About This Report

Reporting Period
This report is an annual report covering the period from January 1, 2022, to December 31, 2022. To improve the completeness of the report, some data may exceed the above range (subject to the specific date indicated).

Report Boundary
The Report covers JA Solar Technology Co., Ltd. and its manufacturing bases, which is consistent with the scope of the disclosure in JA Solar’s 2022 Annual Report. Some manufacturing bases consist of multiple companies. Where individual companies are involved in this Report, they will be reflected as such; otherwise, the name of the associated manufacturing base will be used.

For ease of presentation, “JA Solar Technology Co., Ltd.” is also referred to as “JA Solar”, “the Company” or “we” in this Report.

Report Release
This is the sixth sustainability report/ESG report/social responsibility report released by JA Solar Technology Co., Ltd. and its subsidiaries. The last report was published in June 2022.

References
- Global Reporting Initiative (GRI) Sustainability Reporting Standards
- United Nations Sustainable Development Goals (SDGs)
- The Ten Principles of the United Nations Global Compact
- HKEX ESG Reporting Guide

Report Reliability Assurance
The Company guarantees that the contents of this report do not contain any false records or misleading statements. The majority of the data in this report is derived from the Company’s original operational records and publicly disclosed official documents, such as its quarterly reports and annual reports. Unless otherwise specified, the amounts disclosed in the report are measured in RMB.

Report Statement
The financial data involved in this report are in compliance with the Accounting Standard for Business Enterprises and relevant accounting systems promulgated by the state and have been audited in accordance with the China Internal Auditing Standards, truly reflecting the financial indicators and operating conditions of the enterprise. The report has been reviewed and audited internally by the enterprise, and a report assurance agency has been engaged to provide guidance and evaluation to ensure that the report is true, accurate, and complete. JA Solar hopes to enhance communication with stakeholders through the release of this report.

Report Acquisition
This report can be perused online and is available in both Chinese and English. You may log on to the Company’s official website (http://www.jasolar.com) or contact esg@jasolar.com to obtain an electronic copy of the report. In case of any ambiguity in the understanding of the Chinese and English content, the Chinese version shall prevail.
In the past year, the global energy situation has undergone tremendous changes, and the topic of sustainability has been receiving increasing attention. More and more countries and enterprises are making efforts for this. As a leading global photovoltaic (PV) enterprise, JA Solar is guided by the sustainability concept of “Green to Green, Green to Grow, Green to Great” to supply zero-carbon clean energy and achieve zero-carbon green development while striving to create a high-quality sustainable development model.

For years, we have always focused on PV technology R&D and product innovation to promote the popularization and application of PV power generation on a wider scale. In 2022, we supplied nearly 40GW of PV products to the world, ranking among the top in the world for six consecutive years. The full-scale mass production of JA Solar’s n-type PV Module, DeepBlue 4.0 X, will definitely help customers create greater value and provide clean energy for more people.

Over the years, we have always adhered to the concept of sustainability to create a responsible, green and low-carbon corporate image. We have established the Strategy and Sustainability Committee to help achieve the Company’s ESG and sustainable development strategic goals. We actively implement the green manufacturing system, pay a premium on resource conservation and intensive utilization, and widely apply digital technology and intelligent manufacturing to create a green intelligent manufacturing factory. Adhering to scientific governance and compliance management, we abide by national laws and regulations and internationally accepted rules, with a “zero tolerance” attitude towards corruption and fraud. This promotes the healthy development of the PV industry through strict internal control and fair competition and cooperation.

For years, we have always embraced the core values of “being customer-centered, promoting welfare for our staff members, creating value for owners”, and worked with all stakeholders to create a mutually beneficial situation. We strive to achieve mutual trust and mutual benefit while coordinating development with upstream and downstream partners to jointly build a green supply chain and ecosystem. At the United Nations Climate Change Conference, we launched the Zero Carbon Development Initiative, and initiated the Scientific Carbon Target Commitment at the founding director of the Global Sustainable Markets Initiative (SMI). We have also joined the Photovoltaic Recycling Industry Development Cooperation Center, and become the world’s first PV cooperative enterprise to follow the CDP supply chain decarbonization. We actively undertake social responsibility and build PV power generation projects in various application scenarios, such as the agrivoltaic project supplied by JA Solar that has lit up the Winter Olympic Games venue. We are continuously exploring clean energy solutions and new models of ecological restoration and protection, while taking concrete actions like donating PV lamps to the United Nations High Commissioner for Refugees to allow more people to enjoy happiness.

We will keep forward step by step! Leveraging the global trend of the “carbon neutrality” era and staying true to the original mission of “developing solar power to benefit the planet”, JA Solar is eager to work together with global partners to create a green earth, a zero-carbon future, and a better life.

JIN Baofang
Chairman of JA Solar
Based on the vertical integration model of the solar PV industry chain, JA Solar Technology Co., Ltd. has been committed as always to provide PV power generation system solutions to global customers. Its main business is the R&D, production, and sales of solar PV wafers, cells, and modules; the development, construction, and operation of solar PV power stations as well as the R&D, production, and sales of PV materials and equipment. The company is headquartered in Beijing and has production factories in China and overseas, mainly in Xingtai and Langfang in Hebei, Wuxi, Yiwu in Zhejiang, Qujing in Yunnan, and Baotou in Inner Mongolia; and overseas production factory in Bac Giang, Vietnam. New factories are under construction in Dongtai, Jiangsu, Shijiazhuang, Hebei, Ordos, Inner Mongolia and the USA.

Based on the "Photovoltaic Product Business Group" main industry chain, the Company has continuously improved its organizational structure, established the "Intelligent Energy Business Department", and increased investment in downstream PV applications; to expand the development and construction scale of PV power stations. We constantly explore the development of multiple PV power generation application scenarios, including BIPV and energy storage. We have also established the "Photovoltaic New Materials Business Department" to strengthen the R&D of PV supplementary materials and equipment, including PV crystal pulling equipment, PV conductive materials, and PV packaging materials. Meanwhile, we pursue reduced costs while ensuring supply for the rapid development of the main industry chain.

Adhering to the guiding ideology of "seizing opportunities to boost steady progress and improve quality and efficiency", the Company has built a "One Body, Two Wings" business system structure to strengthen and expand the PV intelligent manufacturing business. It focuses on the PV supplementary materials and equipment industry, and develops downstream PV power generation application scenario solutions, thereby providing customers with optimal new energy system solutions.

In 2022, JA Solar accelerated the construction of manufacturing bases, improved its global strategic layout, intensified the transformation and upgrading of intelligent manufacturing, and increased its production capacity, with the aim to seize new opportunities in the future. By the end of 2022, the Company had a total of 963MW of various types of PV power stations. In addition, JA Solar has multiple "grid-parity" PV power plant projects under construction in China, with a capacity of about 240MW. It is anticipated that the grid connection will be completed in the first half of 2023. The Company’s cumulative shipment of cells and modules has exceeded 108GW, contributing to the global realization of a zero-carbon future.

In recent years, with the business principle of "stable growth for sustained profitability", JA Solar has promoted the concept of green and low-carbon to a new level of enterprise strategic development through technological innovation and empowerment. We have driven the green development of the industry with technological advantages. This helps advance global "carbon emission reduction", and realize "carbon peaking" and "carbon neutrality" in China. In 2022, the Company proposed the sustainable development concept of "Green to Green, Green to Grow, Green to Great", hoping to work together with the value chain to move towards a green development path through our own actions. JA Solar has also actively responded to climate change. Based on carbon inventory, JA Solar’s Beijing Headquarter has achieved carbon neutrality in operational emissions in 2021. In 2022, the Company joined the Science Based Targets initiative (SBTi) and became the first PV enterprise to participate in the Carbon Disclosure Project (CDP) supply chain project to address climate change.

As of 2022, JA Solar has multiple manufacturing bases around the world, with over 30,000 employees. Its PV module shipments have been among the top in the world for many consecutive years, covering 135 countries and regions. Relying on continuous technological innovation, robust financial advantages, and a developed global sales and service network, JA Solar received the highest "AAA rating" for PV TECH’s bankability in 2022. The Company has been ranked among the "Fortune 500 China" and the "Global Top 500 New Energy Enterprises" for consecutive years.

About JA Solar
JA Solar Sustainability Impact Map 2022

Sustainable Public Welfare Impact

In April 2022, JA Solar was selected as a board member of the China Poverty-alleviation Promotion of Volunteer Service (now “China Rural Development Volunteer Service Promotion Association”).

In August 2022, JA Solar signed a donation agreement with UNHCR to donate PV lamps to families who have been compelled into displacement.

In October 2022, JA Solar participated in the special event of the 77th United Nations Day and jointly raised PV lamps with representatives of the United Nations organizations based in China and more than 100 embassies.

Successively constructed several national rural revitalization PV projects in Yanchi, Ningxia; Kangbao, Hebei; and Lincheng, Hebei, and other regions. The Company has made a cumulative payment of about RMB 60,294,000 for the projects.

Awards/Certifications

ESG Practice in Public Company Case Study — China Association for Public Companies

Fortune 500 China — FORTUNE China

Global Top 500 New Energy Enterprises — China Energy News

Best Investor Relations Award for Listed Companies in China — Securities Times

AAA Bankability Rating — PV ModuleTech

ESG Outstanding Corporate Governance Award 2021 — The (5th) Social Responsibility Conference

Outstanding Cases of Social Responsibility of Chinese Private Enterprises (2022) — All-China Federation of Industry and Commerce

“Caring Entrepreneur” of the National Charity Organizations — China Charity Federation

2021 Philanthropist of the Year/2021 Philanthropic Enterprise of the Year — Hebei Charity Federation
Sustainable Innovation Impact

About JA Solar

Providing high-efficiency modules for key PV projects in multiple countries and regions to contribute to the global clean energy transformation.

Largest

- The world’s largest hydro-PV project - the Kela 10MW PV project in China.
- Malaya’s largest Tilted Photovoltaic Project - 35.5MW PV Power Plant Project in Malaysia.
- The largest Building Integrated Photovoltaics (BIPV) project in China Automotive Industry Park - Dongfeng Intelligent Equipment Industrial Park 22MW Roof Distributed Power Generation Project.

First

- Congo (Brazzaville)’s first Photovoltaic Power Generation and Waste Incineration Power Station Project.

Multi-scene

- Shanghai New Generation Grid-friendly Green Power Station Demonstration Project.
- Beijing Energy Station 5MW Rooftop PV Project.
- Tel Yitzhak Reservoir 10.75SM Floating PV Power Station Project in Israel.

Product innovation

Continuous product innovation to increase customer value.

In May 2022, JA Solar released its first n-type PV module, DeepBlue 4.0 X, officially announcing its entry into the n-type PV module market.

Promoting technological innovation to enhance intelligent manufacturing.

In December 2022, JA Solar’s Yangzhou Base was included in the list of “National Excellent Scenarios of Intelligent Manufacturing” for its “Workshop Intelligent Production Scheduling”.

In January 2023, JA Solar received approval to build the first national intellectual property operation center in the PV manufacturing field (excluding polycrystalline silicon).

Industry exchange

Actively participating in industry exchanges to promote the common development of the industry.

In China, Photovoltaic Industry Annual Conference.
- Photovoltaic Industry Chain Supply Forum.
- Global Solar Energy Digital Summit.
- World Future Energy Summit.
- World Conference on Clean Energy Equipment.

Awards/Certifications

UL Environmental Product Declaration (EPD) Certification (DeepBlue 3.0) — Environment Product Declaration

The 19th People’s Craftsmanship Award - Craftsmanship Product Award — People’s Daily Online

“Top Brand PV” in the Middle East & North Africa, Chile, Mexico, and Australia — EUPD Research

2022 Advanced Clean Energy Equipment (DeepBlue 4.0 X, DeepBlue 3.0) — World Conference on Clean Energy Equipment

Seventh “Top Performer” award issued by PVEL — PVEL (PV Evolution Labs)

RETC “High Achiever” for the third time — Renewable Energy Test Center (RETC)

Canton Fair Design Innovation Award (CF Award) (DeepBlue 3.0) — China Foreign Trade Centre Group Co., Ltd.

2022 National Intellectual Property Advantage Enterprise — China National Intellectual Property Administration

JA Solar passed the evaluation by the National Enterprise Technology Center — General Office of the National Development and Reform Commission

Leading Quality Enterprise in the National Photovoltaic Industry
Leading Brand of Quality in the National Photovoltaic Industry
National Quality and Integrity Benchmarking Enterprise
Stable and Qualified Products that passed National Quality Inspection — China Association for Quality Inspection
In April 2022, Photovoltaic Recycling Industry Development Cooperation Center
JA Solar joined the “Photovoltaic Recycling Industry Development Cooperation Center” and became a vice-chairman member.

In May 2022, United Nations Day Activities
JA Solar attended the UN77th United Nations Day celebration event together with the United Nations system in China and more than 100 embassy representatives.

In June 2022, Sustainable Markets Initiative
JA Solar became a founding member of the Sustainable Markets Initiative (SMI) China Council.

In October 2022, Strategic Cooperation with China Beijing Environmental Exchange
JA Solar signed a strategic cooperation agreement with the China Beijing Environmental Exchange for in-depth cooperation in multiple fields, such as voluntary emission reduction management and low-carbon development of enterprises to explore new ways for the PV industry to address climate change.

In November 2022, United Nations Climate Change Conference
JA Solar was invited to participate in the COP27 series of events of the UN’s United Nations Climate Change Conference, where Board Chairman Jin Baofang delivered a keynote speech.

In November 2022, Meeting with King Charles III of the United Kingdom
As the only representative of Chinese private enterprises, JA Solar participated in the Global Council of Sustainable Markets Initiative (SMI) networking event and the meeting with King Charles III of the United Kingdom.

In December 2022, Strategic Cooperation with CDP
JA Solar became the first PV enterprise to join the CDP supply chain project.

In February 2023, Awards/Certifications
Six bases of JA Solar were awarded as National “Green Factories” (as of February 2023)
— Ministry of Industry and Information Technology

China’s Annual Pioneer of CSR Carbon Neutralization of 2022
— China Chamber of International Commerce Sustainable Development Committee, SynTao

Selected the Report on Low-carbon Transformation and High-Quality Development of Chinese Enterprises 2022
— China Chamber of International Commerce Sustainable Development Committee, SynTao

“Zero-carbon Pioneer” Enterprise Demonstration Cases
— China Entrepreneur Magazine

China’s Annual Pioneer of CSR Carbon Neutralization of 2022
— China International Import Expo - China International Economic Management Technology Summit Forum
Sustainability Management

JA Solar firmly believes that sustainable development is closely related to the Company’s strategy. Only by adhering to the concept of sustainability can its foundation be evergreen. Therefore, while carrying out business activities, JA Solar actively works with stakeholders to jointly put the concept of sustainability into practice and create shared value.

In 2022, JA Solar proposed the sustainable development concept of “Green to Green, Green to Grow, Green to Great” centering on the sustainable development goals of the United Nations.

G2G Sustainability Concept

In 2022, JA Solar proposed the sustainable development concept of “Green to Green, Green to Grow, Green to Great” centering on the sustainable development goals of the United Nations.

