compliance with market regulations in its activities, we have formulated the Marketing Compliance Management Document, clarifying standards such as the code of conduct for publicity and data privacy protection, and provided regular training on compliance with marketing laws and regulations. We respect consumer's right to information, provide detailed description of products and specifications, ensure true and accurate product information, and mitigate potential risks such as label missing, false labeling, label theft, etc

During the reporting period, no violations of marketing regulations or voluntary codes were reported.

Sustainable Supply Chain

Supplier Management

We have formulated Supplier Management Procedures to standardize the introduction procedure and daily management of suppliers and establish scientific procurement cooperation system. According to the results of daily evaluation and regular evaluation, the company effectively managed suppliers by eliminating unqualified suppliers, helped HOYUAN's sustainable supply chain, continuously improved product quality, reduced procurement costs and resource consumption, and improved brand image and core competitiveness.

In terms of localization, we encourage localized procurement, which can improve the security of the supply chain, reduce transportation cost, mitigate potential negative impact on the environment. In addition, the extension of the industrial chain can also help develop local economy and promote local employment likewise.

Supplier Access

The company manages new suppliers in accordance with the Questionnaire for Newly Introduced Suppliers, adopts the entire process of assessment from relevant production licenses, qualifications for product or service provision based on industry requirements, to third-party testing reports, etc., and selects qualified suppliers that satisfies corporate business needs.

Hierarchical Management & Performance Assessment

We perform a semi-annual performance assessment of suppliers, whereby the results are categorized into four grades. Assessment items include qualified rate of incoming materials, delivery rate, after-sales service, warehousing acceptance, production and use, etc. for a comprehensive review. For assessment results below expectation, the supplier shall provide and execute an improvement within the specified period. In 2022, 341 new suppliers were introduced.

Supplier Training

Case

In addition to continuously improve management capacity, the company hosts on-site regular meetings with main and auxiliary material suppliers, covering analysis of the actual on-site product use, analysis of subsequent product use, promotion of new products and effectiveness, as well as overall product stability, etc.



112

Employer who gathers strength and meets expectations

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Equality, Diversity and Inclusiveness



The company adheres to the principle of equal employment, equal pay for equal work, open social recruitment, campus recruitment, etc. in selecting and recruiting talents, so as to create an open and transparent environment for all job-seekers.

Anti-Forced Labor and Prohibition of Child Labor

Good employment environment and harmonious labor relations are the basis for the rapid development of HOYUAN. In order to avoid abuse of child labor, the company requires all applicants to fill out the registration form, and performs strict and careful inspection on the ID card of applicants. Candidates are only allowed for further procedures after their photos and ID information checked without any problem. Before signing labor contracts, new employees shall truthfully provide valid identification documents, degree and academic certificates, photos and medical examination reports to make sure all employees have reached legal employment age. If anything abnormal is identified, we will promptly inform relevant institutions and terminate the contract accordingly.

Anti-Discrimination and Anti-Harassment

The company does not allow any form of discrimination or harassment, any discrimination in the recruitment process of employees and in the actual performance of their work (e.g., promotions, rewards, training, etc.) due to race, color, age, gender, sexual orientation, ethnicity, disability, pregnancy, etc., or any form of corporal punishment, mental or physical oppression, verbal abuse, including the threat to engage in any such conduct.

The Right of Freedom of Association and Collective Bargaining

The company attaches great importance to the democratic management, participation and supervision of employees, and has established a Labor Union in accordance with laws and regulations. After full consultation and agreement between the representatives of the Company and Employee representatives, a comprehensive collective contract was signed. The company ensures that employees' lawful interests are safeguarded in terms of working hours and rest, labor remuneration, insurance and welfare, labor protection and occupational health, and skills training. Up to now, the coverage rate of collective contract employees is 100%, and the coverage rate of protection agreements on female employees is 100%, which effectively guarantees the rights and interests of employees.

the coverage rate of
collective contract
employees is

100 %

the coverage rate of
protection agreements
on female employees is

100 %

Employee Training and Development



HOYUAN encourages the corporate value of common development with employees. We firmly believe that an all-round training system is the core in individual and corporate development. We constantly empower employees based on the Employee Handbook and Annual Training Plan, whereby a diversified training model is in place to provide employees with good learning atmosphere and easy access to learning opportunities.

The company provides induction training for new employees, and arranges temporary training according to different situations, thus helping new employees integrating into new job and lifestyle in a fast and smooth manner; the company also arranges on-the-job training to instill internal/external professional skills for constant employee development. Meanwhile, online and offline training sessions are available to create learning atmosphere in the company.

Projects	Course System
Training System for Generic Competency	Training of New Employees
	General Vocational Skills Training
	Management/Leadership Development
Training System for Professional Competency	Specialized Capacity Development for Each Business Sector
	Specialized Capacity Development for Each Function

Job-specific training



On-the-job training is available in each department with training materials recorded and filed.



Skills Training for Special Work



The training for key process personnel and personnel involved in key environmental factors shall be provided by relevant responsible department, and they shall not get on the job until training examination is passed and license granted.

Daily Training in Workshop

Case

According to the Annual Training Plan, each department shall provide training on safety technology and management, process operation procedures and theories, equipment operation and maintenance, corporate culture and quality, environment, safety, intellectual property, energy management system, etc.



HOYUAN Scholarship

In order to ensure industry-university-research collaboration and better fulfill the agreement of nurturing talents from dual channels, four HOYUAN classes were set up in joint efforts with Baotou Light Industry Vocational and Technical College in 2020. During the early stages of this scholarship, in order to encourage students to pursue professional knowledge, actively participate in the later stage of corporate practice, and strive to become outstanding talents in line with corporate requirements, HOYUAN Scholarship was granted every semester as an incentive.



Allowances for Further Learning

The objectives are implementing corporate talent strategy, improving overall cultural quality and academic level and structure, cultivating a high-quality talent team, and enhancing corporate competitiveness. All enrolled candidates will be allocated tuition allowances according to overall corporate arrangement for improving the education background of employees.



Employee Rights



The company continues to improve its compensation and welfare system to provide employees with competitive compensation and welfare. In this way, employees will be able to enjoy better work and life conditions, as well as welfare and benefits including health protection, daily life care, team-building activities, holiday allowances, etc.

Compensation and Incentives

In order to attract, motivate and retain outstanding talents, HOYUAN provides employees with comprehensive and competitive compensation and welfare packages on the basis of market conditions and job features, formulates and continuously improves the system related to Compensation Management Regulations, respects contribution from employees, and stimulates enthusiasm and initiative in daily work.