Since its founding in 2005, JA Solar has established its mission of “developing solar power to benefit the entire human race” and is committed to becoming a great enterprise. Over the years of operation, JA Solar has not only provided green power generation products to the world but has also been ardently practicing social responsibility. The Company benefits all parties locally and abroad through various forms such as PV-based poverty alleviation, charity donations, disaster relief and education assistance. This contributes to the realization of a mutually beneficial situation for the environment, climate, society, and economy. Together with the rest of the world, JA Solar creates a green and beautiful future for humanity.
JA Solar Sustainability Report and ESG Report 2022

JA Solar SDGs Map

United Nations Sustainable Development Goals (SDGs)

<table>
<thead>
<tr>
<th>Goal 1: No Poverty</th>
<th>Goal 8: Decent Work and Economic Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>End poverty in all its forms worldwide.</td>
<td>Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all.</td>
</tr>
<tr>
<td>JA Solar fully mobilizes its business and resource advantages to play a role in the country’s “rural revitalization”. The Company continues to promote the construction of PV projects in multiple areas and explore the organic combination of PV-based poverty alleviation and industrial development (aquaculture, agriculture, etc.), thereby ensuring the sustained growth of local domestic income.</td>
<td>JA Solar continues to promote technological innovation and improve product efficiency, facilitating grid connection at a fair price. It increases the accessibility of clean energy, and advances the transformation of clean energy.</td>
</tr>
<tr>
<td>JA Solar is also fostering occupational health and safety work in various manufacturing bases to ensure the health and well-being of employees.</td>
<td>JA Solar provides employees with equal opportunities, a safe work environment and decent work. This supports them in obtaining fair income, a better workplace, better welfare protection, and personal development. While creating employment opportunities, the Company drives the development of enterprises in the upstream and downstream of the industrial chain and fosters the sustainable development of the industry.</td>
</tr>
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<td>The Company has established an independent innovation mechanism, through the “100 Hope Primary Schools Donation Project” and the “10,000 Needy Students Relief Project” projects. JA Solar has provided all students with a fair opportunity to receive education.</td>
</tr>
<tr>
<td>The Company firmly prohibits all forms of workplace discrimination, harassment, coercion, threats, and violence, and has established a sound human resources management and system. It adheres to equal pay for equal work for both male and female employees as part of our commitment to creating a fair workplace environment.</td>
<td>JA Solar strongly prohibits employment discrimination, and adheres to the concept of diversified talents and inclusive development. It is committed to providing a talent platform for the growth and development of all groups with professional talents, including gender, age, ethnicity, belief, and people with disabilities.</td>
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</table>

Goal 3: Good Health and Well-being

Ensure healthy lifestyles and promote well-being for people of all ages. |

Goal 6: Clean Water and Sanitation

Ensure availability and sustainable management of water and sanitation for all. |

Goal 7: Affordable and Clean Energy

Ensure access to affordable, reliable, sustainable, and modern energy for all. |

Goal 4: Quality Education

Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. |

Goal 5: Gender Equality

Achieve gender equality and empower all women and girls. |

Goal 9: Industry, Innovation, and Infrastructure

Build durable and resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation. |

Goal 10: Reduced Inequality

Reduce inequality within and among countries. |

Goal 11: Sustainable Cities and Communities

Make cities and human settlements inclusive, safe, resilient, and sustainable. |

Goal 12: Responsible Consumption and Production

Ensure sustainable consumption and production patterns. |

Goal 13: Climate Action

Take urgent action to combat climate change and its impacts. |

Goal 14: Life below Water

Protect, restore, and promote sustainable use of ocean ecosystems, and marine biodiversity. |

Goal 15: Life on Land

Protect, restore, and promote sustainable use of terrestrial ecosystems, wine, production, and land degradation. |

Goal 16: Peace, Justice, and Strong Institutions

Create peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable, and inclusive institutions at all levels. |

Goal 17: Partnerships for the Goals

Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development. |
JA Solar continuously updates and improves its sustainability management structure and system, while urging various departments to integrate the concept of sustainability into their daily business work. This seeks to comprehensively enhance the Company’s sustainable development capabilities. In 2022, the Company established a carbon management and sustainable development department to promote its strategic planning and implementation related to climate change and sustainable development. In February 2023, in order to adapt to its strategic and sustainability needs, to improve the environmental, social, and governance (ESG) architecture, and to promote its sustainable development and ESG goals, JA Solar renamed the Strategy and Sustainability Development Committee under the Board of Directors to the Strategy and Sustainable Development Committee. The Committee will supervise and manage its important ESG-related topics and work, and promote the formulation of its ESG-related plans, goals, and systems, thus improving its sustainability management structure.

**JA Solar ESG Governance Framework**

### Board of Directors
The Strategy and Sustainability Development Committee has been established in the Board of Directors to lead and supervise the sustainable development work of the Company, and approve the planning and setting of the company’s climate and ESG strategic goals, etc.

### Management Leadership
The Sustainability Management Committee has been established in the Management Leadership to promote the implementation of ESG-related matters with regular reviews on the progress of ESG-related goals.

### Executive Leadership
The Carbon Management and Sustainability Department has been established in the Executive Leadership to undertake the decisions related to ESG/ climate/ sustainable development, and promote the implementation of relevant measures. They also liaise with relevant personnel from various departments and bases to form a coordinated and united mechanism in work.

**ESG Material Topics Analysis**

Attempting to scientifically and accurately identify material topics related to the environment, society, and governance, and actively respond to changes in the internal and external environment, JA Solar conducted an analysis based on international and domestic policies, combining local and foreign disclosure standards and guidelines, and benchmarking with peers with full reference to the opinions of industry experts and various stakeholders. The Company has communicated with various stakeholder groups through questionnaires, interviews, and other forms to gain an in-depth understanding of their expectations for the sustainable development of JA Solar. The Company has received a total of 137 feedback questionnaires from stakeholders, sorting out 25 material environmental, social, and governance topics (7 at the environmental level, 12 at the social level, and 6 at the governance level), forming an important reference basis for JA Solar’s ESG strategic planning, performance management, and information disclosure.

### Work Steps

1. Understand the organizational background of the Report
2. Identify actual and potential impacts
3. Assess the degree of impact
4. Prioritize disclosure of the most influential topics

### List of Material Topics of JA Solar

<table>
<thead>
<tr>
<th>Environmental (E)</th>
<th>Social (S)</th>
<th>Governance (G)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Environmental Management System</td>
<td>• R&amp;D Innovation and Intellectual Property Protection</td>
<td>• Anti-Corruption and Business Ethics</td>
</tr>
<tr>
<td>• Effluents and Waste Management</td>
<td>• Customer Protection</td>
<td>• Information Security and Privacy Protection</td>
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<tr>
<td>• Clean Technology Opportunities</td>
<td>• Driving Industry Development</td>
<td>• Corporate Governance</td>
</tr>
<tr>
<td></td>
<td>• Employee Training and Development</td>
<td>• Improper Competition</td>
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<td>• Market Performance</td>
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<td></td>
<td></td>
<td>• Compliance and Risk Management</td>
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<tr>
<td></td>
<td></td>
<td>• Social Responsibility and Intangible Assets</td>
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<tr>
<td></td>
<td></td>
<td>• Corporate Social Responsibility</td>
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<tr>
<td></td>
<td></td>
<td>• Employee Development</td>
</tr>
</tbody>
</table>

By adding new topics such as "R&D Technology Innovation and Intellectual Property Protection" and "Product Life Cycle Management", and adjusting and upgrading some of the topics e.g., refining "Environmental Compliance" to "Environmental Management System") to make the company’s material topics more relevant and responsive to the expectations of internal and external stakeholders.

In the analysis process of material topics, JA Solar conducted an analysis based on international and domestic policies, combining local and foreign disclosure standards and guidelines, and benchmarking with peers with full reference to the opinions of industry experts and various stakeholders. The Company has communicated with various stakeholder groups through questionnaires, interviews, and other forms to gain an in-depth understanding of their expectations for the sustainable development of JA Solar. The Company has received a total of 137 feedback questionnaires from stakeholders, sorting out 25 material environmental, social, and governance topics (7 at the environmental level, 12 at the social level, and 6 at the governance level), forming an important reference basis for JA Solar’s ESG strategic planning, performance management, and information disclosure.

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JA Solar Sustainability Report and ESG Report 2022

Stakeholder Communication

JA Solar attaches great importance to communication with stakeholders. It constantly improves various communication mechanisms, actively listens to the voices of stakeholders, understands their demands, and responds with practical actions.

<table>
<thead>
<tr>
<th>Key Stakeholders</th>
<th>Concerns and Expectations</th>
<th>Communication Channels</th>
<th>Feedback and Practice</th>
</tr>
</thead>
</table>
| Customers        | High-performance products, high-quality service, information security | New product launches, customer appreciation meetings, exhibitions, customer service, product exchange conventions, etc. | • Improve product innovation capability  
• Pay attention to customer demands and provide timely feedback  
• Actively participate in industry exhibitions  
• Information security |
| Shareholders and investors | High return on investment, robust financial health, accurate information disclosure | Shareholders’ meetings, on-site reception, online performance briefing, telephone, online message, e-mail, and other methods | • The regular release of sustainability reports, financial reports, etc.  
• Timely reminders for shareholders to check and collect information related to sustainability and company operations  
• Set up an “Investor Education” column on the Company’s official website |
| Staff | Clear career development channels, comfortable working environment, all-rounded personal development | Employee training and communication, employee communication, employee development and group building activities, etc. | • Establish a scientific human resource management system  
• Listen to and collect employee suggestions  
• Strengthen occupational health and safety management  
• Focus on employee career development  
• Regularly organize team building or cultural and sports activities |
| Suppliers and partners | Stable supply, long-term collaboration, fair cooperation | Supplier exchange meeting, daily supplier management | • Improvement of the supplier management system  
• Dynamic evaluation and review of suppliers  
• Creation of a list of excellent suppliers  
• The Company’s audit department has established an “anti-fraud” hotline |
| Government and regulatory agencies | Orderly industry competition, sufficient industry development momentum, operational compliance of the Company, and focus on environmental protection and safe production | Government-related meetings, websites, policy advice channels, etc. | • Strict implementation of the code of business conduct  
• Optimization of internal control and compliance management  
• Improvement of our anti-fraud management and strengthening supervision on corporate integrity and anti-corruption  
• Strengthening of safety production management  
• Energy conservation, emissions reduction, and protection of the ecological environment |
| Community | Environmental safety, improvement of people’s livelihood, community development, public relations, cultural life | Public welfare activities, organization of relief efforts, environmental protection activities, etc. | • Organization of charity activities, volunteer work, rendering aid, and making donations  
• Allocation of resources to support community construction |
| NGO | Focus on environmental protection, the sufficient importance for industrial development, enterprises bearing social responsibilities | Joining associations, participating in initiatives, public welfare donations, etc. | • Strengthening of cooperation with non-governmental organizations and active provision of assistance  
• Develop an environmental management system  
• Donation to public welfare |

Addressing Climate Change

Climate change not only poses a threat to the survival and development of humanity but also has a significant impact on the assets and operational security of enterprises. According to the sixth assessment report of the United Nations IPCC with reference to the current trend of climate change, more frequent and intense extreme climate events could push sensitive species and ecosystems to irreversible critical points. There is an urgent need for global action to mitigate and adapt to the effects of climate change. As a leading enterprise in the PV industry, JA Solar is strongly aware that with the continuous strengthening of global action and increase in expectations to address climate change, the new energy market in various countries will expand further. This will open up unprecedented development opportunities for JA Solar. It is also inevitably facing a series of physical and transformation risks brought about by climate change. To actively address opportunities and challenges, JA Solar regards climate change-related risk management as an important component of corporate governance. The Company follows the recommendations of the Task Force on Climate-Related Financial Disclosures (TCFD). It conducts overall management and disclosure of work-related to addressing climate change from the dimensions of governance, strategy, risk management, and indicator objectives.

Governance

The Board of Directors of JA Solar participates in the decision-making of identifying climate-related risks and opportunities, and formulates relevant management indicators and mechanisms. It also supervises and guides the implementation of relevant tasks. Board members have a deep understanding of the potential impact of climate change on the business, as well as the risks and opportunities faced by the PV industry in the future. Based on these climate-related opportunities and challenging topics, JA Solar regularly evaluates its short-term and long-term business strategies (including the long-term sustainability of the business) and conducts discussions on climate-related risks and opportunities.

In 2022, in order to strengthen the management capacity of climate-related topics, JA Solar established the Carbon Management and Sustainable Development Department to coordinate and supervise the advancement of climate change-related work. The Department is responsible for formulating the Company’s carbon reduction strategy, leading strategic resource planning, and the relevant resource allocation, and developing an annual budget. The Department is also responsible for leading climate-related risk assessments within the Company, promoting R&D investment decisions, and performing climate-related compliance assessments.

In February 2023, aiming to adapt to its strategic and sustainable development needs, improve the environment, society, and governance (ESG) framework, enhance the management ability of climate-related topics, and promote the realization of its sustainable development goals, JA Solar renewed the Strategy Committee under the Board of Directors as the Strategy and Sustainable Development Committee. Such Committee conducts special supervision and management of the ESG affairs (including climate change-related affairs).
Strategy

JA Solar actively innovates to transform the energy structure. It takes multiple measures to address the risks and opportunities brought about by climate change, and resolves the risks and challenges posed by them. The risks posed by climate change mainly include two types. They are physical risks caused by extreme weather or rising temperatures, and transformation risks brought about by changes in markets, regulations, policies, etc. in response to climate change.

Physical Risks

The main physical risks faced by JA Solar include heat waves, rising sea levels, floods, frequent extreme weather events, and biodiversity losses. These risks have an impact on the production and operation of the enterprise in different time dimensions.

Short-term

Potential Impact

On the one hand, extreme weather events such as rainstorm, flood, typhoon, and drought caused by climate change may threaten the equipment and infrastructure of various production and operation bases of JA Solar, as well as PV power plants and other facilities owned by the Company, resulting in a series of direct or indirect economic losses such as asset damage, maintenance costs and insurance costs.

On the other hand, extreme natural disasters in the short term may cause the Company’s raw material supply and product logistics to be blocked or interrupted, and delays in project implementation进度, resulting in a decline in the Company’s contractual ability, while affecting the supply and sales of products and services.

Long-term

Potential Impact

Chronic risks caused by climate change include persistently high temperatures, drought, and rising sea levels. These risks may affect the production and operation bases, PV power plants, and other infrastructure of JA Solar located in climate-sensitive areas, water-resource-sensitive areas, or low-altitude areas, resulting in increased operating costs (such as increased water and electricity costs, increased cooling and heating expenses, and increased equipment losses), compromising the stability of the Company’s operations and causing sustained economic losses.

Transition Risks

JA Solar attaches great importance to the transformation risks brought about by climate change. It actively responds to new policies, regulations, and market demand, and promotes innovative development of PV technology. It also builds a low-carbon PV industrial chain to create a green PV plant. It performs information disclosure to continuously reduce medium and long-term potential risks. With the introduction of relevant systems such as the Opinions of the Central Committee of the Communist Party of China and the State Council on the Complete, Accurate and Comprehensive Implementation of the New Development Concept To Do a Good Job in Carbon Peak and Carbon Neutrality and the Action Plan for Carbon Dioxide Peaking before 2030, China and various regions may implement stricter climate-related policies (such as implementing a carbon price mechanism, requiring a higher proportion of the use of renewable energy). With the establishment and continuous improvement of China’s carbon market, more key industries with high energy consumption are expected to gradually be included in the carbon market management. This may put pressure on the JA Solar’s supply chain, further affecting its production and sales.

In addition, with the introduction of stricter environmental protection and safety regulations such as the industrial Green Development Plan (2016-2020), Green Manufacturing Engineering Implementation Guidance (2018-2020), and the “4th Five-Year” Industrial Green Development Plan, higher requirements have been put forward for enterprises to practice green production, build green factories, and reduce their carbon footprint.

On the other hand, as various overseas countries and regions have successively announced carbon neutrality goals and action plans (such as the signing of the European Green Deal by EU countries to achieve carbon neutrality by 2050), and the introduction of a series of important policies such as the European (Climate Law), JA Solar will also face stringent regulations and requirements for addressing climate change overseas. In addition, with the market heat may decrease in the short term, with the risk of increased costs.

Potential Impact

With the continuous improvement of carbon prices in domestic and foreign markets and the continuous expansion of the coverage of emission control industries, in the long run, higher requirements have been raised for the carbon footprint management of JA Solar’s product life cycle. Furthermore, in the context of supply chain globalization, the related risks faced by suppliers may also be transferred to JA Solar through the supply chain, further increasing enterprise costs.

With the continuous reduction of subsidies for new energy, the market heat may decrease in the short term, with the risk of increased costs.

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Policy and Legal Risk

JA Solar closely follows the changes in policies and regulations related to carbon trading. It actively carries out greenhouse gas inventory, and develops and improves emission inventories. It also monitors and optimizes emission hotspots, thus enhancing its ability to manage greenhouse gas emissions.

It applies environmental protection concepts throughout all aspects of operations including R&D, production, packaging, logistics, and product recovery, continuously reducing energy and resource consumption, creating green factories, and promoting green operations. It strictly complies with the regulatory requirements of the country where its base is located and the country where the product is sold. It establishes a comprehensive system and assurance mechanism, and continuously improves its low-carbon development, safety and environmental protection risk management and control level. These measures ensure that the environmental compliance requirements of each operating country are met.

Market Risk

Reputational Risk

JA Solar Sustainability Report and ESG Report 2022

Sustainability Management
Identification of Climate Change opportunities

With the continuous increment of the intensity of policies related to climate change locally and abroad, the intensity of integration of PV power generation with various industries, as an important technical means to achieve net zero carbon emissions, has continuously been increased. This has also brought huge market opportunities for JA Solar. For example, with the imminent implementation of the EU carbon tariff, high carbon emissions enterprises such as steel and nonferrous metals will further seek low-cost carbon reduction measures from the production process to avoid the cost increase caused by the tariff. Therefore, more and more enterprises are purchasing or building PV green power plants to replace a large amount of fossil energy power consumption in the production process. It reduces the product life cycle carbon footprint, and unleashes huge incremental space and opportunities for the PV industry.

Currently, more and more enterprises have set their own carbon targets. Distributed power plants and increasing the proportion of green power utilization have become essential ways to achieve emission reduction goals. Therefore, JA Solar strives to seize the opportunity and explore multiple scenarios of “PV+” applications to help users in different industries achieve their carbon neutrality goals. Currently, JA Solar can be seen in extensive scenarios and applications, such as IKEA, the United Nations in China, the Marina Bay Sands in Singapore, and the Mercedes-Benz automotive dealership store in Kuala Lumpur, Malaysia.

In the future, JA Solar will continue to promote climate change-related scenario analysis to further identify the short-term, medium-term, and long-term risks faced by its various businesses under different emission scenarios. It will provide a favorable reference for its future strategic and financial planning.

Risk Management

Based on the possibility and scope of risk occurrence, JA Solar has preliminarily identified climate-related physical risks and transformation risks that have a substantial impact on the business. It further selects key climate risks through communication with stakeholders such as research institutions, government regulators, investors, and stock exchanges, in combination with the climate risks that have occurred or can be predicted in its actual business scenarios. In addition, JA Solar has incorporated climate-related risk management into the overall ESG management framework. The Carbon Management and Sustainable Development Department has coordinated the implementation of climate-related risk management in various departments and business units.

To further strengthen risk management, the Company continues to establish and improve its risk management systems and risk management policies. This allows for effective monitoring and management of various risks including climate risks. Based on the risk management system, the Company has developed a risk management assessment and monitoring process. Each department carries out work based on the relevant process and regularly reports the identified significant risks. Unified grading and overall management of risks (including climate-related risks) are realized.

Metrics and Targets

JA Solar has relentlessly promoted the formulation of climate-related strategies and goals. The Company promotes low-carbon management and sustainable development from the organizational side to the product side in an all-rounded manner.

JA Solar is consistently organizing carbon inventory work to identify its own carbon emissions. In November 2022, it joined the Science Based Targets initiative (SBTi), with a commitment to helping limit global warming to around 1.5°C. It promotes the setting of carbon reduction targets in a more sustainable and international manner. In addition, the Company has joined CDP supply chain projects to continuously improve supply chain emission reduction performance and enhance the ability of suppliers to address risks related to climate change.

In the future, JA Solar will continue to commit efforts to promoting the achievement of carbon reduction goals, lead global energy transformation, and help create a carbon-free new energy world. This will make more contributions to the construction of global ecological civilization and sustainable development.

JA Solar Operation-wide GHG Emissions (Scope 1 + Scope 2)²

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Unit</th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope 1: Direct GHG Emissions²</td>
<td>tCO₂</td>
<td>30,965</td>
<td>35,406</td>
<td>45,268</td>
</tr>
<tr>
<td>Scope 2: GHG emissions from purchased power</td>
<td>tCO₂</td>
<td>1,214,319</td>
<td>1,548,463</td>
<td>1,834,111</td>
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<tr>
<td>Scope 3: Other Indirect GHG Emissions²</td>
<td>tCO₂</td>
<td>7,755,100</td>
<td>10,209,525</td>
<td>10,702,382</td>
</tr>
<tr>
<td>Operation-wide GHG Emissions Intensity</td>
<td>tCO₂/hundred million</td>
<td>4,817.91</td>
<td>3,834.85</td>
<td>2,574.88</td>
</tr>
</tbody>
</table>

¹. The greenhouse gas emissions (Scope 1 to Scope 2) involved in the operation scope of JA Solar include CO₂, CH₄, N₂O, HFCs, SF₆.
². Other indirect greenhouse gas emissions (Scope 3) involve greenhouse gas categories: CO₂, CH₄, N₂O, HFCs, SF₆.
JA Solar regards its excellent governance as an important cornerstone of sustainable development. Adhering to the business principle of "stable growth for sustained profitability", JA Solar has continuously improved the entire corporate governance system, established a diversified governance structure, and effectively protected the interests of investors. The Company continues to carry out compliance risk management and control internally. It actively fulfills its responsibilities in anti-corruption and business ethics and helps to achieve high-quality development while ensuring stable and efficient operation.

Major internal control risk events: 0
Percentage of female in the board of directors: 33%
Anti-corruption related training personnel: 3,177 participants
Newly authorized patents: 215
Coverage of integrity and integrity cooperation agreements signed between the company and suppliers: 100%
JA Solar was awarded the China Well-known Trademark
Goverance Framework

JA Solar runs a scientific and standardized management system with efficient operation and clear boundaries to maintain its stable operation and sustainable development. It has established a corporate governance structure with the Shareholders’ Meeting, Board of Directors, Supervisory Committee, and Senior Management as the main body. Among them, the Board of Directors has a Strategy Committee (now renamed “Strategy and Sustainable Development Committee”), a Remuneration Committee, a Nomination Committee, and an Audit Committee. The Company has formulated corresponding rules of procedure and work management systems, covering various aspects, such as corporate governance, information disclosure, investment, transaction, audit, subsidiary management. The system has provided a solid institutional guarantee for standardized operations and healthy development.

Protection of Investors’ Rights and Interests

JA Solar attaches great importance to the protection of investors’ rights and interests. It has developed systems such as the Investor Relations Management Policy and Information Disclosure Management Policy to disclose information in a timely, objective, accurate, and comprehensive manner in strict accordance with the requirements of relevant laws, regulations, and company policies. During the reporting period, JA Solar successfully completed the preparation and disclosure of 4 periodic reports and 148 interim reports. Apart from disclosing regular reports, the Company actively holds performance briefings and interactive Q&A sessions with investors, so that investors can have a more comprehensive and intuitive understanding of the Company’s situation. This helps investors make investment decisions. The Company has also established contacts with investors through various channels and methods, such as official variable announcements, strategy meetings, institutional special exchange meetings, exchange interaction platforms, hotlines, emails. This action improves the Company’s transparency and integrity, and ensures that all investors of the Company have equal access to relevant information about the Company.

JA Solar adheres to the concept of prioritizing “creating value for the owners”. Under the premise of normal operation and sustainable development, it takes a positive approach to bring returns to investors with practical actions. The Company completed the equity distribution in 2021, distributing a cash dividend of RMB 1.5 (including tax) to all shareholders for every 10 shares, and converting the capital reserve fund to 4 additional shares for every 10 shares. A total of RMB 251,567,168.40 of cash dividends was distributed, and an additional 670,845,782 shares were converted. This ensures stable dividend distribution while sharing business results with shareholders, protecting the interests of investors, and maintaining the Company’s sustainable, stable, and healthy development.

Endowing to further establish and improve the Company’s long-term incentive mechanism, attract and retain outstanding talents, and enhance its core competitiveness, the Company has drafted the 2022 Stock Option and Restricted Stock Incentive Plan (Draft) with the approval of the 32nd Meeting of the 5th Board of Directors and the 2021 Shareholders’ Meeting. It recognized June 22, 2022 as the grant date to grant stock options and restricted shares to eligible incentive recipients. The grant registration was completed on July 25, 2022. The Company granted a total of 4,389 million restricted shares to 32 incentive objects and 15,071 million stock options to 837 incentive objects.
Legal Compliance

Compliance is an important foundation for a Company’s long-term and stable operation. JA Solar pays great attention to internal compliance management. It adheres to business ethics, and improves the construction of the compliance system. It also cultivates a compliance culture and continuously enhances the level of compliance. This ensures the orderly development of the Company’s various businesses.

Compliance System

A robust compliance system is a necessary guarantee for strengthening internal supervision and preventing enterprise risks. JA Solar continues to promote the construction of a compliance system. It has set up the Compliance Management Committee to give full play to the leadership of the Company’s senior management for the promotion of various types of compliance work and formulation. At the same time, the Company has also continuously improved the compliance management operation guarantee mechanism and supporting systems. The Company has developed some content management policies, such as the Control Procedures for the Evaluation of Laws, Regulations and Other Requirements and Compliance Work. At the same time, the Company has also conducted targeted compliance training, such as Legal Due Diligence for Photovoltaic Power Station Projects, Special Training on Trademark Law and Advertising Law, and Guidelines for Combating and Prevention of Legal Risks in Distributed Photovoltaic Power Generation Projects.

Case

In terms of overseas business compliance risk management, the Company has actively responded to trade sanctions and sanctions policies. On the one hand, the Company has established a professional trade compliance team. The team is responsible for tracking and supporting systems. The Company has developed some content management policies, such as the Control Procedures for the Evaluation of Laws, Regulations and Other Requirements and Compliance Work. On the other hand, JA Solar actively optimizes and updates the Company’s supply chain planning and management. It improves traceability of supply chains in accordance with specific country regulations and policy requirements, and reduces the potential impact of overseas trade restrictions. Up to now, the Company’s shipments to major countries and regions, such as the United States, Europe, and India have been largely normal.

In recent years, China’s PV industry has developed rapidly, and domestic PV enterprises have flourished in overseas markets. In order to reduce the compliance risks in the Company’s overseas operations and enhance employee compliance awareness, the Company conducted training on EU competition regulations for the entire European sales and legal team in January 2022. It has engaged overseas professional law firms to explain the context of EU competition law. The training has led a theoretical foundation for the Company to better carry out compliance management construction as well as a beneficial foundation for a series of compliance actions brought about by the release of the EU competition law.

Business Ethics and Anti-corruption

JA Solar adheres to corporate values and strictly abides by business ethics standards to promote a culture of honesty and integrity. As a multinational conglomerate with global operations, JA Solar prohibits business conduct in ways that violate laws and regulations or commercial integrity and ethics, or constitute any form of commercial bribery. It opposes monopoly and unfair competition, and maintains market fairness in its business and commercial activities. In 2022, there were no business ethics risks in JA Solar.

Fighting Corruption and Promoting Integrity

JA Solar focuses on building a robust integrity system to prevent corruption and strives to create a credible and corruption-free enterprise. The Company strictly complies with the Anti-corruption Law of the People’s Republic of China, the Anti-money Laundering Law of the People’s Republic of China, the Anti-corruption Law of Hong Kong, and other laws and regulations related to anti-bribery, anti-fraud, anti-extortion, and anti-money laundering in various overseas operation locations. A series of policies have been formulated and issued, including the Business Ethics Policy, the Internal Audit Management Policy, the Implementation Rules for Punishment of Audit and Supervision Violations, the Anti-fraud Reporting and Handling Procedures, and the Engineering Audit and Supervision Management Measures. This strictly prohibits corruption and other violations.

In the Code of Conduct for Suppliers, the Company prohibits employees from offering, promising, authorizing, or giving bribes, and explicitly prohibits giving or providing any valuable items to illegally induce the purchase, lease, use, or recommendation of purchasing or leasing the Company’s products or services. The relationship between company employees and clients shall not violate any law and shall comply with applicable professional or industry codes of conduct.

Create a Culture of Honesty and Integrity

JA Solar continues to promote the establishment of a culture of honesty and integrity in the Company. The Company has formulated the Management Rules for Protection of Whistleblowers and Rewards of Honest Deeds, which is updated regularly. It also provides six reporting channels, including the official WeChat account, complaint telephone number, and e-mail address, to internal and external stakeholders to lodge their complaints. After receiving the information provided by the informant and submitting it to the internal audit department for preliminary screening and investigation, the suspected act of violation will be transferred to the legal authority for processing and investigation. At the same time, the Company complies with national laws and regulations and its own confidentiality requirements for whistleblowers and reported information. It strictly maintains confidentiality in all aspects, such as acceptance, registration, storage, and investigation to prevent unauthorized disclosure or loss. Those found guilty of violating confidentiality regulations will be dealt with strictly and subject to severe punishment.

At the same time, the Company continues to carry out anti-corruption education, and regularly publish posts through the “JA Solar Integrity” WeChat official account as guidelines for employees to work with honesty and resist corruption. In 2022, JA Solar organized an “Integrity Publicity Month” with the theme of “Staying a Spirit of Integrity and Building a Great Enterprise” to share fraud cases, anti-fraud policies and systems, and complaint channels. The Company also regularly publishes various integrity promotion videos and online courses on the Company’s “Yidian.Zhishi” learning platform. This requires employees to learn and submit questionnaires to ensure the Company’s anti-corruption requirements are implemented and communicated to all employees.

In 2022, JA Solar conducted four anti-corruption-related training sessions, with 3,173 participants. The percentage of operating sites that have conducted corruption risk assessments is 100%.

Coverage of integrity and integrity cooperation agreements signed between the company and suppliers 100%
Intellectual Property Protection

JA Solar places emphasis on the important role of independent intellectual property rights in promoting technological innovation. With intellectual property management as a priority in enterprise management, market as the orientation, and talent as the cornerstone, it provides support for consolidating and improving core competitive advantages.

The Company has gradually established a robust intellectual property management and protection system as well as high-level intellectual property cultivation and operational strategies. Through the formulation of a series of systems such as the Intellectual Property Rights Management Methods, the Company has established an intellectual property management framework with the legal authority as the main body and various coordinated aspects, such as R&D, procurement, sales, production, and human resources. By the end of 2022, JA Solar has established a relatively complete intellectual property management system and rights protection mechanism, including patents, trademarks, technical secrets, and software copyrights. It has also improved the management process from application to later maintenance, laying a solid foundation for enterprise innovation and development.

In 2022, JA Solar continued to adhere to the Enterprise Intellectual Property Management as guidelines, based on the Company’s Intellectual Property Rights Management Methods, consolidating all aspects of intellectual property management work. It has continuously improved the Company’s intellectual property management and protection measures. This helped to strengthen the Company’s independent innovation capabilities. In 2022, the Company won the title of “National Intellectual Property Advantage Enterprise”.

In addition, JA Solar has continued to increase its Free to Operate (FTO) investigation efforts. Together with the Company’s internal intellectual property team and external lawyers, JA Solar also conducted FTO investigations on solar cell technologies such as TOPcon, IBC, HJT, and key applications of bus bar technologies to avoid product infringement risks.

In 2022, JA Solar had 215 new authorized patents, 65 of which were invention patents. All patents were independently applied for and granted. Those patents involve various main business segments, such as crystalline silicon, batteries, modules, and power station maintenance, promoting technological progress in the PV industry. A guarantee has been provided for its product sales.

JA Solar also focuses greatly on the cultivation and protection of brands. It gradually promotes broader and solid trademark registration and protection worldwide. It has always laid out trademarks in advance before the launch of new products, legalized the brand, and monitored the dynamics of core trademarks in real time to ensure the validity of the trademarks. It prevents trademark infringement in the market by sending letters and complaints, effectively preventing and curbing trademark infringement. The legitimate rights and interests are thus safeguarded. In 2022, the Company was granted 18 new registered trademarks, and a total of 301 registered trademarks locally and abroad.

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To ensure its data security, JA Solar has continuously established a security protection system, deployed security devices to formulate policies for data invasion access control, which also detect and protect sensitive data. The system detects key data and file formats in data traffic under specific conditions to prevent leakage of sensitive information. The Company has also made detailed management regulations on data transmission, data storage, data access leakage prevention, data encryption, etc. in the System Access Standard.

As governments and the public have increasingly attached importance to information security in recent years, JA Solar has made sustained efforts to information security and privacy protection during its operations. Based on the Personal Information Protection Law of the People’s Republic of China and other laws and regulations, the Company has formulated and issued a series of systems, such as the Business Secrets Management Methods, Information Security Management Procedures, System and Network Security Management Regulations. JA Solar has also continuously improved the information security and privacy protection system to protect the information security of employees, customers, and partners.

Information Security and Privacy Protection

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To better prevent information security risks, further improve the ability to handle network and information security emergencies, and ensure the physical security, operational security and data security of important computer information systems, JA Solar has also developed the Security Incident Emergency Response Management Policy. This ensures a scientific, effective, and rapid response to network and information security emergencies.

In addition, JA Solar also actively conducts information security training for employees, which enhances the awareness of information security and privacy protection of its employees. In 2022, the Company organized a total of 24 information security training sessions for a total of 5,623 participants. During the reporting period, there were no complaints of infringement of customer privacy rights or loss of customer data.
Since its establishment, JA Solar has incorporated environmental protection concepts into various stages such as R&D, production, packaging, transportation, application, and product recycling, continuously reducing energy and resource consumption. We have also continuously improved the performance of PV products. It is committed to building a resource-saving and environmentally friendly enterprise. In the future, JA Solar will continue to explore and actively build a green and low-carbon sustainable development ecology of the full industry chain. We will strive to build a high-end, intelligent, and green high-quality development model while contributing to China’s transformation from a "manufacturing powerhouse" to an "intelligent manufacturing powerhouse".

- Clean energy usage: 1,148.93 GWh
- Reuse of reclaimed water: 6,627,600 m³
- Recycled waste: 54,390.5 tons
- Environment-related training sessions covering approximately 13,420 participants
- Cumulative total capacity of PV power stations: 963 MW
- Cumulative total capacity of PV power stations: 6,627,600 m³
Green Manufacturing

With the proposal of the sustainability concept of “Green to Green, Green to Grow, Green to Great”, JA Solar practices the concept by building green factories. The practices include manufacturing green products, generating green energy, and creating a green earth in its operations. We implemented a green manufacturing system, thereby reducing pollution and carbon, saving energy and environmental protection, and building green factories with the promotion of green operations.