Corporate Remuneration Structure

Remuneration Category	Financial	Non-financial
Remuneration Item	Basic Salary	Statutory Paid Leave
	Performance-based Incentives, Special Incentives, Other Bonuses	Company Welfare
	Statutory Benefits	Non-cash & Other Incentives
	Company Benefits	

Performance management is a necessary tool in realizing strategic goals of the company and serves as a management tool to enhance employee value and corporate value. HOYUAN follows the principles of "objectivity, impartiality, fairness, openness, and dual communication" to conduct performance appraisals in different categories and various levels, whereby the results are directly linked with bonuses, salary adjustments, and job promotions, so as to attract, motivate, and retain high-performance talents for further development of the company.

Welfare and Benefits

We have established complete employee protection system. In addition to statutory holiday, we also provide maternity leave, marriage and funeral leave, sick leave, nursing leave, etc. for eligible employees, so as to ensure employees take necessary rest and vacation; the company also arranges annual health examination to remind employees of the importance of their own health, so that they can work more at ease and enjoy a happier life.

Celebration of Female Workers' Contribution on the International Women's Day

Case



HOYUAN carefully prepared holiday gifts for all female workers, with sincere wishes and blessings, celebrating a wonderful International Women's Day on March 8.

Rich Activities for Employee Vitality

Case

The company arranges a wide variety of cultural and sports activities on a regular basis to further enrich the spare time of employees, stimulate their vitality and enthusiasm for work, and also continuously enhance team spirit and Employee orientation, cohesion and execution determination.



Share Moments with Families

Case



The company arranges all kinds of interesting parent-child activities to further enrich summer vacation of employees' kids, boost employee happiness, and ensure every employee's child feel the love from the company.

Communication and Feedback

The company arranges democratic communication channels for employees, listens to employees' voices in a direct manner, actively encourages employees to get engaged in corporate management and construction, effectively helps employees solve practical problems, and creates a harmonious and orderly working environment.

Communication Mechanism	
Employee feedback	If employees have any ideas, concerns or are treated unreasonably or unfairly, they can report to their managers and further escalated by their managers, etc. The original decision shall remain in force until any change is decided and applied.
Meeting	Various departments arrange their own regular business and communication meetings for comprehensive information notification and report, business exchange, opinion expression, etc.
Internal Email	Internal email system of the company serves as a common channel for daily communication amongst departments; thus, everyone is encouraged to communicate as such.
Office Automation System	Employees can log into the system according to their job authority to access corporate announcements, corporate news, process documents, rules and regulations, etc. They can also exchange and share information, and request relevant process approvals via this platform.
Notice Board	A notice board has been set up in the workshop, where corporate notices and other information relevant to employees shall be posted. The notice board is one of the most important channels for corporate information release.
Workers' Congress	Workers' congress serves as the basic form of democratic management of the company. It is regarded as the democratic organization of corporate employees to exercise management in a democratic manner, and it serves as the communication bridge between the employees and the managers for exchange of ideas and opinions accordingly.

Listen to the Voice of Employees for Mutual Development with the Company

Case

In order to strengthen internal Employee communication and exchange, better understand Employee opinions, improve Employee engagement, and enhance scientific management of the company, a Employee voice channel is established in this regard.

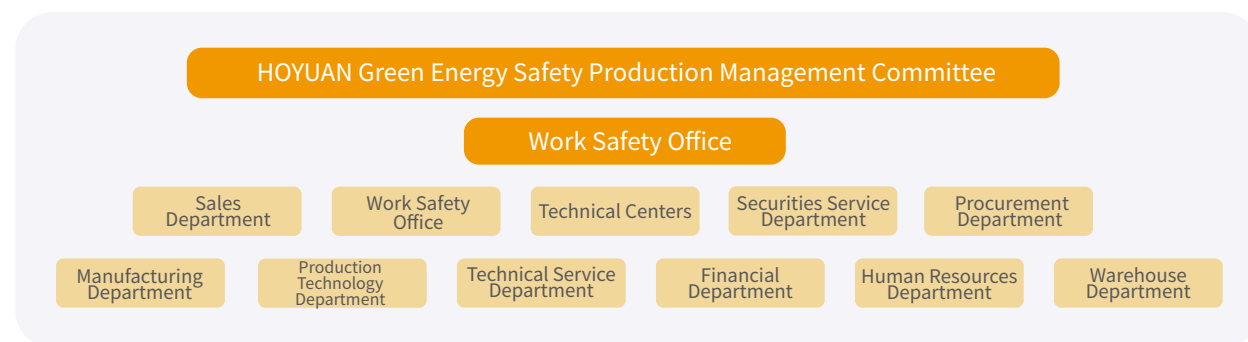


Occupational Health and Safety

Occupational health and safety is a priority on HOYUAN's agenda. We believe that ensuring a safe and healthy workplace is the basic protection a company could provide for its employees.

Occupational Health and Safety Management System

The company is committed to creating a safe and healthy working environment for its employees, whereby the Safety Production Management Committee (hereinafter referred to as the Safety Committee) has been set up for formulating safety training objectives and work plans, guiding daily safety management, fully implementing the policy of "safety foremost, prevention first, and comprehensive treatment", and effectively safeguarding the health and rights of all employees.



Risk Identification & Management

The company continuously promotes the construction of dual prevention mechanism for production safety, comprehensively investigates, identifies and evaluates risks, takes responsibility of safety risk management and control, applies effective measures to mitigate major safety risks, and ensures standardized control and management of corporate risk-related matters; the company establishes and improves potential risk investigation and management system, comprehensively investigates, timely manages and eliminates potential risks and accidents, and ensures closed-loop management of potential risk investigation and governance, and continuously improves corporate production safety all along. During the reporting period, we organized 134 special safety inspections, with a total of 3,183 hidden dangers investigated. Up to now, 3,183 rectification items have been completed, with a rectification rate of 100%².

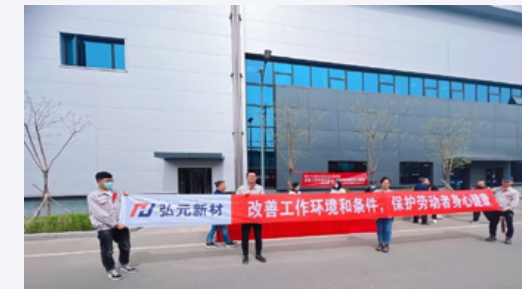
Prevention and Control of Occupational Hazards

HOYUAN has established the Occupational Health Management System to strengthen management of prevention and control of occupational hazards, and effectively protect health and safety of workers at work. The company provides employees with occupational health examinations to identify adverse effects of occupational hazards in a timely manner, and maximize the health and safety of employees. For positions involving occupational hazards, the company informs relevant employees when they get onboard, set up warning signs of occupational disease hazard in relevant locations, regularly announce the results of occupational hazards testing, and organize occupational health training and education accordingly. Meanwhile, we provide employees with occupational disease protective equipment and health food products that comply with national and industry standards, and supervise employees to use and wear protective equipment and devices appropriately.

² Data from HOYUAN, HOYUAN New Material (Baotou) and HOYUAN Energy.

Outstanding Performance in the Promotion Week of Law on Prevention and Control of Occupational Disease

Case



During the promotion week of Law on Prevention and Control of Occupational Disease, the company further improved workers' awareness of occupational health, helped them to obtain knowledge and understand legal norms related to the prevention and control of occupational diseases, and improved their awareness of occupational disease prevention and control measures for mutual combat in this regard.

Emergency Management Mechanism

In order to improve the ability to prevent and handle sudden production safety accidents and scientifically respond to various types of accidents that may occur in the production process, the company has formulated the Emergency Response Plan for Production Safety Accidents, including a comprehensive plan, special emergency plan for special equipment, and on-site accident handling schemes for electrocution accidents, mechanical injuries, and confined space. At the end of the reporting period, the investment in safety education and training amounted to RMB 15 million, with 160 training sessions attended by a total of 9,700 participants and a total training duration of 30,000 hours.

At the end of the reporting period

the investment in safety education and training amounted to RMB

15 million



Fire Safety Education and Training



Emergency Drill for Vehicle Injury



Fire-fighting Equipment Training



Training on Typical Accidents

Charity and Public Welfare



During corporate development, HOYUAN actively undertakes social responsibilities, gets engaged in public welfare donations and sponsorships, organizes all kinds of voluntary activities, makes every effort to promote rural revitalization, assists disadvantaged groups in society, focuses the needs of society, continues to provide care, and contributes to the building of a harmonious society. During the reporting period, the total donations of the company amounted to approximately RMB 13.17 million, with 529 hours of volunteer services from 3,634 volunteers throughout the year.



During the reporting period

total donations

13.17 million

volunteer services

529 hours

volunteers

3,634 people

Love Donation Day

Case

From December 28th to 30th, 2022, the company took "extensive mobilization, emphasis on participation, adherence to voluntary, diverse forms" as the principle of the activities, advocating that the majority of cadres and workers and self-employed people to donate a day's salary or income, and practicing the original mission with concrete actions.



HOYUAN promotes volunteer cause, encourages employees to take active part in volunteer services so as to improve corporate image as well as integrate volunteer services as part of their responsibilities.

Volunteer for Emergency Rescue to Safeguard Lives

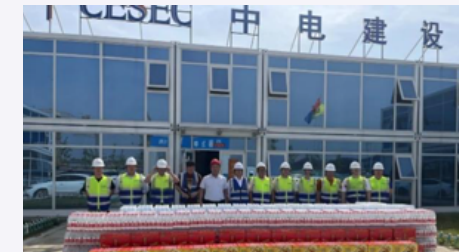
Case

In order to effectively mitigate disaster and promote such awareness, the company rolled out a meteorological disaster prevention and mitigation week through on-line and offline channels with the theme of "mitigating disaster and risks to safeguard our mutual home".



Condolence Activity

Case



In order to improve collaboration with CESEC and motivate front-line workers, the company organized on-site condolence activities for CESEC during the May Day holiday.

Signing Ceremony of Public Welfare Foundation of Wuxi Merchants

Case



On August 1, 2022, the company signed an agreement for donation of RMB 3 million to Public Welfare Foundation of Wuxi Merchants.

HOYUAN is committed to fulfilling its social responsibility and practicing the core value of "integrity, pragmatism, dedication, innovation and efficiency", and continues to make continuous efforts for rural revitalization by providing targeted assistance and counterpart assistance.

Contribution to Rural Revitalization

Case

In order to support social charity and public welfare, the company donated a total of RMB 29,000 in this regard.





04

Guardian of Green Mountains and Lucid Waters

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Environmental Management Compliance



HOYUAN strictly abides by the Environmental Protection Law of the People's Republic of China, Prevention and Control of Water Pollution Law of the People's Republic of China, Atmospheric Pollution Prevention and Control Law of the People's Republic of China, and other relevant laws and regulations. The company follows the purpose of "protecting the environment for the benefit of mankind", comprehensively supervising and managing environmental protection, and maintaining the safety of the ecological environment in a practical manner. During the reporting period, the company had no major pollution leaks and environmental violations.

The company ensures environmental management in accordance with ISO 14001 standard, and continues to improve and optimize the environmental management system, whereby HOYUAN New Material (Baotou) has already passed the certification and other subsidiaries are actively following suit. The plan is that all subsidiaries of the company will be covered by system certification. In accordance with the principle of "source control, process control, terminal management", we have formulated an environmental management network mechanism, coordinated by the EHS department, clarified goals and tasks of environmental protection for all employees, integrated environmental protection into all aspects of production and operation, identified environmental factors, and organized basic management inspections on a regular basis, so as to continuously improve environmental management, institutionalize, standardize and systematize environmental protection in this regard. In addition, we connect environmental objectives with the performance of workshops and teams, implement the responsibility system for environmental protection, and hold accountable those who fail to fulfill their management responsibilities and disqualify them from performance rewards accordingly.



The company aims to address the root causes and improve the quality of environmental management by formulating an annual environmental implementation plan every year, and have met all targets set for 2022. The capital investment in environmental protection during the reporting period amounted to RMB 84.08million.

2022 Environmental Objectives

Major environmental pollution accidents	Compliance of environmental pollutant emissions	Compliance of hazardous waste disposal	Control of key environmental factors
0	100 %	100 %	100 %
Completion of environmental protection emergency drills	Investigation and disposal of environmental pollution accidents	Implementation of environmental training plan	
100 %	100 %	100 %	

The company organizes regular training on the basis of environmental protection laws & regulations and environmental management system, and constantly improves employees' awareness of environmental protection and the concept of environmental regulations. In 2022, HOYUAN and HOYUAN New Material (Baotou) hosted 12 environment-related training with a total of 576 participants.

In 2022

HOYUAN and HOYUAN New Material (Baotou) hosted

a total of

12 environment-related training

576 participants



Specialized Training on Environmental Laws & Regulations



Training on Environmental Protection Knowledge



Energy Management



HOYUAN adheres to the concept of green manufacturing, and integrates green and low-carbon philosophy into the entire process of production and manufacturing. The company has prioritized the utilization of energy-efficient machines and equipment against high energy-consuming equipment, and set up automated production lines, etc. for labor costs reduction and production efficiency improvement, ensuring a greener and more scientific production process.