Environmental Management System

JA Solar has always pursued the path of green development, providing clean and efficient energy to users worldwide. It also practices green production and forges an environmentally friendly enterprise. The company actively identifies and complies with relevant laws and regulations while continuously improving and implementing the environmental management system under the guidance of laws and regulations, such as the Environmental Protection Law of the People’s Republic of China, the Environmental Impact Assessment Law of the People’s Republic of China, and the Management Measures for Legal Disclosure of Enterprise Environmental Information. In 2022, all manufacturing bases that have officially been put into operation by JA Solar have passed the certification of ISO14001 environmental management system.

In order to accurately identify and reduce the potential impacts on the environment during production and operation, and proactively respond to and manage environmental risks, JA Solar has developed systems such as the EHS Management System Manual, the Environmental Protection Management Procedures, and the Environmental Factor Identification and Evaluation Procedures in accordance with relevant standards such as ISO14001 and 1050001, as well as various legal and regulatory requirements, in combination with its actual situation. The various systems define the organizational structure, corresponding responsibilities, and work procedures of the company’s environmental management while providing standardized and institutionalized management of all business departments, subsidiaries, and entities controlled by JA Solar. In addition, each manufacturing base has continued to develop environmental emergency plans, promptly report qualified units to prepare environmental emergency emergency management training and drills. These measures minimize the adverse effects caused by environmental accidents.

Aiming to better implement and comply with the relevant national and local environmental protection laws, regulations, and policy documents, JA Solar has established the Safety Committee at its headquarters and the EHS Management Department. The Committee has been equipped with full-time personnel. In addition, it has established EHS management committees and EHS functional departments with full-time management personnel in each subsidiary. A networked governance system is established, with EHS management committees and functional departments in each subsidiary enabling the establishment to perform and improve various environmental management accounts; ensure the normal operation of environmental protection facilities.

In 2022, the environmental management work of each base of JA Solar has been carried out steadily, and there were no penalties faced for violating environmental laws and regulations.

Building a Green Factory

JA Solar attaches great importance to green production and has thus established and implemented a green factory management system. As of February 2023, six bases of JA Solar have been recognized as one of the “green factories” by the Ministry of Industry and Information Technology. This is not only a reflection of JA Solar as an advanced benchmark in the PV industry, but also a positive response on global green development.

In order to continuously improve employees environmental management capabilities and disseminate green manufacturing concepts and knowledge, JA Solar’s Yangzhou Base launched various green factory creation activities in 2022.

On the one hand, the base has implemented a special green factory management organization for the system construction, implementation, assessment, and reward work related to green factories. To ensure the steady progress of the construction of green factories, JA Solar’s Yangzhou Base has established a target responsibility system. It has also defined various indicators and execution plans by setting environmental-related medium- and long-term plans as well as annual goals.

In addition, to further spread the green manufacturing culture and create a green environment together with employees, the Yangzhou Base has also conducted environmental-related knowledge training and drills for employees with evaluation of the training results. In 2022, the Yangzhou Base conducted 99 environmental-related training for 3,940 participants. The training covers various contents such as emission and treatment of three wastes, environmental related laws and regulations, and environmental factor training.
Energy Management

In terms of energy management, the Company has established an energy management system based on the environmental management system, developed system documents, such as the Energy and Resources Management Policy and Energy Management Manual. Guided by the 4R principles of circular economy (reduce, replace, recycle, and recovery), it has continued to promote innovation and improvement in energy efficiency, emission reduction, resource conservation, and other aspects. It has also appointed special personnel to regularly record the use of energy and resources. Thus, it has achieved effective management of energy resources. As of 2022, five of the Company’s bases have obtained the ISO50001 energy management system certification.

- **Case**: JA Solar’s Fengxian Base Equipment Energy Conservation Upgrade Project

  The No. 1 Workshop of Shanghai Fengxian Base was built in 2010 and was initially equipped with 5 heat pump units and 26 air conditioning boxes. With extended usage time, the working efficiency of various equipment gradually decreased, and it was difficult to meet the control requirements for workshop temperature during the periods of high temperature in summer and low temperature in winter. The indoor temperature in some areas was relatively high.

  To further reduce energy consumption and emissions in the production process, in May 2022, the Fengxian Base began to carry out equipment energy-saving technical transformation. This involves eliminating old equipment and installing secondary energy efficiency and frequency conversion-controlled heat pump units and air conditioning boxes. During the trial operation, the workshop temperature was well-controlled. Based on the electricity consumption data before and after the transformation, it was deduced that more than 1.4 million kWh of electricity could be saved each year.

- **Case**: Waste Heat Recovery Project of Production Factory

  In response to the national policy of “Controlling energy consumption and energy intensity” to promote energy conservation and consumption reduction, in 2022, the various bases of JA Solar continued to explore and carry out waste heat recovery projects.

  - **Yiwu Base**
    - The No. 1 Workshop of Shanghai Fengxian Base was built in 2010 and was initially equipped with 5 heat pump units and 26 air conditioning boxes. With extended usage time, the working efficiency of various equipment gradually decreased, and it was difficult to meet the control requirements for workshop temperature during the periods of high temperature in summer and low temperature in winter. The indoor temperature in some areas was relatively high.

  - **Donghai Base**
    - The PV project of JA Solar’s Donghai Base was constructed and put into operation in multiple stages starting from 2012 to 2016, with a total installed capacity of approximately 4.36MW. It adopts a “self-generation for self-use grid connection mode to reduce its own carbon emissions. In 2022, the project generated 3,922MWh of electricity, accounting for about 6.6% of the total electricity consumption.

- **Yangzhou Base**

  - The distributed power plant project of JA Solar’s Yangzhou Base is divided into four phases, with a total installed capacity of about 12.74MW, and the power generated is used for production and office use in the plant. In 2022, the first three PV phases of the base generated a total of 1250MWh of green power. With the completion of the fourth phase of the project and its grid connection, the newly installed PV power generation in the future fourth phase of is expected to reach 9,500MWh/year. This has effectively reduced the Company’s energy costs while promoting green and low-carbon production.

  - **Fengxian Base**
    - JA Solar’s Fengxian Base has a total of 4MW Golden Sun Demonstration Project and 1MW Distributed Photovoltaic Project, distributed on the roof of the plant area and living areas. In 2022, the PV power station in Fengxian Base generated 3,930.18MWh of total power for use.
Water Resources Management

JA Solar highly values water resource management. It strictly abides by relevant laws and regulations, such as the Water Law of the People’s Republic of China, the Water Pollution Prevention and Control Law of the People’s Republic of China, and the Water Pollution Prevention and Control Action Plan, as well as the Company’s Energy and Resource Management Policy. It has established wastewater treatment and discharge management systems, such as the Wastewater Discharge Control Procedures in order to monitor and manage the main water consumption in the production process and key stages that have an impact on water resources. The drainage system of “Separating rainwater from sewage and separating clean water from sewage” is adopted for the drainage of each base. The rainwater is discharged locally through the rainwater pipe network while the production and domestic wastewater is discharged after being connected to the existing sewage treatment station in the plant area for treatment per the standards.

At the same time, in order to effectively manage production water, each base of JA Solar has incorporated water use objectives into its environmental management indicators based on its own actual situation. For example, JA Solar’s Yancheng Base has set a water consumption target of reducing the ratio of water consumption to production capacity by 3% every year. In 2022, the main source of water for each manufacturing base of JA Solar came from municipal water supply, with a total water consumption of 3,130,200 m³ and a water consumption intensity of 0.45 m³/RMB 10,000.

In addition, the Company attaches considerable importance to the recycling and utilization of water resources. It also constantly explores various methods for wastewater treatment and reclaimed water reuse. In 2022, JA Solar’s Donghai Base explored the development of a primary RO concentrated water reuse project. By utilizing equipment, such as RO membranes and high pressure pumps, the water is purified using osmotic pressure to achieve wastewater reuse. Since the equipment was put into operation in February 2022, as of the end of the reporting period, the total water production has reached 86,400 m³.

In 2022, the Company discharged 20,538,700 m³ of wastewater, with a wastewater discharge intensity of 2.81 m³/RMB 10,000, and a water resource recycling capacity of 6,627,600 m³.

Environmental Management

Air Pollutant Management

Air pollutant management is an important part of JA Solar’s green manufacturing practice. The Company strictly complies with the Laws of the People’s Republic of China on the Prevention and Control of Air Pollution and other laws and regulations. It conducts classified monitoring and treatment of various types of waste gases generated during various production processes. The Group requires all manufacturing bases to comprehensively identify and manage environmental factors, with full prohibition of the use of ozone depleting substances, such as hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and carbon tetrafluoride (CF4). For the main waste gas pollutants generated during the production process, each base conducts real-time control through online monitoring equipment to ensure 100% compliant emissions.

For long-term and stable operation of environmental protection equipment, the Company also formulated a maintenance inspector and inspection policy for environmental protection equipment. In addition to installing online automatic detection devices for various emissions, the Company has also added quarterly manual testing and proofreading to its own monitoring plan. This ensures that each emission segment meets the standards.

In addition, JA Solar continuously upgrades and transforms environmental protection facilities. It also optimizes production processes and explores waste gas reuse while reducing air pollutant emissions during production. From 2020 to 2022, JA Solar’s Fengeai Base invested more than RMB 5 million to continuously upgrade the technology of the workshop waste gas purification tower. The comprehensive treatment technology of “closed collection + pretreatment + activated carbon + purification tower fan” was adopted to carry out environmental protection transformation on the vacuum pump at the source of laminated waste gas generated in the production process. This reduces the total emission of waste gas, and achieves comprehensive treatment from source to treatment. Currently, the emission value of VOCs in the exhaust gas of the Fengeai Base remains stable at 40mg/m³ and below, far below the local standard of Shanghai (<50mg/m³).

Air Pollutant Management

Water Resources and "Three Wastes" Management

JA Solar places great emphasis on the management of wastewater, exhaust gases, and waste. It adheres to the policy of “resource recovery, turning waste into treasure, and comprehensive utilization” to reduce “three wastes” pollution. The Company strictly abides by various laws and regulations. It has formulated corresponding “three wastes” management policies to continuously explore the recycling of resources while minimizing the environmental impact of production.

Water Resource Utilization of Ammonia and Nitrogen Waste Gas

In the previous waste gas treatment process, the ammonia waste gas generated during the production process is often discharged after being sprayed per the standards. However, the wastewater generated by this process often has a high ammonia-nitrogen content, and the process operation is unstable. Therefore, the treatment of ammonia nitrogen waste gas wastewater is costly and very challenging. In 2022, the Ningjin Base of JA Solar explored resource reuse methods. It has performed gas-liquid physical conversion and absorption of ammonia in the previous waste gas treatment process. Unfortunately, the process operation is unstable. Therefore, the treatment of ammonia waste gas wastewater is costly and very challenging. In 2022, the Ningjin Base of JA Solar explored resource reuse methods. It has performed gas-liquid physical conversion and absorption of ammonia in a crystallization furnace for secondary utilization. After transformation, the system can provide 58,000 tons of high purity argon annually.

The argon recovery system of the Qujing Base of JA Solar (Phase II) is designed through a process flow of “collection - buffer - hydrodeoxygenation - decarbonization - distillation - gas supply”. The overall recovery rate is increased by about 8.4% compared to the hydrogen-free process by using the hydrogen oxidation process. The argon recovery system of the Qujing Base of JA Solar (Phase I) is designed through a process flow of “collection - buffer - hydrodeoxygenation - decarbonization - distillation - gas supply”. The overall recovery rate is increased by about 8.4% compared to the hydrogen-free process by using the hydrogen oxidation process.

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### Case Study: Yixiu Base Condensate Reuse Project

There are many combined air conditioning units in the halls and modules workshop of JA Solar’s Yixiu Base. The units generate a large amount of condensed water during their operations in summer where high temperature and humidity are accompanied. During the operation of the ice machine in the base power station, the cooling tower needs to consume plenty of water for heat exchange and cooling. In order to improve the utilization rate of water resources, in 2022, Yixiu Base collected the condensed water from air conditioners and supplied it to the cooling tower through water pump pipelines. This saved about 74,000 tons of water throughout the year, while saving 180MWH of electricity for ice machines per year.

### Case Study: Qujing Base Reclaimed Water Reuse Project

In order to reduce the unit consumption of water and improve the utilization rate of water resources, JA Solar’s Qujing Base has explored reclaimed water reuse projects in multiple workshops. Through equipment, such as concentrated water reuse pump, reuse water tank, multi-media and PP filtration, the treated wastewater can be directly reused after reaching the usage standard and can be sent to a cooling tower for reuse after being treated and filtered by nanofiltration membrane. The system was put into use in the slicing workshop in late March 2022, achieving a recycling rate of 80% in April and over 85% in November. The machining workshop of Qujing Base also realizes a water recycling rate exceeding 96,000 tons. The production cost is reduced by more than RMB 130 million.

### Case Study: Argon Recovery and Reuse

To reduce exhaust emissions during the production process and improve the efficiency of argon used in the production of monocrystalline silicon, various bases of JA Solar have explored the development of argon recovery and reuse.

The argon recovery system of the Xingtao Base utilizes a membrane compressor regulator to recover and purify the argon discharged from the monocrystalline silicon melting furnace. The purity of argon produced by absorption and purification reaches above 99.9%. The argon can thus be reused in a crystallization furnace for secondary utilization. After transformation, the system can provide 58,000 tons of high purity argon annually.

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Waste Management

Each manufacturing base of JA Solar implements strict classification management of waste. Wastes are divided into hazardous waste and general waste according to relevant regulations, such as the Law of the People’s Republic of China on Prevention and Control of Environmental Pollution by Solid Waste and the Measures on the Management of Hazardous Wastes, production stage, hazardous toxicity as well as established a list of hazardous wastes that clearly indicates the types of hazardous waste from the source. Each manufacturing base has also established a full-process, full-settlement benefits.

On the one hand, the Company tries to reduce the generation of hazardous waste from the source. Each manufacturing base has also established a list of hazardous wastes that clearly indicates the types of hazardous wastes, production stage, hazardous toxicity as well as disposal units and methods. On the other hand, the Company has issued the Hazardous Waste Management Measures. The Measures clarify the requirements for collection, storage, transportation, disposal, and other aspects. Each base has also established a full-process, full-chain monitoring camera system that covers the entire process of waste production sites, transportation routes, hazardous waste warehouses, intelligent weighing systems, ground pumps, and factory entrances. This further ensures the standardization of hazardous waste disposal.

While general waste is disposed of by a professional third-party organization, each manufacturing base actively explores the recycling of materials, such as cardboard boxes, plastics, and sludge based on its own solid waste production situation.

<table>
<thead>
<tr>
<th>Waste Category</th>
<th>Amount (tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total amount of hazardous waste generated</td>
<td>2,132.52 tons</td>
</tr>
<tr>
<td>Total amount of non-hazardous waste generated</td>
<td>1,13,125.64 tons</td>
</tr>
<tr>
<td>Amount of waste recycled</td>
<td>54,390.5 tons</td>
</tr>
</tbody>
</table>

JA Solar has always adhered to the harmonious coexistence of human beings and nature. It strictly abide by the national ecological red line, and actively promotes ecological protection. In order to ensure the compliance operation of the project, JA Solar has established the Environmental Protection Management Procedures, which adheres to the “three simultaneities” requirements for new projects. It has also explicitly proposed to protect biodiversity in project development, construction, and operational activities. No construction will be performed within the national ecological red line protection zone. The Company’s manufacturing bases, such as the ones in Ningjin and Yiwu, regularly carry out soil and groundwater quality surveys alongside third-party monitoring to ensure ecological stability around them.

In addition, through the organic integration of natural ecological resources and PV projects, JA Solar has continuously explored new models of clean energy solutions and ecological restoration and protection over the years. The Company has also built several PV power plants with distinctive characteristics, including PV power plant projects for sand control, for agriculture, for fishery and mountain-built PV power plant project. Thus, we forge an innovative path of complementary ecological management and industrial development.
With the corporate mission of "developing solar power to benefit the entire human race", JA Solar is committed to promoting global energy transformation as well as green and low-carbon development with clean technologies and products. By the end of 2022, the Company's cumulative shipment of cells and modules exceeded 128GW. As low-carbon products gradually become a green entry threshold for countries, JA Solar adheres to its own sustainable development philosophy. It continuously improves the technology conversion rate of PV products, while actively fulfilling social responsibilities to create green and low-carbon products. The Company appoints experts in the product technology R&D department to be responsible for product carbon footprint research and management. Currently, all the Company's mainstream products have passed the French Certisolis certificate, while 182 mainstream products have obtained the Italian UL EPD (Environmental Product Declaration) environmental protection product declaration certification. The core technology “High-efficiency PERC Single Crystal Solar Cell and Module Technology” has been selected into Green Technology Promotion Catalogue (2020) issued by the National Development and Reform Commission. Several products have also been included in the first batch of "Green Design Products" for PV cells and modules by the Ministry of Industry and Information Technology.