HOYUAN New Material (Baotou) has passed ISO 50001 system certification and built an energy management system. In order to strengthen energy management and improve energy utilization, we have formulated documents such as Energy Management System and Energy Management Control Procedures for scientific supervision, management and analysis of the entire process of energy procurement, supply, distribution, utilization and measurement. We have ensured effective control of energy consumed in the production and service process, so as to improve energy utilization, reduce energy consumption and save energy costs in the production process to achieve energy goals of the company. The Power & Equipment Department is responsible for energy management of the company, including preparation of relevant energy process management rules, design planning and supply distribution of energy consumption, and development of on-site energy inspection program, with at least four on-site inspections on a monthly basis to supervise energy waste behaviors and ensure proper rectification measures in place.

procurement

supply

distribution

utilization

measurement



- Strengthen energy-saving management via energy-saving technological transformation, and ultimately achieve the advanced value of energy consumption per unit of product
- Construct photovoltaic distribution on plant roof and vacant ground by means of photovoltaic materials produced by the company so as to apply photovoltaic electricity generation for material production
- Increase the proportion of green power in the production process so as to set a key milestone for corporate carbon neutrality commitment

In 2022, HOYUAN New Material (Baotou) rolled out efficient and consumption-reducing technological innovation projects, including adopting high-efficiency furnace to reduce electricity consumption, developing a new water quenching process to reduce material loss, and applying environment-friendly and energy-saving resin materials to reduce steam energy consumption, with a total of 1,220.5kWh of electricity saved. Meanwhile, HOYUAN New Material (Baotou) was also recognized as one of the Top Ten Energy (Water) Efficiency Benchmarking Leading Enterprises in Baotou.

Apply New Materials to Reduce Energy Consumption



At present, monocrystalline thermal fields mainly take PAN (polyacrylonitrile) mats as the main insulation material. PAN mats boast better oxidation resistance and higher thermal conductivity. In the production of monocrystalline, there is huge heat loss, significantly increasing electricity consumption and its production costs. In this regard, we have established a heat loss model for the thermal field by simulating the data of the environment, and applied a new type of thermal insulation material prepared from plant fibers (right) to enhance the thermal insulation performance of the upper, lower and surrounding parts of the thermal field to prevent large amounts of heat loss and maximize the utilization of heat generated. Comparatively speaking, energy consumption is reduced by about 6% on average.



Energy Conservation Week of HOYUAN New Material (Baotou)



From June to July 2022, Power Facilities Department and Sustainable Improvement Departments of HOYUAN New Material (Baotou) jointly hosted a special event with the theme "What have I done to save energy". The event focused on green, energy-saving, low-carbon production and lifestyle, guiding all corporate Employee to pay attention to energy conservation & consumption reduction and improve energy efficiency by means of demonstrating status quo for the sake of green and low-carbon development of the company.



Offline Energy Conservation Poster

Water Management



All of the company's bases are not built near water resource protection areas, and the water used by the company is taken from municipal water supply, and there is no negative impact on local water resources management due to water intake.

In terms of production water, we have been seeking new ways of improving water management performance, for example, by applying air coolers for production equipment to reduce cold water amount and water consumption in general. In addition, the company also plans the utilization of recycled water, whereby wastewater treatment devices are utilized to effectively convert silicon wastewater, fluorine wastewater, and domestic sewage into recycled water so as to reduce water discharge and fresh water consumption. In 2022, slicing workshop wastewater recycling project of HOYUAN New Material (Baotou) managed to save 715,700 tons of water on an annual basis.

In 2022

slicing workshop wastewater recycling project of HOYUAN New Material (Baotou) managed to save 715,700 tons of water on an annual basis.

715,700 tons



Slicing Workshop Wastewater Recycling Project of HOYUAN New Material (Baotou)



Waste Management and Discharge



HOYUAN attaches great importance to the compliance management of waste and emissions, and actively takes measures to reduce pollution emissions to ensure 100% facilities equipped with pollution prevention and control systems are put into operation, 100% completion of pollutant self-monitoring tasks, 100% compliance of hazardous waste collection and disposal, and 100% completion of waste water and waste gas self-monitoring tasks. In 2022, the company invested approximately RMB 49.14 million in environmental protection, covering waste gas, sewage and solid waste treatment.

Exhaust Gas

Characteristic pollutants from exhaust gas of the company mainly include total suspended particulate matter, nitrogen oxides, toluene, xylene and non-methane total hydrocarbon, and the company is in compliance with Integrated Emission Standard of Air Pollutants in all operation locations.

In terms of particulate pollutants from the monocrystalline furnace such as cleaning dust, charging dust, machine silicon crushing dust, etc., the company applies the control method of "collector + bagged dust collector + exhaust pipe" so as to reduce the amount of dust discharged into the air. In terms of acid mist waste gas, the company built three sets of new alkali spray scrubber towers for treatment in 2022, effectively improving the overall waste gas treatment efficiency.

Activated Carbon System Modification Project



In 2022, HOYUAN upgraded paint spraying exhaust gas treatment device of the factory by adding a new primary activated which not only ensured the stable emission concentration and met the standard, but also controlled the removal efficiency. The modified secondary activated carbon adsorption manages to reach the removal efficiency no less than 80% of non-methane total hydrocarbon.



In 2022, the company emitted 7.64 tons of nitrogen oxides, 0.95 tons of volatile organic compounds (VOCs), and 7.09 tons of particulate matter.

Waste

The company classifies and manages general waste and hazardous waste, strictly standardizes waste management in terms of waste generation, recycling, storage and transfer, and ensures on-time specialized inspection in place.

The company determines hazardous waste according to the National Catalogue of Hazardous Wastes for each production process waste, registers identified hazardous waste, and ensures unified management of hazardous waste with reference to the Technical Specification for Setting Identification Signs of Hazardous Waste and Standard for Pollution Control on Hazardous Waste Storage issued by the Ministry of Ecology and Environment. Transferring hazardous waste is strictly in accordance with established processes of the company so as to ensure standardized management.

Sewage

The company follows relevant laws, regulations and standards, and has established corresponding management systems for wastewater collection, treatment, management, regular monitoring and emergency response procedures. In terms of wastewater generated in production, we ensure on-time collection and treatment, and reuse of the recycling water in the production process, so that industrial wastewater is properly recycled and water resource recycling rate is improved in general.

Fluoride Emission Reduction and Treatment



HOYUAN New Material (Baotou) signed a waste acid recycling and treatment contract with a third-party company to recycle and reuse waste hydrofluoric acid and nitric acid generated from the pickling process of silicon materials, reduce the amount of concentrated acid disposed of at the wastewater treatment station, reduce the discharge of mixed acid, and reduce the cost of wastewater treatment. We manage to improve fluoride ion removal efficiency at the atomization stage by adding highly efficient fluoride ion treatment chemicals to reduce fluoride emission concentration and alleviate the treatment pressure on downstream effluent plants.



Response to Climate Change



Overexploitation of fossil energy and natural resources has led to a significant increase in greenhouse gas emissions, leading to global warming and triggering a series of natural disasters, including heat waves, floods and droughts. Actively tackling carbon emissions has become a global consensus. The most effective way to reduce carbon emissions is to increase the proportion of non-fossil energy, while solar energy is recognized as a clean, economical renewable energy to help achieve carbon neutrality in the new era, and as the main global energy amongst all. Solar energy has become a key energy source for promoting energy diversification and achieving sustainable development. HOYUAN has planned a vertical integration of the photovoltaic industry chain on an expansive scale, constructed high-quality production lines to produce cutting-edge products to suit the rapid and high-quality development of the photovoltaic industry, so as to contribute to the grand strategic goals of carbon peaking and carbon neutrality of the Chinese government.

In addition to providing clean energy technology solutions for different industries, we are also driving carbon reduction actions in our own operations and value chain. We continuously optimize energy efficiency and reduce the carbon footprint of our products through the recycling of raw materials and packaging materials. In cooperation with customers and suppliers, we have developed a process plan for the transfer and recycling of bale materials. In 2022, 5,730 sets of composite bale materials of silicon rods have been recycled, and 921.4 tons of crucible bottom materials have been purified and reused.

The company reduced CO2 emissions by 40,412,398 tons throughout 2022.

Cascaded Utilization of Steam



Case

The company utilizes steam in a cascaded manner, and reduces steam consumption in many ways to save energy and reduce carbon emissions. Since heat loss is inevitable during the delivery of 1.0 MPa steam, we have adopted a cascaded utilization of steam by actively controlling the temperature and pressure reduction process, so as to reduce the temperature and pressure to 0.4 MPa steam for utilization after the loss of 1.0 MPa steam energy, and then reduce the temperature and pressure to 0.2 MPa steam for final utilization. In addition, we also utilize the jacket and sump waste heat of the reduction furnace for condensate flash evaporation, and steam generated in great amount thus is further utilized for the steam supply of the whole plant.



■ Silicon Recycling and Reuse



In the monocrystalline silicon wafer production process, monocrystalline round rod is converted into square rod link, whereby loads of head, tail, and edge skin are left over and recognized as "recycling material". We recycle those recycling materials from the production process, and further put them into monocrystalline furnace after testing, picking, and cleaning.

In terms of recycling materials generated during the conversion process from monocrystalline crystal round rod into square rod, a special non-metallic cardboard box is used for collection, thereafter, a full box is sent to the pre-cleaning process for preliminary cleaning to remove the surface dirt, put into the box again after cleaning, and then sent to the silicon workshop for further cleaning a second time. The silicon material workshop carries out pickling for different kinds of recycling materials through different acid-base ratio, reduces the content of metal impurities on the surface of circulating materials, makes circulating materials can be reused to pull crystals, and ensures the consistency of crystal rod quality. By means of recycling materials, we have managed to exceed 97% recycling and reuse of monocrystalline silicon materials.



Recycled Material Collection



Circulating Material Cleaning



Independent Verification Statement



To the management and stakeholders of HOYUAN,

TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch (hereinafter referred to as “TÜV SÜD”) has been engaged by HOYUAN Green Energy Co., Ltd. (hereinafter referred to as “HOYUAN” or “the Company”) to perform an independent third-party verification on HOYUAN Green Energy Co., Ltd. 2022 Environment, Social and Governance Report (hereinafter referred to as “the Report”). During this verification, TÜV SÜD's verification team strictly abided by the contract signed with HOYUAN and provided verification regarding the Report in accordance with the provisions agreed by both parties and within the authorized scope stipulated in the contract.

This Independent Verification Statement is based on the data and information collected by HOYUAN and provided to TÜV SÜD. The scope of verification is limited to the given information. HOYUAN shall be held accountable for authenticity and completeness of the provided data and information.

Scope of Verification

Time frame of this verification:

- The Report contains the data disclosed by HOYUAN during the reporting period from January 1st, 2022 to December 31st, 2022, including economic, environmental and social information and data, methods for management of material issues, actions/measures and the Company's sustainability performance during the reporting period.

Physical boundary of this verification:

- The on-site verification sampling took place at below listed location:
158 Nanhu Middle Road, Xuelang Sub-district, Binhu District, Wuxi, Jiangsu Province, China

Scope of data and information for the verification:

- The scope of verification is limited to the data and information of HOYUAN and all companies under its operational control covered by the Report.

The following information and data are beyond the scope of this verification:

- Any information and contents beyond the reporting period of this Report; and
- The data and information of HOYUAN's suppliers, partners and other third parties; and
- The financial data and information disclosed in this Report that have been audited by an independent third party are not verified again herein.

Limitations

- The verification process is conducted in the above scope and places. Sampling and verification are adopted for the data and information in the Report by TÜV SÜD, and only the stakeholders within the Company are interviewed; and
- The Company's standpoint, opinions, forward-looking statements and predictive information as well as the historical data and information before January 1st, 2022 are beyond the scope of this verification.

Basis for the Verification

This verification process was conducted by TÜV SÜD's expert team with extensive experience in the economic, environmental, social and other relevant areas and drew the conclusions thereof. The verification is in accordance with the following standards:

- *International Standard on Assurance Engagements ISAE 3000(Revised), Assurance Engagements Other than Audits or Reviews of Historical Financial Information, Limited Assurance*
- *TÜV SÜD Procedure of Verification on Sustainability Report*

In order to perform adequate verification in accordance with the contract and provide reasonable verification for the conclusions, the verification team conducted the following activities:

- Preliminary investigation of the relevant information before the verification;
- Confirmation of the presence of the topics with high level of materiality and performance in the Report;
- On-site review of all supporting documents, data and other information provided by HOYUAN; tracing and verification of key performance information;
- Special interview with the representative of HOYUAN's management; interviews with the employees related to collection, compilation and reporting of the disclosed information; and
- Other procedures deemed necessary by the verification team.



Verification Conclusions

According to the verification, we believe that the data and information presented in HOYUAN's report are objective, factual and reliable, without systematic problems, and can be used by stakeholders.

Inclusivity	HOYUAN has identified the internal and external stakeholders such as shareholders and investors, employees, customers, suppliers, government and regulators, etc., and established a stakeholder communication mechanism to collect the demands of stakeholders on a regular basis.
Materiality	HOYUAN has established the prioritization process of material topics determination, identified and assessed the priority of the sustainability topics which are highly related to the industry, the Company disclosed the strategy, management approach as well as sustainability performance in corporate operation, therefore the Report's adherence to materiality principle is guaranteed.
Responsiveness	HOYUAN has disclosed the management approach and performance of high material topics that stakeholders concern, such as business ethics, energy management, employee training and development, occupational health and safety, etc., and has established a communication mechanism, to fully respond to the demands and expectations of stakeholders.
Impact	HOYUAN has established a Sustainability Committee to enhance the company's efforts in the areas of environmental, social responsibility and corporate governance. By leading the development of the Company's ESG strategic planning, policies and work plans, reviewing and approving the ESG annual report, and regularly evaluating the implementation of the Company's ESG work, the Company will continue to promote the process of corporate sustainable development work.