Relying on the world's leading clean energy technologies and products, JA Solar continuously explores innovative solutions during the development, construction, and operation of PV power stations. It uses green products and innovative models to assist with the green and low-carbon transformation of various industries and regions. By the end of 2022, the scale of PV power stations held by JA Solar was 930MW, with an annual power generation capacity exceeding 900 million kWh. In addition, the Company has multiple "grid connection at a fair price" PV power station projects under construction in China. These projects are expected to be connected to the grid for power generation in the first half of 2023, making contributions to achieving global green development.

The impact of PV products on the environment during the production and use process has always been an important factor of concern for the end market. JA Solar continues to explore green environmental protection throughout the product life cycle. In 2022, the Company's DeepBlue 3.0 and other products were awarded the Italian UL EPD logo.

In addition, JA Solar DeepBlue 3.0 has also successively passed certifications, such as the South Korean Eco-Label Certification and the French Certisolis certificate for low carbon footprint. This demonstrates its positive practice of creating green products and contributing to global sustainable development.

JA Solar ardently explores diversified PV solutions under different scenarios and conditions, to continuously promote the application of clean energy. It has provided PV modules for the 58.5MW floating PV power station at the Sirindhorn Dam Hybrid Solar PV Park in Ubon Ratchathani, Thailand. This helps build a demonstration project for hydropower and floating PV integrated energy. Floating power stations require modules with excellent UV resistance, high temperature and moisture resistance, and PID resistance. JA Solar has provided high-efficiency PV modules for the Floating PV power station of Sirindhorn Dam. Combining the Sirindhorn Dam hydropower station and energy management system built in the 1970s, this project can adjust hydropower and PV power generation based on load changes (i.e., daytime PV power supply, nighttime hydropower station power supply, or simultaneous PV and hydroelectric power generation operation mode). While ensuring the continuous and stable supply of clean energy, it is expected to reduce carbon dioxide emissions by 47,000 tons per year.

During the project design process, ecological environment protection was also taken into full consideration. Horizontal directional drilling technology is adopted to lay cables underwater to avoid damage to the underwater ecological environment. Relying on stable product performance, JA Solar vigorously utilizes green products to help Thailand achieve the goal of increasing the share of renewable energy to 35% by 2037.
Environmental-Friendly Raw Materials

JA Solar attaches great importance to the use of green and environmentally-friendly materials in the production process. It cooperates with suppliers to actively develop and exploit low-carbon and environmentally-friendly materials. It reduces the carbon footprint of products while strictly controlling the emission of harmful substances.

On the one hand, JA Solar adheres to the goal of "sustainable development", and the goal of "clean production". In the introduction stage of new materials, based on the general trend of international environmental protection, it fully considers the green environmental requirements of various materials. The Company strictly controls lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyl ether, polybrominated biphenyl, and other toxic and harmful substances involved in the entire life cycle of raw materials. Before put into production, the materials are subject to hazardous material compliance and third-party chemical testing. This ensures that all raw materials and auxiliary consumables are green products. It also incorporates topics, such as hazardous chemical waste, solid waste, and no conflict minerals into its supplier social responsibility and sustainable development evaluation system. In addition, the Company conducts an annual process evaluation of the production line to ensure that green production runs through each production process. In 2022, JA Solar DeepBlue 3.0 single-glass products were developed and applied with environmentally friendly and more resistant backseals. DeepBlue 3.0 double-glass products were developed and evaluated with lead-free solder strips and mass production conditions. This effectively mitigates the negative environmental impact of the products while meeting environmental policies of various countries.

In addition, JA Solar actively cooperates with upstream and downstream enterprises in the industry. This aims to promote suppliers' clean energy use and carbon emission management and assist in their energy structure adjustment. It attaches high value to carbon footprint management of raw materials and promotes suppliers to carry out carbon footprint certification work. In 2022, both JA Solar’s silicon material suppliers completed carbon footprint certification. This boosts the Company to create green and low-carbon products.

JA Solar encourages suppliers to create green and low-carbon raw materials and reduce the carbon footprint of products.

Differentiated backseal
The Company effectively reduces product energy consumption and the aging time and production line circulation times in the fluorine film composite process in the production process.

Alternative application of recycled aluminum
Cutting down the high energy consumption of electrolytic aluminum production through the recycling and reuse of waste aluminum.

Glass energy optimisation
Company cooperates with glass suppliers to explore waste heat recovery and utilization, lowering energy consumption of glass while increasing environmental benefits.

Sustainable Logistics and Packaging

As the mainstay of clean energy, PV products bear the important mission of promoting global carbon emission reduction and energy structure transformation. JA Solar is not only a new energy manufacturer of high-quality and efficient PV products, but also committed to taking the lead in creating zero-carbon parks and products during production and processing. It regards packaging logistics as a critical aspect in the realization of a green industrial chain. It continues to make efforts in the packaging, transportation, storage, and other aspects of products, with a view to create a complete green supply chain system and mature green chain implementation standards, serving as a model for green-manufacturing.

It positively explores green packaging and the recycling of packaging materials. In 2022, its manufacturing bases continued to advance the recycling of waste pulp and reproduction of carton packaging. It also probes into the method of recycling of packaging materials with suppliers. It realizes the recycling of silicon packaging by using silicon cardboard boxes instead of the original packaging. JA Solar’s Yiwu Base has also taken the initiative to engage in frequent contact with outsourcing solar cell manufacturers to promote the recycling of solar cell packaging and practice low-carbon environmental protection. JA Solar’s Yiwu Base promotes the recycling of packaging materials through taobao and other methods. This increases the consumption of one-time packaging material and waste emissions. In 2022, more than 400,000 sets of solar cell packaging materials and nearly 20,000 pallets were recycled in the JA Solar’s Yiwu base.
 JA Solar Sustainability Report and ESG Report 2022

**Product Disassembly and Recycling**

JA Solar positively undertakes environmental responsibilities throughout the entire product life cycle. It disassembles and recycles waste PV modules to help cover "the last mile" of the PV green chain.

It has established a long-term strategic partnership with PV CYCLE, a world-renowned PV module recycling agency, to ensure that all modules exported to the EU comply with WEEE directives and corresponding national electronic waste disposal specifications and requirements. As a global member of PV CYCLE, JA Solar is also actively delivering solutions for waste PV modules to customers in non-EU regions. In September 2022, JA Solar Group passed the audit conducted by Massa, a French third-party audit agency, on the recycling of waste PV module and WEEE compliance.

In order to further enhance employees' understanding and increase awareness of the disassembly and recycling of PV products, in October 2022, the Company engaged PV CYCLE experts to carry out online training on PV product recycling. Its employees' understanding of product life cycle management has been enhanced.

**Green Culture**

JA Solar attaches great importance to the environmental impact of employees' office activities. It actively responds to the national call for energy conservation and carbon reduction and advocates the concept of green office internally to create a green office culture. The Company has developed a series of internal policies, such as the Office and Logistics Supplies Management Policy, Lighting Safety Management Policy, and Enterprise Water Conservation Management Policy, to promote electricity conservation, paper saving, and green travel for daily work. This helps create a low-carbon and environmentally friendly green office.

In 2022, the Company, represented by its headquarters, actively implemented carbon emission reduction in its daily operations through power-saving initiatives, paperless office, centralized garbage disposal, and recycling programs. JA Solar has also increased its proportion of vehicles powered with new energy, reduced the individual carbon footprint of employees, and achieved a continuous reduction in greenhouse gas emissions from its daily administrative activities.

For further sustainable development of the PV industry, JA Solar works with PV Industry Development Cooperation Center, as various enterprises, universities, scientific research institutions, financial institutions, and industry organizations engaged in PV recycling, to jointly initiate the establishment of Photovoltaic Recycling Industry Development Cooperation Center. JA Solar makes full use of its experience and advantages in "green scientific research", "green manufacturing", and "green management" to actively promote the establishment and improvement of systems in the field of PV recycling as well as the formulation and popularization of policy standards, technology research and innovation. JA Solar makes unremitting efforts to develop PV recycling, the final and key link of the entire PV industry chain.

**Case: JA Solar Beijing Headquarters Achieved Carbon Neutralization of Operational Emissions in 2021**

As a leading PV enterprise, JA Solar follows closely the sustainable development concept of "Green to Green" and strives to create a green development model. In 2021, the Company conducted verification on greenhouse gas emissions in Scope 1 and Scope 2 of the global management headquarters in Beijing for the whole year of 2021. By purchasing the verified carbon unit (MCU) produced by the Liangdu Afforestation VCS+CCB certification project, it has achieved carbon neutrality in 2021.

To survey the Company’s concept of sustainable development and enhance employees' awareness of environmental protection, in 2022, JA Solar organized the "World Environment Day" activity and environmental protection training for all manufacturing bases and PV power stations. It also implemented the theme of the National Environment Day, "Work Together to Build a Clean and Beautiful World". Each base tapped on employees' environmental habits and enhanced their awareness of caring for the environment and protecting the ecology through promotional videos, banners, posters, signing of proposals, and cleaning up of white trash.

**Training covering approximately 13,420 participants**

In order to emphasize the importance of conservation, frugality, and hard work, the Company headquarters held a "Conservation at JA Solar" action training meeting in 2022 for each base to practice frugality and reduce wastage. After the meeting, each base thoroughly implemented the spirit of strict conservation and actively carried out various "Conservation at JA Solar" activities.

Among them, the Xingtai Base carried out various "Conservation at JA Solar" plans such as vehicle management, office management, business entertainment, gift management, etc. Through monthly tracking, it clarifies the actual cost savings of each action item each month, ensuring the continuous and effective implementation of the action plan.

Xingtai Base also organized the posting of signs and slogans on frugality and conservation in different areas and mobilized employees to carry out and practice conservation photography activity. In the form of offline or small videos, they recorded, displayed, and communicated their own or others' conservation tips and practical actions in green office, food consumption, utilization, green travel, and other aspects, cultivating employees' awareness of frugality and conservation while conveying the actions of practicing conservation and advocating against wastage, thus creating "a Conservation at JA Solar" atmosphere for all employees.

By the end of October 2022, all departments of Xingtai Base had submitted nearly 100 "Conservation at JA Solar" action items, saving over RMB 3 million in total. The photography activity received extensive participation of the base staff, achieving an excellent publicity effect.
JA Solar considers technological innovation as an important driving force for sustainability. The Company has always focused on technological innovation and has been guided by market demand based on technological R&D, to promote R&D innovation and strengthen its technological advantages. With a strong emphasis on the construction of an innovation system, JA Solar has created a robust R&D system, laying a solid foundation for it to maintain its leading product technology advantages with medium and long-term technical reserves.

### Products and Services

- **R&D investment RMB**: 46.08 hundred million
- **R&D personnel**: 2,276 persons
- **Large-scale mass production of n-type Bycium cells with a maximum conversion efficiency of**: 25.3%
- **Customer complaint resolution rate**: 100%

**The First National Intellectual Property Operation Center**

in the PV Manufacturing Field (excluding polycrystalline silicon)
**Technological Innovation**

JA Solar considers technological innovation as an important driving force for sustainability. The Company has always focused on technological innovation and has been guided by market demand based on technological R&D. To promote R&D innovation and strengthen its technological advantages. With a strong emphasis on the construction of an innovation system, JA Solar has created a robust R&D system, laying a solid foundation for it to maintain its leading product technology advantages with medium and long-term technical reserves.

**Innovative Capacity Building and Guarantee**

Facing the full PV industry chain business, JA Solar focuses on building a R&D layout and multi-level R&D system with global competitive advantages. It has established independent R&D centers (including crystalline silicon R&D centers, solar cell R&D centers, component R&D centers, and system R&D centers) and core R&D technology teams in Xingtai, Hebei, Yangzhou, Zhangzhou and other places. It also continuously improves PV product technology R&D and process in the major aspects of wafers, solar cells, modules and systems.

To ensure the independent innovation ability of the enterprise, JA Solar adheres to the R&D strategy of "one generation for production, one generation under R&D, and one generation for reservation". It has internally built a professional scientific research team composed of professional scientists and personnel with doctoral and master’s degrees from well-known universities locally and abroad. It has constantly supported technical research and technological innovation for a long time. On the one hand, the Company continues to cultivate technical backbones with strong scientific research capabilities and rich experience, while vigorously introducing outstanding technical R&D talents to adapt to the rapid technological R&D and production process iteration in the PV industry. The Company has also established a comprehensive R&D management policy, management norms, and intellectual property protection and incentive policy. A positive atmosphere has been shaped for actively carrying out technological innovation and promoting product intelligent upgrading within the Company. By the end of 2022, JA Solar had 1,260 authorized patents, including 233 invention patents. The Company has also gradually expanded its overseas patent application layout, which currently covers the United States, Europe, Japan, South Korea, Malaysia, India as well as other countries and regions.

JA Solar values R&D cooperation with external third-party organizations highly and actively promotes the R&D model of combining "Industry, university, research". The Company has established extensive cooperative relationships with many well-known scientific research institutions, colleges and universities, and internationally renowned enterprises locally and abroad. Together with these third-party organizations, JA Solar developed cutting-edge PV new technologies, accelerating the pace of industrialization and innovation. In 2022, the JA Solar Human Resources Platform led various bases and organizations to sign contracts with a total of 44 cooperative universities. This effectively assisted in the construction of professional and technical talent teams and promoting the industrial innovation as well as upgrading of the Company.

**Case**: Cooperating with Universities to Cultivate Solar Cell R&D Talents

Perovskite solar cells feature many characteristics, such as easy access to raw materials, high conversion efficiency, and excellent life cycle carbon footprint. They have become a hot research direction in the field of PV technology in recent years. It is anticipated in the industry that the conversion efficiency of perovskite solar cells can reach up to about 50%, which is approximately twice that of current crystalline silicon solar cells. At present, perovskite solar cells are still in the early stages of industrialization where it is facing technical bottlenecks, such as lack of long-term stability and insufficient preparation processes for large areas.

To accelerate the research, development, and application of perovskite PV cells, as a leading global PV enterprise, JA Solar actively carries out research and reserve of perovskite and laminated cell technology and cultivates core technical talents. In 2022, it cooperated with the research team of the Beijing Institute of Technology to jointly research and develop key technologies for high-efficiency perovskite optoelectronic devices with conversion efficiency greater than 20%. Under the guidance of the technical team at Beijing Institute of Technology, JA Solar Research and Development Center has established a perovskite solar cell laboratory to cultivate leading talents in the field of solar cell technology.

**Case**: JA Solar’s Yiwu Base was Approved as a Provincial Doctoral Innovation Station

JA Solar’s Yiwu Base has always focused on innovation-driven and talent team building. Over the years, the base has cooperated with the doctoral team of China Jiliang University to cultivate nearly 1,000 professional and technical backbone, accelerating the promotion of key core technologies in the PV industry.

In March 2022, after being reviewed and recognized by the Zhejiang Association for Science and Technology, JA Solar’s Yiwu Base became the first batch of Zhejiang doctoral innovation stations. We further strengthened the Company’s industry-university-research cooperation with universities and scientific research institutions, thus forming a smoother R&D talent cultivation channel and providing a strong assurance for the Company to continue carrying out technological innovation, product innovation, and solution innovation.
Innovation Achievements and Promotion

Committed to becoming a leading global PV power generation solution platform enterprise, JA Solar is continuously innovating process technologies and solutions, promoting the rapid development of the industry, and assisting in energy transformation. With ongoing investment in R&D, JA Solar’s solar cell and module technology has always maintained a leading level in the industry. The 182mm * 182mm module size proposed by the Company is the optimal specification based on the current development situation of the full industry chain and the actual situation of PV module production, transportation, installation, and system support of PV modules. High-efficiency modules, based on 182mm-sized wafer technology, high-efficiency solar cell technology, high-efficiency packaging materials, and high-density packaging technology, can meet the mainstream needs of various application scenarios in the market.

In terms of solar cell technology, the Company took the lead in achieving large-scale mass production of PERC solar cells in 2014, guiding the entire PV industry into the era of PERC technology. Currently, the highest conversion efficiency of Percium solar cell mass manufacturing based on continuous optimization of PERC technology has reached 23.90%. The n-type Bycium solar cell developed successfully by the Company on continuous optimization of PERC technology has reached 25.30%. JA Solar continues to maintain a competitive edge in solar cell technology, laying a solid foundation for the constant delivery of higher power PV modules to the market.

In terms of high-efficiency modules, JA Solar relies on the industrial advantage of a vertically integrated R&D system to quickly realize mass production of new technologies and processes in various aspects such as wafers, batteries, and modules. The company positively carried out joint R&D with module and accessory suppliers, introduced new efficient packaging materials such as glass, backplane, and solder tape, and developed several highly efficient modules that are popular in the market. Since 2020, the Company has successively launched three series of core products: DeepBlue 3.0, DeepBlue 3.0 Pro, and DeepBlue 4.0 X. The same version of each series of modules has consistent sizes, which improves power efficiency and reliability while achieving perfect matching and upgrading at the system end. This helps to effectively reduce Balance of System - PV (BOS) cost and levelized cost of electricity (LCOE), thus creating more value for customers.

JA Solar DeepBlue Series Efficient Modules Continue to Be Upgraded

In 2022, JA Solar launched and mass produced DeepBlue 4.0 X series modules. The product is designed with Bycium cell technology and high-density packaging technology. It has a module efficiency of 22.4%, with the maximum power of the Version 78 module reaching 625W. In addition, with the significant improvement of module performance under low irradiance conditions, the product features better power generation performance. The results of the one-year outdoor demonstration project conducted by JA Solar with TUV NORD at the CPVT Yinchuan National Photovoltaic Outdoor Demonstration Base (February 2021 to February 2022) show that n-type modules using Bycium batteries generate 1.9% more power per watt than p-type modules. Compared to mainstream p-type modules, the BOS cost of DeepBlue 4.0 X modules can be reduced by about 2.3%, and the LCOE cost can be reduced by about 4.6%, creating higher value for customers.

Significant Honors

Canton Fair Design Award (CF Award)

In 2022, JA Solar launched and mass produced DeepBlue 4.0 X series modules. The product is designed with Bycium cell technology and high-density packaging technology. It has a module efficiency of 22.4%, with the maximum power of the Version 78 module reaching 625W. In addition, with the significant improvement of module performance under low irradiance conditions, the product features better power generation performance. The results of the one-year outdoor demonstration project conducted by JA Solar with TUV NORD at the CPVT Yinchuan National Photovoltaic Outdoor Demonstration Base (February 2021 to February 2022) show that n-type modules using Bycium batteries generate 1.9% more power per watt than p-type modules. Compared to mainstream p-type modules, the BOS cost of DeepBlue 4.0 X modules can be reduced by about 2.3%, and the LCOE cost can be reduced by about 4.6%, creating higher value for customers.

Significant Honors

RETC “Top Performer” Honor

In 2022, JA Solar was awarded the “TOP PERFORMER” honor by the Renewable Energy Test Center (RETC), an authoritative testing agency in the United States, with outstanding performance in three dimensions, namely quality, reliability, and power generation performance. This is the third consecutive time that JA Solar has won this honor.

Significant Honors

PVEL “Top Performer” Honor

In 2022, with its excellent PV module products, JA Solar was once again awarded the “TOP PERFORMER” honor by the global authoritative independent third-party PV testing agency PV Evolution Labs (PVEL), which is also the seventh time that JA Solar has received this honor. The evaluation of “Top Performer” PVEL modules is based on the “Photovoltaic Product Qualification Program (PQP)” Compared to IEC testing, PQP testing is more rigorous both in terms of test conditions and test sequences. Each test has significant reference significance for the reliability of modules in practical application scenarios.

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Innovation Achievements and Promotion

In terms of high-efficiency modules, JA Solar relies on the industrial advantage of a vertically integrated R&D system to quickly realize mass production of new technologies and processes in various aspects such as wafers, batteries, and modules. The company positively carried out joint R&D with module and accessory suppliers, introduced new efficient packaging materials such as glass, backplane, and solder tape, and developed several highly efficient modules that are popular in the market. Since 2020, the Company has successively launched three series of core products: DeepBlue 3.0, DeepBlue 3.0 Pro, and DeepBlue 4.0 X. The same version of each series of modules has consistent sizes, which improves power efficiency and reliability while achieving perfect matching and upgrading at the system end. This helps to effectively reduce Balance of System - PV (BOS) cost and levelized cost of electricity (LCOE), thus creating more value for customers.

JA Solar DeepBlue Series Efficient Modules Continue to Be Upgraded

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Significant Honors

Canton Fair Design Award (CF Award)

In 2022, JA Solar DeepBlue 3.0 series modules won the Canton Fair Design Award (CF Award) at the Canton Fair for their outstanding performance in innovation, functionality, quality, aesthetics, and environmental protection purposes. JA Solar DeepBlue 3.0 series modules were the only PV module product that won awards. The CF Award aims to “establish a quality benchmark and guide design innovation”, and selects award-winning products that combine design aesthetics, quality, and market recognition.

In 2022, JA Solar’s DeepBlue 3.0 series of modules was awarded the “TOP PERFORMER” honor by the Renewable Energy Test Center (RETC), an authoritative testing agency in the United States, with outstanding performance in three dimensions, namely quality, reliability, and power generation performance. This is the third consecutive time that JA Solar has won this honor.

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The development of energy storage technology is of great significance for the large-scale application of clean energy. Using the independently developed 1500V liquid cooling platform technology, JA Solar actively develops energy storage products based on various application scenarios and outdoor cabinets, and prefabricated modular energy storage systems for multi-scenario applications, such as industry, commerce, and source network. For home users, the Company also actively promotes a series of products for household battery systems, optical storage systems, and energy storage systems to meet the energy storage needs of different types of users.

The Company also explores “PV+” integrated solutions, providing customers with services, such as integrated cooling and thermal insulation, PV storage and charging, and comprehensive energy management through professional scheme design. Through business models, such as independent investment and Contractual energy management mechanisms (EMC) agreement cooperation, the Company provides users with comprehensive energy services, helping them optimize energy utilization schemes and improve energy efficiency.

In 2022, JA Solar conducted in-depth exploration of BIPV modules and established a highly competent BIPV research team to carry out R&D of BIPV roofing and BIPV curtain wall products. This enables the creation of BIPV products that meet building safety, aesthetics, and design specifications while taking both building materials and PV properties into consideration. Hence, this helps to build a zero-carbon future.

In order to meet the clean-energy needs of users in rural areas and promote the creation of a green countryside, in July 2022, JA Solar officially launched the distributed household power station sub-brand “JA Solar Xingjia” for villagers. By installing household PV power stations, farmers can obtain clean electricity while receiving stable income, creating a “solar passbook”.

Currently, JA Solar has launched various cooperation modes, such as Jing Xing Bao (co-construction mode), Jing Yi Bao (full-payment mode), and Jing Zu Bao (operating lease mode). For special roofs, the Company has developed innovative solutions, including an integrated plan for converting flat roofs to colored steel slopes, a courtyard type floor support plan, and a household sun shed PV power generation system plan, thus enabling more users to benefit from green energy for a better life.
Driving Industry Development

While continuing to carry out technological innovation, JA Solar also actively promotes industry exchanges and development. The Company immensely attaches great importance to the coordination and cooperation of the full industry chain. It actively participates in the formulation and promotion of national PV industry standards and has made outstanding contributions to the formulation of relevant policies, technical process standards, and implementation of operation specifications within the industry.

JA Solar positively participates in and organizes the establishment of industrial alliances, and various activities, in a bid to seek common development with the industry. It interacts and communicates with the Photovoltaic Association and establishes contacts with the International New Energy Solutions Platform (INES) and the International Investment Alliance for Renewable Energy (IIARE) to jointly explore the path of clean energy globalization.

Case JA Solar Led the Formulation of Group Standards to Promote the Standardized Application of Advanced Technologies

In recent years, the speed of product and technology iterations in the PV industry has accelerated. Group standards developed in the industry in accordance with the actual needs of the market are an effective supplement to national standards and industry standards. These have a long development cycle, with a great positive significance in promoting the integration of industry, university, and research, speeding up the conversion of scientific research results into productivity, and stimulating the enthusiasm of market innovation.

In 2022, the group standard Test Method for Peel Strength of Crystalline Silicon Photovoltaic Solar Cell Electrodes (Standard No.: T/CSTM 00461-2022) drafted with JA Solar as the leading initiator was officially released and implemented by the Zhongguancun Material Testing Technology Alliance (CSTM). This group standard specifies the terms and definitions, equipment requirements, sample requirements, environmental requirements, test methods, data processing, and test reports for the Test Method for Peel Strength of Crystalline Silicon Photovoltaic Solar Cell Electrodes. It provides a standardized industry standard for relevant testing and has considerable guiding significance in the manufacturing and testing process of crystalline silicon solar cells.

Case Hosting the “Global Solar Energy Digital Summit 2022”

To help explore the path of clean energy development and accelerate the establishment of a global green economy, market, and production, JA Solar hosted the “Global Solar Energy Digital Summit 2022”. This summit was divided into two parts, namely the Global Station and the Brazil Station. More than 30 speakers, including representatives of the International Renewable Energy Agency, PowerChina Resources Limited, the Korean Solar Energy Society, and the Portuguese Renewable Energy Association, were invited to share their experiences and perspectives online. The summit focused mainly on the global PV market, with the aim to tap into the growth potential of global large-scale ground power stations and industrial and commercial PV, analyze the global energy transformation goals, and facilitate energy transformation.

More than 30,000 attendees worldwide attended the summit online, including vast industry stakeholders, such as government organizations, regulatory agencies, investors, developers, manufacturers, and third-party consulting service providers.

Case Organizing the “Seminar on Green and Low Carbon Solutions for PV Assisted Steel Enterprises”

With the “carbon neutrality” goal included in the “14th Five-Year Plan”, accelerating the pace of carbon emission reduction, guiding green technology innovation, continuing to promote industrial and energy structure adjustment while improving the global competitiveness of industry and economy have become common issues faced by Chinese enterprises. In July 2022, the “Seminar on Green and Low Carbon Solutions for PV Assisted Steel Enterprises” was held. It was sponsored by the Beijing Tianjin-Hebei Strategy Innovation Alliance of Green Steel Technology and jointly organized by the Beijing Tianjin-Hebei Iron and Steel Alliance, Qian’an Collaborative Innovation Research Institute, and JA Solar Technology Co., Ltd. The Seminar gathered industry stakeholders to explore the path of green transformation in the steel industry.

Case Joining the Sustainable Markets Initiative (SMI) China Council

To promote the creation of a “sustainable market”, jointly advance the coordination and unification of world economic development and environmental protection and drive the Chinese business community to save China’s voice and propose “China’s plan” in the global economic and environmental governance reform, JA Solar joined the Sustainable Markets Initiative (SMI) China Council in August 2022 and participated in its inaugural meeting. During the conference, Chinese and foreign enterprises conducted exchanges and discussions on sustainable development topics, such as carbon finance and green and low-carbon transformation. It further pooled the wisdom and strength of all parties in a bid to work together to promote the “green recovery” of the world economy.

With the support of the World Economic Forum in Davos, then Crown Prince Charles of the United Kingdom established the Global Council of the Sustainable Markets Initiative (SMI) in June 2019. It was formally proposed and promoted in 2020 and aimed to unite global forces to jointly address climate change, protect biodiversity, and achieve sustainable development.

In November 2022, the “2022 China Photovoltaic Industry Annual Conference and (Chuzhou) Photovoltaic High-Quality Development Summit Forum sponsored by the China Photovoltaic Industry Association” was held in Chuzhou, Anhui Province. JA Solar attended the annual conference and participated in multiple activities, such as the “Photovoltaic Application Ecological Innovation Development Forum”, “China (Chuzhou) Photovoltaic Industry Talent Development Symposium and New Energy Professional Development and Talent Demand Seminar”. The topics of technical innovation and talent cultivation with the industry were discussed.

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Product Quality and Safety

JA Solar implements strict controls on product quality and safety. Based on the group’s strategic planning and with the goal of “continuously becoming a leading global PV product supplier”, JA Solar adheres to the principle of “surviving by quality, developing by quality, and seeking benefits from quality”, which ensures product quality with high standards, strict requirements, and foresight. The continuous and effective development of the Company’s overall management is thus advanced. This enables JA Solar to lead the high-quality development of the PV industry.

The Company pays close attention to the construction of the quality management system and works simultaneously on multiple aspects, such as strategic planning and business planning, product and service development management, intelligent manufacturing refinement management, procurement, delivery, and outsourcing management, sales service. At the same time, it continuously improves the quality responsibility mechanism and established a quality management system covering the full industry chain of R&D, procurement, manufacturing, testing, logistics and after-sales.

JA Solar implements strict controls on product quality and safety. Based on the vertical integration of the industrial chain layout in the product design and development process, JA Solar has established a complete technology R&D system covering all aspects, such as wafers, batteries, modules, and PV application systems. Mass production is introduced and production processes are continuously upgraded in strict compliance with the new product development process to improve product performance and quality. The Company has also set up a comprehensive product feasibility evaluation system, focusing on comprehensive evaluation of product design itself, materials used, and reliability of production processes to ensure product quality and safety. In addition, the Company strictly reviews and evaluates the selection of suppliers and supply materials. These measures render certain long-term stability in the quality of raw materials, and building a “moat” of excellent quality.

In the process of product testing, the Company has established strict product testing standards. Our modules have passed rigorous testing by international authoritative institutions, and the quality, reliability, and power generation performance have been proven to be excellent. In addition to passing the tests and receiving certifications by TUV, CE, TÜV, AustraliaCEC, India BIS, South Korea KS, etc. in many regions and countries to meet market access requirements, JA Solar has also adopted stricter testing standards in the process of product design and development. These practices ensure the performance and safety of the product under different extreme conditions, such as Potential Induced Decay Test (PID), salt mist, ammonia gas, sand dust, mechanical load, and attenuation rate. With excellent product quality, JA Solar stands out from extensive competitor products and becomes the exclusive module supplier for the project.

In addition, JA Solar also actively conducts training for R&D personnel to enhance their professional skills and product quality awareness. On the other hand, the Company provides professional skills training for employees, such as the Robust Design and TRIZ theory training program to polish the team’s scientific research professional abilities. On the other hand, the Company offers quality management training for employees. The quality awareness of R&D personnel and their ability to use high-quality methods and tools have been enhanced. Product defects have also been identified at the design side. The training ensures product quality, performance safety as well as long-term reliability.

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In various production aspects, such as wafers, batteries, and modules, JA Solar strictly controls product quality to ensure efficient and reliable product quality. In addition, JA Solar has constantly driven digital transformation in various manufacturing bases. It established quality analysis systems and conducted real-time monitoring and automatic early warning for production lines. 24 hours a day. Accurate control of product quality and control of quality risks are thus realized. Based on its outstanding performance in product quality control, JA Solar’s Yangzhou Base won the Jiangsu Provincial Governor’s Quality Award in 2022.

Adhering to the theme of “improving quality, reducing costs, and increasing efficiency”, JA Solar actively embraced the transformation and upgrading of digital intelligence. It takes advantage of advanced technologies, such as big data, cloud computing, and artificial intelligence to promote intelligent manufacturing. It has thereby achieved intelligent operation and management of production processes while constantly improving quality management and control capabilities.

JA Solar’s Yiwu Base, through the application of digital technology, accomplished intelligent planning, intelligent production, and intelligent logistics, which enables “7-day delivery full process visibility”, based on order volumes. Fully automated visual inspection equipment based on artificial intelligence technology can facilitate direct monitoring of product defects and improve product inspection efficiency while ensuring product quality and safety. Moreover, the high-efficiency crystalline silicon solar cell intelligent manufacturing demonstration factory in JA Solar’s Yiwu Base is based on a comprehensive interconnected, intelligently controlled, safe and reliable industrial network. It adopts advanced manufacturing technology and high-quality management standards. It has comprehensively utilized intelligent systems, such as MES and Enterprise Resource Planning (ERP) to complete the information sharing and management of the entire life cycle of the automated production, manufacturing, and service of crystalline silicon solar cells. The project’s lean production and quality management level has been up to the international leading level in the segmented industry.
Since its establishment, JA Solar has always adhered to the service tenet of “being customer-centered and continuously satisfying customers’ demands.” We have been wholeheartedly serving every customer while continuously improving the service level. At the same time, we take customer satisfaction as the criterion of action. With persistent adherence to the service concept of “customer-oriented” operations, it has established a complete customer service guarantee system to ensure that every aspect related to customers can be effectively controlled. Thus, JA Solar has developed a customer service network with worldwide coverage. In combination with the characteristics of regional markets, it provides customers with a variety of full-process services in areas, such as sales, technical consultation, on-site service for power stations, and customer feedback processing.

The Company has developed a series of guidelines and documents, such as Customer Service Control Procedures, Headquarters In-Sale Service Process, Product Recall Process, Customer Complaint Handling Process, and Customer Satisfaction Survey Process. The documents define a customer-centric service policy, clarify the qualification of customer service personnel, and standardize various business processes and rules related to customer service. The standardization and normalization level of customer service have been continuously improved. In terms of selection of customer service personnel, JA Solar performs strict selection and ensures the professionalism of each customer service personnel. Customer service personnel training is also organized frequently to enhance the professional customer service level provided to customers.