Recommendations on Continuous Improvement

- It is recommended that the Company discloses more information about their management practices and performance in addressing climate change in the future in accordance with the *Task Force on Climate-Related Financial Disclosures (TCFD)* framework.

Statement on Independence and Verification Capability

TÜV SÜD is a trusted partner of choice for safety, security and sustainability solutions. It specialises in testing, certification, auditing and advisory services. Since 1866, TÜV SÜD has remained committed to its purpose of enabling progress by protecting people, the environment and assets from technology-related risks. Today, TÜV SÜD is present in over 1,000 locations worldwide with its headquarters in Munich, Germany. TÜV SÜD has been committed to sustainable development and actively promotes environmental protection related projects. Over the years, TÜV SÜD has been actively expanding its performance in energy management, renewable resources, and electric automobiles, etc., helping its customers meet sustainable development needs.

TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch is one of TÜV SÜD's global branches and has an expert team whose members have professional background and rich industrial experiences.

TÜV SÜD and HOYUAN are two entities independent of each other and both TÜV SÜD and HOYUAN and their branches or stakeholders have no conflict of interest. No member of the verification team has business relationship with the Company. The verification is completely neutral.

Signature:

On Behalf of TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch

Zhu Wenjun

TÜV SÜD Sustainability Authorized Signatory Officer

July 28th, 2023 Shanghai, China

Note: In case of any inconsistency or discrepancy, the simplified Chinese version of this verification statement shall prevail, while the English translation is used for reference only.



Appendix

Key Performance Table

Economic Performance

Indicators	2020	2021	2022	Unit
Total Assets	49.01	144.91	210.34	Hundrend million
Net Assets	26.62	74.41	125.36	
Revenue	30.11	109.15	219.09	
Total Tax	1.09	2.77	6.64	

Governance performance

Indicators	2020	2021	2022	Unit
Coverage of Business Ethics Training	100	100	100	%
Signature Rate of Employee Integrity Agreement	100	100	100	
Signature Rate of Integrity Agreement with Suppliers	100	100	100	
Systemic Risk	0	0	0	Times

Social Performance

Employee Employment

Indicators	2020	2021	2022	Unit
Total Number of Employees	2,982	5,370	7,245	Person
Categories of Professional Composition				
Production Personnel	2,169	3,979	4,727	
Sales Personnel	28	31	28	
Technical Personnel	435	813	1,286	
Finance Personnel	14	15	43	
Administrative Personnel	336	532	1,161	

Indicators	2020	2021	2022	Unit
Education Background				Person
Doctor	1	2	2	
Master	11	27	48	
Undergraduate	335	594	1,071	
Junior College	1,241	2,041	2,611	
Senior High school and Below	1,394	2,706	3,513	
Hiring Rate ³	35.47	33.82	24.66	%

Employee Training

Indicators	2022	Unit
By Gender		Hour
Male Employees	20.25	
Female Employees	22.99	
By Employee Category		
Senior Executives	8.00	
Middle Management	10.14	
General Managers	4.41	
General Employees	21.35	

Human Rights Training

Indicators	2020	2021	2022	Unit
Number of Employee Trained on Human Rights	34	59	62	Person

³ [Calculation formula] Employee hiring rate = Number of new employees during the reporting period ÷ (Number of employees on board at the end of the reporting period + Number of employees leaving during the reporting period) × 100.



Parental Leave

Indicators	2020	2021	2022	Unit
Total number of employees on parental leave	41	101	173	person
Male employees eligible for paternity leave	41	92	159	
Female employees eligible for maternity leave	0	9	14	
Total number of employees returning to work after vacation	41	98	170	
Male	41	92	159	
Female	0	6	11	
Total number of employees staying at their positions over 12 months after returning to work	41	98	170	
Male	41	92	159	
Female	0	6	11	
Retention Rate ⁴	100	97.03	98.27	%

Occupational Health & Safety

Indicators	2022	Unit
Coverage of Physical Examination for Employees	100	%
Lost-time Accident Rate	0	
Rate of Serious Lost-time Accidents	0	
Absence Rate	0	
Work-related Injury Rate	0	Times/million working hours
Occupational Diseases	0	Case

⁴ [Calculation formula] Retention rate = total number of male (female) employees still in service at the end of the reporting period ÷ total number of male (female) employees who returned to work after parental leave during the reporting period × 100

Environmental Performance

Energy Utilization

Indicators	2020	2021	2022	Unit
Natural Gas	56843.71	75851.16	77706.16	m ³
	2024.12	2700.96	2767.00	GJ
Gasoline	55600.00	72318.00	75530.16	L
	1738.33	2261.02	2361.44	GJ
Diesel	5030.00	68485.00	74405.00	L
	180.44	2456.71	2669.07	GJ
Outsourcing Electricity	377,750,423.00	1,203,685,626.00	1,929,794,431.00	Kwh
	1,359,901.52	4,333,268.25	6,947,259.95	GJ
Total Energy Consumption	1,363,844.41	4,340,686.94	6,955,057.47	GJ
Proportion of Outsourced Electricity in Total Energy Consumption	99.71	99.83	99.89	%
Energy Consumption Intensity of Output Value (RMB 10,000)	4.53	3.98	3.17	GJ per Output Value (RMB 10,000)

GHG Emissions⁵

Indicators	Emission Source	2020	2021	2022	Unit
Direct (Scope 1) GHG Emissions	Gas	113.66	151.67	155.38	Tons of Carbon Dioxide Equivalent
	Gasoline	133.25	173.32	181.02	
	Diesel	13.10	178.30	193.71	
Energy Indirect (Scope 2) GHG Emissions	Outsourcing Electricity	215,431.07	686,461.91	1,100,561.76	Tons of carbon dioxide equivalent / RMB 10,000 output value
Total Emissions (Scope 1 & 2)		215,691.08	686,965.20	1,101,091.88	
Emission intensity per RMB 10,000 output value		0.72	0.63	0.50	

⁵The emission factors are taken from the 2006 IPCC Guidelines for National Greenhouse Gas Inventories and the Ministry of Ecology and Environment's Notice on the Work Related to the Management of Greenhouse Gas Emission Reporting by Enterprises in the Power Generation Sector in 2023-2025. Due to the expansion of production capacity, corporate greenhouse gas emissions have been rising year on year, and the intensity of greenhouse gas emissions has been reduced year on year through energy saving and emission reduction initiatives.