To better understand consumer needs and continuously improve customer service levels, JA Solar provides customers with a multi-channel after-sales service system. Customers can obtain corresponding service support through various channels, such as the official website, official WeChat account, headquarters telephone, customer service email, etc. JA Solar also runs a “24-hour response system” to respond to customer needs within the shortest time possible.

JA Solar strictly conducts annual customer satisfaction surveys to understand customers’ feedback and needs in product performance and safety, product delivery time, product prices, customer service, new product requirements, and other multi-faceted aspects. In 2022, the average customer satisfaction score for JA Solar was 96.48 while the customer complaint resolution rate was 100%. There were 0 customer service complaints received and 0 products recalled for safety and health reasons.

JA Solar Customer Service System

- Break down responsibilities and processes of relevant departments based on customer needs.
- The sales-end department strives to understand customer needs while pre-sales contract reviewers conduct assessments to analyze customer needs, providing customers with high-quality products that meet their needs.
- During the supply process of modules, we provide timely response to customer requests, arrange for engineers to provide on-site service to the project site, offer professional technical support, and conduct comprehensive technical disclosure and training on component handling, storage, turnover, unpacking, installation, maintenance, etc. according to various technical documents.
- Provide factory inspection audits for customers (including quality management systems, occupational health and safety management systems, social responsibility related, and sensitive policies, laws, and regulations)
- Disclose safety risks existing in on-site operations (such as broken component glass cuts, frame scratches, component toppling injuries, crushing injuries, and electrical injuries)
- In response to customer feedback, the Company has established a “24-hour response system” to facilitate communication with customers within 24 hours upon receiving their feedback or queries after understanding the actual situation so as to provide emergency solutions. The department will further report such information to relevant departments, allocate an investigation team to identify the cause, provide a root cause analysis, then determine the responsibility within 7 working days and solve the problem within 30 working days.
- Conduct annual customer satisfaction surveys
  - There were no product recalls, and the total number of products sold or shipped that need to be recalled for safety and health reasons was zero

JA Solar 2022 Customer Satisfaction Survey Upgrade

JA Solar has always regarded customer satisfaction as an important indicator for quantitative evaluation of the comprehensive quality of JA Solar’s products, quality management level, customer repurchase rate, and brand loyalty. Over the years, the Company has continued to conduct customer satisfaction surveys to guide and promote its product quality improvement, enterprise process optimization, and assist it in making the best decisions to maximize customer demand.

At the end of 2022, JA Solar continued to conduct its annual customer satisfaction surveys. Compared to previous years, the scope and sample size of the satisfaction survey in 2022 have been widely improved, with the customer satisfaction survey dimensions increasing from 10 to 20. The satisfaction dimension and Scope 1 include but are not limited to, product quality, factory quality, product delivery, customer service, business connectivity, management system integrity, cost performance, and enterprise cooperation loyalty. The survey targets include, but are not limited to, the top 100 shopping partners in each sales region and the top 3 new customers in each region this year, as well as key strategic and potential customers in each region.

Multi-dimensional and multi-sample satisfaction monitoring and measurement can ensure the objectivity and impartiality of customer satisfaction surveys, thereby deeply exploring customer potential needs, and continually enhancing customer satisfaction.
Value Chain Management

JA Solar is committed to extending its sustainability concept to all links of the value chain. It promotes suppliers to practice social responsibility through continuous improvement and optimization of supply chain management capabilities. The environmental, social, and governance levels of the entire value chain are thus improved.

- Percentage of main material suppliers who have passed the certification of ISO9001 quality management system: 100%
- Percentage of main material suppliers who have passed the certification of ISO14001 environmental management system: 80%
- Percentage of main material suppliers who have passed the certification of ISO45001 occupational health and safety management system: 80%
- Signing rate of Supplier Environmental Health/Safety and Social Responsibility Commitment: 100%
Supplier Access

Scientific and standardized supplier management can effectively reduce operational risks and ensure product quality. In order to achieve sustainable development and practice sound corporate social responsibility, JA Solar has established a comprehensive supplier management system targeting the three aspects of supplier access, daily management, and improvement. Based on this system, the company carries out overall management throughout the entire process in various aspects, such as supplier introduction, management, assessment, monitoring, and quality improvement. It has developed and issued a number of supplier management systems, including the Management System for Adoption of New Suppliers and New Materials, Code of Conduct for Suppliers, Routine Management Rules for Suppliers and Supplier Assessment and Scoring System. These practices seek to achieve “more rigorous quality management, more scientific management methods, and more efficient quality monitoring,” while working together with suppliers for mutual development. Based on international standards, such as SA8000:2014, the company has developed the JA Solar Sustainability Procurement Rules and requires suppliers to sign the Supplier’s Letter of Commitment on Environmental, Health, and Safety Responsibility. The Letter clarifies the supplier’s social responsibility and sustainability assessment system. The system covers a total of 101 indicators on 17 major topics, such as product quality, environment, employment, health and safety, community communication, and business ethics. While requiring self-evaluation of key material suppliers, the company also conducts further assessment and evaluation to ensure the compliance and sustainability of the supply chain.

Management of Suppliers

For suppliers who have been admitted and registered with the company, JA Solar will establish a supplier management file based on the content of the supplier’s social responsibility and results of the sustainable evaluation system, as well as relevant assessment mechanisms, such as the Code of Conduct for Suppliers. The company also conducts daily management and regular audits of suppliers. It has set up a trans-department management team, including multiple functional departments, such as SQE, procurement, process, and quality control. It also regularly conducts supplier audits and training to effectively identify and evaluate potential risks and weaknesses of suppliers while improving their compliance capabilities.

In the general management process of suppliers, the company conducts regular reviews of suppliers under the guidance of the Code of Conduct for Suppliers. Suppliers found to be problematic during the review process will be required to complete rectifications within the specified date. If the management team finds that there are serious violations of labor regulations and the SA8000 standards, such as forced labor and environmental pollution, the company will determine a specialized department in the area where the supplier is located to conduct a written review of the supplier’s social responsibility and sustainable development situation in the place of occurrence. The company may terminate cooperation with non-compliant suppliers to ensure supply chain compliance.

In 2022, the environmental assessment of JA Solar covered 120 suppliers, and the social assessment covered 70 suppliers. The signing rate of the Supplier’s Letter of Commitment on Environmental, Health, and Safety Responsibility was 100%, and no actual or potential significant negative social impact was found among the suppliers covered.

Value Chain Management
Responsibility Management

JA Solar has set clear “conflict minerals” review clauses in its supplier admission and daily review. These clauses explicitly require suppliers to verify the source of purchased materials and products while ensuring the traceability and controllability of gold, tungsten, tantalum, and tin minerals used in the supply chain. For suppliers who refuse to track and monitor the origin of conflict minerals or are unable to determine the identity of conflict minerals, JA Solar will suspend its cooperative relationship with them.

Based on the existing sustainable development strategy, JA Solar encourages suppliers to comply with the Organization for Economic Co-operation and Development (OECD) initiative and exercise due diligence on the mineral supply chain for which they are responsible. The Company also encourages suppliers to track the origin of minerals they use to manufacture products based on a conflict-free smeltery plan developed under the Conflict-Free Sourcing Initiative (CFSI). In 2022, JA Solar positively explored and applied the traceability mechanism for production raw materials. Full industry chain traceability has been realized for some modules.

Currently, the conflict mineral involved in the production and operation of JA Solar is “tin,” with no other materials involved. At present, all the metal tin used by the corresponding suppliers of the Company is produced in Chinese mainland.

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Supplier Improvement and Promotion

Based on the principle of “mutual benefits for common development”, JA Solar continues to facilitate the improvement of supplier risk management and control capabilities and cooperates with suppliers for common development. After identifying supplier risks, it monitors and manages the supplier improvement process using a project-based approach. On the one hand, the Company has established a special team to conduct on-site verification of the implementation of supplier quality problem improvement. It also assists suppliers in solving quality problems arising in the production process. The Company also timely tracks quality complaints, regularly organizes quality analysis meetings, and establishes data and information sharing systems. A management cycle of planning, executing, inspecting, and processing (PDCA) of the supplier management process was formed, thereby promoting the continuous improvement and active development of supplier performance and quality.

JA Solar continuously elevates the sustainable development level of suppliers. The Company actively encourages suppliers to further establish and improve communication channels. While carrying out internal promotion of social responsibility, it also requires suppliers to put forward responsibility requirements for their external supply chain (i.e., secondary suppliers) in aspects, such as health, safety, environment, social responsibility, and sustainable development. The sustainable development of the entire value chain is thus promoted.

In addition, JA Solar also continuously conduct supplier RoHS/REACH investigations to facilitate responsible procurement. In 2022, the Company conducted a RoHS/REACH investigation on all main material suppliers’ materials. RoHS testing of all main material suppliers meets the requirements of the RoHS2.0 Directive in 2022.

In order to prove the environmental and social friendliness of the product, in 2022, JA Solar cooperated with a third-party authority, SGS9, to conduct Reach certification tests on JA Solar DeepBlue series modules and issued a Statement of REACH Compliance.

In order to improve the level of social responsibility of suppliers, JA Solar conducted training on SA8000 standard for suppliers in 2022. The Standard is the world’s first international standard for ethics. It covers multiple topics, such as child labor, forced labor, health and safety, freedom to organize trade unions, the right to collective bargaining, and anti-discrimination. It is applicable to companies around the world, in various industries, and of varying sizes. Its purpose is to ensure that the products supplied by suppliers meet the requirements of social responsibility standards.

By explaining the development history and main content of SA8000 to suppliers, JA Solar constantly enhances the sustainable development ability of the supply chain.

9. REACH is a mandatory standard formulated by European Union legislation, the full name of which is the Registration, Evaluation, Authorization and Restriction of Chemicals. This standard has been officially enforced since July 1, 2007, and is mainly used to standardize the materials and processes of electronic and electrical products, making it more conducive to human health and environmental protection.

9. REACH certification refers to the English abbreviation for "Registration, Evaluation, Authorization and Restriction of Chemicals", which is an European Union regulation for the preventive management of all chemicals entering its market and was enforced on June 1, 2007.

10. SGS (Société Générale de Surveillance SA) is the world’s leading inspection, appraisal, testing, and certification agency, and is a globally recognized benchmark for quality and integrity.
Talent Growth

Committed to continuously nurturing talents for the photovoltaic industry, JA Solar attaches great importance to the cultivation and development of talents. We will comprehensively establish a talent system and promote talent growth from the perspectives of equal employment and rights protection, employee development, employee care and communication, occupational health and safety, and other aspects.

Regular employees
29,900 persons

Ethnic minority employees
944 persons

Accumulated health and safety training
8,711 times

Funding for staff to participate in external training inputs
2,388.8 thousand

Occupational health and safety management system employee coverage
100%
Equal Employment and Rights Protection

JA Solar strictly abides by relevant laws and regulations, such as the Labor Law of the People’s Republic of China, the Labor Contract Law of the People’s Republic of China and continuously establishes and improves internal employment regulations, such as the Recruitment Management System, the Employee Reward and Punishments Management Measures, and the Performance Appraisal Management System. It has also set up strict systems related to employee recruitment, promotion and resignation, and provides complete employment, salary, and welfare protection for all employees.

JA Solar strictly adheres to the principles of open, fair and just employment, follows the human rights policies set forth in the core conventions of the International Labor Organization, and is committed to creating a diverse and inclusive employment environment. In system documents, such as the Headquarters Recruitment Management System, the Company explicitly prohibits all discriminatory acts against ethnic, racial, religious, gender, age, sexual orientation and other factors in the recruitment and employment process, and resolutely prohibits the employment of child labor and forced labor. The legitimate rights and interests of all employees are thus respected and protected. The Company fully practices the policy of gender equality and equal remuneration with full protection of the special rights and interests of female employees in terms of salary and treatment. The Company employs disabled employees based on the actual situation of the manufacturing industry and specific positions available in accordance with relevant national regulations and recommendations.

As of the end of the reporting period, the total number of employees of JA Solar was 32,591, including labor dispatch system employees and part-time employees). The total number of formal employees (signing full-time labor contracts) is 29,900, including 21,285 male employees and 8,615 female employees.

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Promoting Employee Development

JA Solar takes talent strategy as the core of its company strategy, with a consistent focus on talent development in the PV field. We have established a talent development model, which is continuously refined, and take “attracting talents externally and cultivating talents internally, so as to shape their spirit with culture” as the pillar of talent development. The Company provides diversified incentive means, such as educational promotion, special training plans, salary packages and special incentive mechanisms. These means aim to build a comprehensive talent cultivation and incentive system to provide employees with a broad career development channel and help them grow professionally. In February 2023, the Company was awarded the title of “National Advanced Private Enterprise in Employment and Social Security” jointly issued by the All-China Federation of Industry and Commerce, the Ministry of Human Resources and Social Security, etc.

Diversified Career Development and Incentive Mechanism

Committed to continuously nurturing talents for the PV industry, JA Solar focuses on the introduction, retention, cultivation and development of talents. It has established a complete talent management system and management mechanisms. Through the formulation of the Headquarters Recruitment Management System, new vitality has been injected into the innovation and development of enterprises.

JA Solar talent management mechanism

The Company firmly believes that fresh graduates are an important force for its talent development and supply system. In 2022, JA Solar actively launched campus recruitment around the Company’s “One Body, Two Wings” talent development plan. It organized 31 online and offline recruitment sessions, covering over 100 universities and colleges. It also carried out targeted training activities for new graduates to facilitate the full process of empowering graduates and helping them grow.

Case: JA Solar’s Vietnam Base University-Enterprise Cooperation Project

JA Solar continues to promote talent team building overseas. JA Solar’s Vietnam Base actively conducts university-enterprise cooperation to expand potential talent channels. In 2022, the Company forged close ties with many universities in Vietnam, such as the Foreign Language School of Thai Nguyen University in Vietnam, Hanoi University of Science and Technology, to recruit and train college students as technical talents. The Vietnam Base recruits more than 1,660 employees throughout the year and employs more than 50 technical personnel holding college degrees or above through university-enterprise cooperation. An extensive talent pool has been established for the Company while helping local students obtain employment opportunities.

"Outstanding Employer" in 2022 - 51job (issued in 2023)
"China’s Best Employer of the Year" in 2022 - fortunechina.com (issued in 2023)
JA Solar adheres to the talent strategy of “attracting talents externally and cultivating talents internally.” While continuously expanding the talent pool and identifying, and retaining incremental talents, it has constructed a clear, flexible, and effective diversified career development channel for existing talents. The Company built a “Post Competency” Evaluation Model based on several dimensions, such as management, professional, executive, and innovation capabilities to empower and evaluate employees. Through a series of systems, such as the internal Selection Method for Reserve Cadres of Senior Management Personnel, the Rotation Management System, and the Employee Job Transfer Management Measures, a diversified career development channel of “vertical rank promotion + horizontal cross sequence expansion” has been developed for different types of employees.

JA Solar also implements a comprehensive incentive and welfare system. The Company has formulated a series of talent incentive systems, such as the Management Regulations on Continual Education for Onboard Employee, Incentive Measures for Further Strengthening On-the-job Learning for Employee, and Management Rules on Rewarding Employee for Publications. In the major areas of “talent growth and development”, “talent achievement and value realization” and “talent respect and recognition”, the Company has launched a total of 23 diversification projects in the short, medium, and long term, so as to continue to promote talent assessment and motivation, talent development and retention. The Company regularly conducts performance and career development evaluations for employees and maintains active communication with them. In 2022, the Company had a total of 29,900 employees who received regular performance and career development evaluations.

"Post Competency" Evaluation Model

JA Solar’s Employee Promotion and Development Channel

Systematic Employee Empowerment and Training

To promote continuous and effective learning and development of staff at all levels, JA Solar has created a comprehensive and systematic characteristic talent cultivation system. Based on the Company’s Training Management System, the Company focuses on its development needs. The rapid improvement of employees’ professional and general abilities is enhanced through four stages of comprehensive and systematic training courses (namely, launching training camps, industrial chain rotation, centralized transfer activities, and promotion training). For employees at different levels, JA Solar conducts a pyramid training system of “leadership”, “whale”, and “precision”, which aims to boost employees’ growth and improve talent echelon construction.

JA Solar Talent Team Construction Project

JA Solar’s Salary, Welfare, and Incentive System

Four Major Incentive Modules
- Salary and equity incentive
- Patent and technology incentives
- Training and promotion incentives
- Other incentives: model evaluation, skill evaluation, etc.
To boost specialization and standardization of talent cultivation and improve its talent cultivation ability, JA Solar has established the JA Solar College to conduct overall management and supervision of the Company’s training plans. In order to broaden its talent training channels, JA Solar has created an “online + offline” training form. On the one hand, it has set up a “Yidian Zhishi” online learning platform, covering more than 2,000 backbone employees in the headquarters and bases. On the other hand, it also provides internal training resources for various units, with a total of over 400 trainers.