Water Resources Utilization ·

Indicators	2020	2021	2022	Unit
Total Water Withdrawal	1,648,945.13	4,097,940.61	6,824,387.00	Ton
Total Water Discharge	485,656.84	1,220,395.08	2,038,524.60	
Total Water Consumption	1,163,288.29	2,877,545.53	4,785,862.40	

Solid Waste Disposal

Category	2020	2021	2022	Unit
Hazardous Waste	6.97	8.28	10.69	Ton
General Solid Waste	3,300	6,200	29,100	
Total Solid Waste	3,306.97	6,208.28	29,110.69	

Material Utilization

Category	2020	2021	2022	Unit
Total weight of materials that are used to produce and package the organization's primary products (non-renewable materials)	1,291	3,106	3,847	Ton
Total weight of materials that are used to produce and package the organization's primary products (renewable materials)	256	1,417	3,114	
Percentage of recycled input materials used to manufacture the organization's primary products and services (%) [Proportion of silicon recycled and reused in the production process of HOYUAN New Material (Baotou) (%)] ⁶	46	46	50	%

⁶ Proportion of silicon recycled and reused in the production process of HOYUAN New Material (Baotou) (%)

14.2 Index Sheet

14.2.1 GRI content index

Statement of use	HOYUAN Green Energy Co., Ltd. has reported in accordance with the GRI Standards for the period from 1 January 2022 to 31 December 2022.
GRI 1 Used	GRI 1: Foundation 2021
Applicable GRI Industry Standard (s)	None

Disclosure	Location
GRI 2: General Disclosures 2021	
The Organization and its Reporting Practices	
2-1 Organizational details	About HOYUAN
2-2 Entities included in the organization’ s sustainability reporting	Breakdown of Reporting Scope Subsidiaries
2-3 Reporting period, frequency and contact point	About this Report
2-4 Restatements of information	This is our first ESG report.
2-5 External assurance	About this Report Independent Verification Statement
Activities and Workers	
2-6 Activities, value chain and other business relationships	About HOYUAN
2-7 Employees	Employer who gathers strength and meets expectations
2-8 Workers who are not employees	Employee Rights
Governance	
2-9 Governance structure and composition	Corporate Governance
2-10 Nomination and selection of the highest governance body	Corporate Governance
2-11 Chair of the highest governance body	Corporate Governance
2-12 Role of the highest governance body in overseeing the management of impacts	Corporate Governance
2-13 Delegation of responsibility for managing impacts	Sustainable Management
2-14 Role of the highest governance body in sustainability reporting	Materiality Analysis



Disclosure	Location
2-15 Conflict of interest	Corporate Governance
2-16 Communication of critical concerns	Sustainable Management Stakeholders Engagement
2-17 Collective knowledge of the highest governance body	Stakeholders Engagement
2-18 Evaluation of the performance of the highest governance body	Corporate Governance
2-19 Remuneration policies	Compensation and Incentives
2-20 Process to determine remuneration	Compensation and Incentives
2-21 Annual total compensation ratio	Equality, Diversity and Inclusiveness
Strategy, Policies and Practices	
2-22 Statement on sustainable development strategy	Message from Chairman
2-23 Policy commitments	Legal Compliance
2-24 Embedding policy commitments	Equality, Diversity and Inclusiveness
2-25Processes to remediate negative impacts	Legal Compliance
2-26 Mechanisms for seeking advice and raising concerns	Legal Compliance
2-27Compliance with laws and regulations	Legal Compliance
2-28Membership of associations	About HOYUAN
Stakeholder Engagement	
2-29 Approach to stakeholder engagement	Stakeholders Engagement
2-30 Collective bargaining agreements	The Right of Freedom of Association and Collective Bargaining
GRI3: Material Topics 2021	
3-1Process to determine material topics	Materiality Analysis
3-2List of material topics	Materiality Analysis
GRI203: Indirect Economic Impacts 2016	
3-3Management of material topics	Charity and Public Welfare
203-1Infrastructure investments and services supported	Charity and Public Welfare
203-2Significant indirect economic impacts	Charity and Public Welfare

Disclosure	Location
GRI204: Procurement Practices 2016	
3-3 Management of material topics	Sustainable Supply Chain
204-1Proportion of spending on local suppliers	Confidentiality constraints : private information of the organization is involved
GRI205: Anti-corruption 2016	
3-3Management of material topics	Legal Compliance
205-1Operations assessed for risks related to corruption	Legal Compliance
205-2205-2 Communication and training about anti-corruption policies and procedures	Legal Compliance
205-3205-3 Confirmed incidents of corruption and actions taken	Legal Compliance
GRI206: Anti-competitive Behavior 2016	
3-3 Management of material topics	Legal Compliance
206-1Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	Legal Compliance
GRI301: Materials 2016	
3-3Management of material topics	Response to Climate Change
301-1Materials used by weight or volume	Key Performance Table - Environment
301-2 Recycled input materials used	Key Performance Table - Environment
GRI302: Energy 2016	
3-3Management of material topics	Energy Management
302-1Energy consumption within the organization	Key Performance Table - Environment
302-3Energy intensity	Key Performance Table - Environment
302-4Reduction of energy consumption	Energy Management



Disclosure	Location
302-5Reductions in energy requirements of products and services	Energy Management
GRI303: Water and Effluents 2018	
3-3Management of material topics	Water Management
303-1Interactions with water as a shared resourc	Water Management
303-2Management of water discharge-related impacts	Environmental Management Compliance
303-3Water withdrawal	Key Performance Table - Environment
303-4 Water discharge	Key Performance Table - Environment
303-5Water consumption	Key Performance Table - Environment
GRI305: Emissions 2016	
3-3Management of material topics	Response to Climate Change
305-1Direct (Scope 1) GHG emissions	Key Performance Table - Environment
305-2 Energy indirect (Scope 2) GHG emissions	Key Performance Table - Environment
305-4GHG emissions intensity	Key Performance Table - Environment
305-5Reduction of GHG emissions	Response to Climate Change
305-7 Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions305-7	Waste Management and Discharge
GRI306: Waste 2020	
3-3Management of material topics	Waste Management and Discharge
306-1Waste generation and significant waste-related impacts	Waste Management and Discharge
306-2Management of significant waste-related impacts	Waste Management and Discharge Response to Climate Change
306-3 Waste generated	Key Performance Table - Environment
306-4Waste diverted from disposal	Key Performance Table - Environment
306-5Waste directed to disposal	Key Performance Table - Environment

Disclosure	Location
GRI308: Supplier Environmental Assessment 2016	
3-3Management of material topics	Sustainable Supply Chain
GRI401: Employment 2016	
3-3Management of material topics	Equality, Diversity and Inclusiveness
401-1 New employee hires and employee turnover	Key Performance Table - Society
401-2Benefits provided to full-time employees that are not provided to temporary or part-time employees	Employee Rights
401-3Parental leave	Key Performance Table - Society
GRI402: Labor/Management Relations 2016	
3-3Management of material topics	Equality, Diversity and Inclusiveness
402-1Minimum notice periods regarding operational changes	Equality, Diversity and Inclusiveness
GRI403: Occupational Health and Safety 2018	
3-3Management of material topics	Equality, Diversity and Inclusiveness
403-1Occupational health and safety management system	Key Performance Table - Society
403-2Hazard identification, risk assessment, and incident investigation	Employee Rights
403-3Occupational health services	Key Performance Table - Society
403-4Worker participation, consultation, and communication on occupational health and safety	Equality, Diversity and Inclusiveness
403-5Worker training on occupational health and safety	Key Performance Table - Society
403-6Promotion of worker health	Employee Rights
403-7Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	Key Performance Table - Society
403-8Workers covered by an occupational health and safety management system	Equality, Diversity and Inclusiveness



Disclosure	Location
403-9Work-related injuries	Key Performance Table - Society
403-10、Work-related ill health	Employee Rights
GRI404: Training and Education 2016	
3-3Management of material topics	Employee Training and Development
404-1Average hours of training per year per employee	Key Performance Table - Society
404-2Programs for upgrading employee skills and transition assistance programs	Employee Training and Development
404-3 Percentage of employees receiving regular performance and career development reviews	Employee Rights
GRI405: Diversity and Equal Opportunity 2016	
3-3Management of material topics	Equality, Diversity and Inclusiveness
405-1Diversity of governance bodies and employees	Key Performance Table - Society
405-2 Ratio of basic salary and remuneration of women to men	Equality, Diversity and Inclusiveness
GRI406: Non-discrimination 2016	
3-3Management of material topics	Equality, Diversity and Inclusiveness
406-1Incidents of discrimination and corrective actions taken	Equality, Diversity and Inclusiveness
GRI407: Freedom of Association and Collective Bargaining 2016	
3-3Management of material topics	Equality, Diversity and Inclusiveness
GRI408: Child Labor 2016	
3-3Management of material topics	Equality, Diversity and Inclusiveness
GRI409: Forced or Compulsory Labor 2016	
3-3Management of material topics	Equality, Diversity and Inclusiveness

Disclosure	Location
GRI410: Security Practices 2016	
3-3Management of material topics	Equality, Diversity and Inclusiveness
410-1Security personnel trained in human rights policies or procedures	Key Performance Table - Society
GRI411: Rights of Indigenous Peoples 2016	
3-3Management of material topics	Charity and Public Welfare
411-1Incidents of violations involving rights of indigenous peoples	N/A: The organization has not involved in violations of the rights of indigenous peoples
GRI413: Local Communities 2016	
3-3Management of material topics	Charity and Public Welfare
GRI414: Supplier Social Assessment 2016	
3-3Management of material topics	Sustainable Supply Chain
GRI416: Customer Health and Safety 2016	
3-3Management of material topics	Product Quality and Safety
416-1Assessment of the health and safety impacts of product and service categories	Product Quality and Safety
416-2Incidents of non-compliance concerning the health and safety impacts of products and services	Product Quality and Safety
GRI417: Marketing and Labeling 2016	
3-3Management of material topics	Customer Relationship Management
417-1Requirements for product and service information and labeling	Customer Relationship Management
417-2 Incidents of non-compliance concerning product and service information and labeling	Customer Relationship Management
417-3 Incidents of non-compliance	Customer Relationship Management



Disclosure	Location
GRI418: Customer Privacy 2016	
3-3Management of material topics	Legal Compliance
418-1Substantiated complaints concerning breaches of customer privacy and losses of customer data	Legal Compliance

The Ten Principles of the UN Global Compact Index

Ten Principles of the UN Global Compact		Location
Human Rights	Principle 1: Businesses should support and respect the protection of internationally proclaimed human rights	Equality, Diversity and Inclusiveness
	Principle 2: make sure that they are not complicit in human rights abuse.	/
Labor	Principle 3: Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining.	Equality, Diversity and Inclusiveness
	Principle 4: The elimination of all forms of forced and compulsory labor.	Equality, Diversity and Inclusiveness
	Principle 5: The effective abolition of child labor.	Equality, Diversity and Inclusiveness
	Principle 6: the elimination of discrimination in respect of employment and occupation.	Equality, Diversity and Inclusiveness

Ten Principles of the UN Global Compact		Location
Environment	Principle 7: Businesses should support a precautionary approach to environmental challenges.	Advocates who support co-prosperity and sharing, green and low-carbon
	Principle 8: Undertake initiatives to promote greater environmental responsibility.	Environmental Management Compliance Energy Management Water Management Waste Management and Discharge
	Principle 9: Encourage the development and diffusion of environmentally friendly technologies.	Advocates who support co-prosperity and sharing, green and low-carbon Response to Climate Change
Anti-corruption	Principle 10: Businesses should work against corruption in all its forms, including extortion and bribery.	Legal Compliance

Shanghai Stock Exchange Self-Regulatory Guidelines No. 1 for Listed Companies-Standardized Operation (2022) Index

No.	Disclosure	Location
8.1	Fulfill social responsibility	Full Text
8.2	Abide by business ethics Abide by business ethics	Legal Compliance
8.3	Social responsibility management	Sustainable Management
8.4	Social contribution value per share (SCVPS)	Investor Relationship
8.5	Corporate social responsibility report	Full Text



No.	Disclosure	Location
8.6	Performance of corporate social responsibility	Full Text
8.7	Safeguard the rights and interests of all employees	Employee Rights
8.8	Protect the environment	Environmental Management Compliance Energy Management Water Management Waste Management and Discharge
8.9	Performance of environmental management	Environmental Management Compliance Key Performance Table - Environment
8.10	Environmental impact	Environmental Management Compliance
8.11	Remedy measures against adverse environmental impacts	Environmental Management Compliance
8.12	Emissions and waste	Waste Management and Discharge
8.13	Work safety & product quality	Product Quality and Safety
8.14	Employment responsibilities	Equality, Diversity and Inclusiveness
8.15	Abide by scientific ethics and norms	Scientific and Technological Innovation

Breakdown of Reporting Scope of Subsidiaries

	Company Name	Short Name
1	HOYUAN New Material (Baotou) Co., Ltd.	HOYUAN New Material (Baotou)
2	HOYUAN Energy Technology (Baotou) Co., Ltd.	HOYUAN Energy
3	HOYUAN New Material (Xuzhou) Co., Ltd.	HOYUAN New Material (Xuzhou)
4	Wuxi HOYUAN New Energy Technology Co., Ltd.	HOYUAN New Energy
5	HOYUAN (Baotou) Qingshan Photovoltaic Power Generation Co., Ltd.	HOYUAN Qingshan PV
6	Wuxi HOYUAN Semiconductor Materials Technology Co., Ltd.	HOYUAN SEMIC
7	HOYUAN Solar (Wuxi) Co., Ltd.	HOYUAN Solar



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