In addition, the various bases of JA Solar also actively carry out diversified forms of job skills competitions to help employees improve their abilities. Through the form of competitions instead of conventional training, the Company enriches the professional knowledge of operators, strengthens the sense of teamwork, and gradually consolidates the foundation of refined operation. The overall comprehensive quality of employees is upgraded. In 2022, JA Solar’s Ningjin Base successfully hosted the “JA Solar Cup” Photovoltaic Industry Staff Skills Competition in Ningjin County and the “JA Solar Cup” Staff Skills Competition in Xingtai City. Several top operating technology winners have been successfully cultivated. A healthy atmosphere of “Than to learn out for super” has been formed internally.

In 2022, JA Solar’s “Yidian Zhishi” online learning platform provided 131,245.6 hours of training, with an online per capita participation of 55.68 hours. It provided RMB 2,388,800 in funds for employees to participate in external training and conducted 17,117 internal and external offline training sessions.

To realize development of international talents, JA Solar has launched the “JA Solar Talent Action” to deliver customized international business courses for employees since 2019. In May 2022, JA Solar College launched the fifth “JA Solar Talent Action”. The 180-day training event combined community activities with AI courses to facilitate thematic learning activities from various dimensions, including listening, speaking, reading, and writing. The courses expand participants’ knowledge of English and assist employees in improving their business English proficiency. The average learning time of the participants was 2,361 minutes. Through this course, the participants’ business English level has been significantly improved.

In 2022, JA Solar College and the Intelligent Manufacturing Management Department of the headquarters held an equipment system skills competition to carry forward the craftsmanship spirit and exemplary power while upgrading the equipment technical level of employees. In the two competitions, the employees from each base can learn from each other, identify gaps in understanding, set benchmarks, and improve their competency level. This effectively boosts the comprehensive skills of equipment maintenance personnel and cultivates technical talents adapted to the era of cost competition.
Employee Care and Communication

JA Solar has always attached great importance to the work-life balance of employees. The Company has established a comprehensive welfare system for employees and carried out a series of activities to enhance their sense of satisfaction in the workplace, enabling employees to work and live happily.

JA Solar places emphasis on the physical and mental health of employees. It strictly complies with national laws, regulations, and policies, provides employees with childcare leave, parental leave, various special allowances, and offers supplementary commercial medical insurance to a certain extent. It proactively launches annual physical examination programs for all employees (twice a year for staff holding positions with special risks), communicates with physical examination institutions, builds an online consultation platform for employees who receive abnormal test results, and engages relevant experts to conduct on-site health consultation and training for them. Bases of the Company actively organize and carry out various sports activities to enhance the physical fitness of employees and cultivate their spirit of cooperation. At the same time, it allows more employees to relish in the joy brought by sports.

In addition, JA Solar has organized various activities to show concern for female employees. Based on the requirements of laws and regulations, it provides female employees with leave benefits such as maternity leave, breastfeeding and childcare facilities, and nursing rooms in some office areas. The bases have carried out a series of caring activities for female employees such as sending flowers to female employees at their workplace, production of MV “Sending a Little Red Flower” and raising awareness on the holistic health of female employees.

JA Solar has also continued to carry out assistance activities for needy employees, with the grassroots labor unions continuously developing and improving relevant systems to provide timely assistance, rights protection, and support to employees faced with various difficulties. JA Solar’s Yangzhou Base has established a labor union fundraising management system to help employees and their families who suffer sudden changes in their families (major diseases, car accidents, etc.) get through difficulties. In 2022, JA Solar’s Hefei Base arranged multiple donation activities for underprivileged employees, with a total donation amount of RMB 65,325. In 2022, JA Solar’s Xingtai Base applied for a total of RMB 201,467 in employee assistance funds and helped solve the problem of children’s education for 34 employees.

JA Solar has always placed great emphasis on employee communication and exchange. Each base has established a labor union committee and held general meetings on schedule. Each base has also signed and passed collective agreement documents such as the Collective Agreement, the Collective Agreement for the Protection of the Rights and Interests of Female Employees, and the Collective Negotiation Agreement on Salaries. In order to resolve conflicts arising in the work process in a timely manner, the Company has set up various communication channels, such as the DingTalk client workbench, phone, email, to ensure that issues are reported and dealt with. The Company has issued and implemented the Employee Satisfaction Survey Procedure of JA Solar Headquarters since 2017 and has conducted employee satisfaction surveys for several consecutive years to provide a listening ear for employees.

In 2022, the Ningjin Labor Union of JA Solar organized a special lecture on women’s health knowledge, with the theme of “Caring for Female Workers, Caring for Health”. The lecture focused on women’s health and provided a simple explanation of profound theories. Based on years of rich clinical experience, the experts reminded everyone to pay attention to their own health, maintain good psychological wellbeing, develop favorable living habits, identify pressing problems and treat them promptly, and develop a health philosophy of prevention first and treatment second. This lecture effectively enriched the female health knowledge reserve of female employees and boosted their self-health care level.

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Occupational Health and Safety

JA Solar attaches great importance to the occupational health and safety of employees, has formulated a series of occupational health and safety regulations and work rules, established a sound occupational health and safety management system, and provided a safe production environment for employees, create a safe production culture and effectively ensure the occupational health and safety of employees.

Construction of Safety Management System

JA Solar adheres to the principle of “safety first”. It constantly improves the construction of occupational health and safety management system, to effectively ensure the occupational health and safety of employees. The company strictly abides by the Environmental Protection Law of the People’s Republic of China, the Law of the People’s Republic of China on the Prevention and Control of Occupational Diseases, the Law of the People’s Republic of China on Work Safety, the Basic Rules for Standardization of Enterprise Safety Production, and the laws and regulations of each operation location. It has built an integrated system for dual prevention of hierarchical risk control and hidden danger detection and governance, with ISO45001 occupational health and safety management system and ISO14001 environmental management system as the framework, and safety production standardization as the basis. Currently, JA Solar has successfully passed the annual supervision and audit of the quality system, environmental system, occupational health, and safety system in 2022, and obtained the certificate of ISO45001 system and ISO14001 system.

To continuously improve the prevention and management capabilities of occupational health and safety issues, the Company has developed the EHS Management System Manual and the EHS Accident Management Procedures and set up the Safety Committee with full-time occupational health management personnel, who are fully responsible for the establishment and maintenance of the occupational health and safety management systems to ensure timely and effective control of safety risks. JA Solar has also established and implemented systems, such as the Hazard Identification and Evaluation Control Procedures and Risk and Opportunity Identification and Evaluation Control Procedures. These can be used to identify and evaluate the occupational health and safety risks of the Company in the aspects of products, activities, or services.

In addition, the EHS team of JA Solar headquarters and each base organize occupational health and safety risk identification and assessment at least once a year. This aims to comprehensively identify and detect occupational hazards in production processes, labor processes, production environment, and conduct risk assessment and grading. Based on the evaluation results, the Company lists the identified “major risks” and “significant risks” as unacceptable risks and includes them in the Company’s Unacceptable Risk List and Control Plan for strict control and follow-up review. Those classified as “general risk” and “low risk” will be included in the acceptable risk list. In addition to negligible risks, control measures will be taken for them to further reduce the risk value.

Construction of Occupational Health Culture

To comprehensively enhance the safety awareness of employees and ensure the safe, stable, and healthy development of the enterprise, JA Solar has provided safety knowledge training for employees to create a safe and healthy culture.

The headquarters of the Company and each manufacturing base have established occupational health network teams. The teams hold monthly meetings, and carry out communication and training on occupational health management, occupational health laws and regulations, excellent practices, etc., thus comprehensively improving the management level of full-time occupational health and safety management personnel of each subsidiary.

The Company also incorporated employees’ health and safety training into the group’s annual training plan and uses the “Xidian Zhuhu” platform to conduct occupational health knowledge training. All subsidiaries and manufacturing bases organize safety training on occupational health, hazardous chemical safety, equipment and fire safety, emergency management, limited space operations, etc. according to the annual work plan.

JA Solar and various manufacturing bases have also carried out interesting activities to shape a safe production and work culture. In June 2022, various bases actively responded to the national call and carried out various forms of “Safety Month” activities. JA Solar raises employees’ safety awareness through a series of activities such as safety training time, special warning education and fire-fighting skills competition. The Company has rolled out an “Occupational Disease Prevention and Control Publicity Week” activity. Subsidiaries promoted relevant laws and regulations at crowded locations such as workshop entrances, canteens, and entrances to raise employees’ awareness of occupational hazard prevention and protection.

Ensuring a Safe Production Environment

JA Solar continues to optimize the workplace environment and is committed to enhancing employees’ sense of security. The Company’s existing and ongoing projects strictly follow the “three simultaneous” management requirements for occupational health and safety. The construction is carried out in strict accordance with the requirements, so as to ensure a reasonable layout of the factory and eradicate hazardous and harmless operations. Each base is equipped with various occupational disease prevention equipment and facilities, which are regularly inspected and maintained to ensure their integrity and availability.

In addition, the EHS departments of JA Solar headquarters and manufacturing bases have full-time occupational health personnel responsible for promoting occupational disease prevention, occupational hazard warning and notification, hazardous factor monitoring, and employee occupational health monitoring. For key departments, JA Solar has formulated requirements for personal protective measures. Targeted training has been provided to employees who may be exposed to occupational disease hazards to ensure that they correctly wear and use appropriate personal protective equipment as required. The Company’s EHS departments also conduct regular spot checks on the use of personal protective equipment and protective equipment for on-site operators, and promptly correct any improper use to ensure the effectiveness of personal protective measures.

JA Solar also continues to enhance occupational health examination before, during, and after work, with the establishment of occupational health monitoring files for employees who are prone to occupational hazards. In addition, the Company regularly entrusts an agency with occupational health testing qualifications to detect occupational disease hazards in the workplace every year, posts occupational health notices, warning signs, and instruction signs on the production site. The monitoring results are published on site. The Company also regularly reports occupational disease hazards in the workplace to relevant competent departments.

In 2022, the Company’s occupational health and safety management system covered 100% of employees, with 0 occupational disease cases, 1 case of work-related injury, 0.04 cases per million working hours, and 0 occupational disease cases, 2 cases of work-related injury, 0.04 cases per million working hours.
Community Public Welfare

2022 marks a key year for the 14th Five-Year Plan and an important year for "continuously improving people’s well-being and solidly promoting common prosperity". Adhering to the mission of "developing solar power to benefit the entire human race", JA Solar practices corporate social responsibility through concrete actions. It extensively participates in social charity and public welfare undertakings, and exerts the power of enterprises to do good.

The cumulative payment for rural revitalization photovoltaic projects is approximately RMB 60,294,000.

The number of public welfare activities carried out in 2022 totaled 27.

Three major projects for the benefit of the people, donations of RMB 1,675,100 in 2022.

Accumulated participation in unpaid blood donation in 2022: 739 participants.
### Exploring Industrial Revitalization

2022 marks a key year for China in the comprehensive promotion of rural revitalization. In response to the national call, JA Solar earnestly practices corporate social responsibility, and leverages its industrial chain advantages, product technology advantages, and ecological cooperation advantages to assist in the revitalization of the country’s rural areas.

As one of the initiators of the China Photovoltaic Poverty Alleviation Alliance, JA Solar has continued to promote PV project construction in multiple regions of the country, relying on its years of accumulated experience in PV-based poverty alleviation and leading advantages in core technologies. Since 2015, the Company has successfully constructed several national rural revitalization PV projects in Yanchi, Ningxia; Kangbao, Hebei; and Lincheng, Hebei, and other regions. As of the end of 2022, the Company has made a cumulative payment of about RMB 60.294 million for the projects. These PV-based poverty alleviation power plant projects will provide local support funds amounting of more than RMB 60 million in 20 consecutive years, benefiting 4,055 needy families.

By the end of 2022, JA Solar has realized scenarios such as agrivoltaics, fishing PV and PV mountain range applications alongside other applications, building a new rural revitalization model that integrates “providing assistance funds, lease payment, and providing job opportunities.” By creating a “PV+” industrial revitalization model that integrates industrial development and rural revitalization, the Company not only helps rural areas achieve clean energy applications, but also lays a solid foundation for upgrading rural industries and realizing common prosperity.

JA Solar also actively connects with community industrial resources. It responds to the call for consumer assistance, innovates consumer assistance models, and assists in the development of rural characteristic industries. In October 2022, JA Solar and China Huadian signed a consumer assistance cooperation agreement at JA Solar’s Beijing headquarters. On the basis of the original PV module cooperation through the e-commerce channel of China Huadian, JA Solar procured its counterpart’s product “Pilale rice” to assist with the development of rural characteristic industries while shaping a new pattern of consumer assistance.

### Focusing on Education Development

Education is an important foundation for achieving the great revitalization of the Chinese nation. JA Solar highly stresses education topics and actively promotes the development of education. The Company, in conjunction with Jinglong Group, has continued to promote the “100 Hope Primary Schools Donation Project” and the “10,000 Needy Students Relief Project” projects since 2017. By improving the construction of teaching hardware facilities, providing learning tools and grants, it has taken a part in promoting regional education equity.

In 2022, the JA Solar’ Solar Charity Fund donated a total of RMB 800,000 to three primary schools in Hebei to improve school conditions and solve practical difficulties faced by students. By the end of 2022, the Company had invested more than RMB 10 million in the “100 Hope Primary Schools Donation Project”, donating a total of 173 Hope Primary Schools in Huanghua City, Qian’an City, Dengo County, Pingshan County, Zhanhuang County, Chicheng County, Liulin Town, Yan’an, Shaanxi Province, and other places.

In 2022, “10,000 Needy Students Relief Project” invested RMB 477,400 Benefiting 114 Students

With the overall success of poverty alleviation and the vigorous development of rural revitalization in China, JA Solar has actively responded to the national call to explore the “county-wide promotion” of rooftop distributed PV construction. In November 2022, JA Solar’s first “county-wide promotion” grid connection project – the 3.6MW Qujing Jinglong distributed rooftop PV power plant fulfilled grid connection, helping Qujing to achieve intensive rural energy development. The project adopts the mode of “self-use first with surplus electricity connected to the grid” where the generated clean electricity is basically fully consumed on the spot, thus effectively reducing local electricity costs while facilitating a green and clean countryside.

JA Solar’s “10,000 Needy Students Relief Project” was officially launched in 2017, aimed at assisting poor students with outstanding academic achievements to complete their studies by continuing to support and encourage them through various dimensions. In 2022, the JA Solar’s Ningjin Intelligent Manufacturing Base provided continuous funding for 11 students for a period of 4 years, with a “Solar Scholarship” of RMB 5,000 per person each year, to support them to successfully complete their university studies. So far, JA Solar has helped 39 students realize their dream of attending college in the Ningjin region.
In 2022, the Company partnered with the Lianyungang Red Cross Society to incorporate it into its Three Major Projects for the Benefits of the People. JA Solar initiated the "Brightness Project for Poor Cataract Patients" in 2011 and has continued to develop community health undertakings. The Company officially supports healthcare by actively implementing medical assistance actions to assist the local community. Supporting Healthcare

In August 2022, the Solar Decathlon China 2022 kicked off in Hebei. This event gathered 15 teams from 29 universities and 10 countries to build high-performance full-time houses powered by clean energy. It focused on the three themes of "sustainable development, intelligent interconnection, and healthy living", with the concept of spreading green development and the 48-hour zero energy consumption challenge as the highlight. Conducting Employee Volunteer Activities

JA Solar actively implements medical assistance actions to assist the development of community health undertakings. The Company officially initiated the "Brightness Project for Poor Cataract Patients" in 2011 and incorporated it into its Three Major Projects for the Benefits of the People. In 2022, the Company partnered with the Lianyungang Red Cross Society and the Ningjin County Charity Federation to promote the "Brightness Project for Poor Cataract Patients" in Ningjin and Lianyungang regions, donating RMB 397,850 to treat 254 cataract patients and help them regain their vision.

In order to improve the urban environment, enhance employees’ environmental awareness, and safeguard the city’s blue sky, JA Solar’s Baxiotou Base has organized voluntary tree planting activities for employees for three consecutive years. The festival took place in April 2022, garnering 94 employee volunteers across various parts of the world. The overseas base of JA Solar has also been vigorously supporting local development. JA Solar’s Vietnam Base continues to carry out material donation activities and work with surrounding communities to achieve common prosperity. In January 2022, JA Solar’s Vietnam Base donated RMB 5,600 to poor people in Yen The County, Bac Giang Province to celebrate the Spring Festival. In November 2022, the base donated RMB 70,000 to organize the “Caring and Warmth” activity in Son Dung County, Bac Giang Province, Vietnam.

Supporting Healthcare

JA Solar Sustainability Report and ESG Report 2022

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<td>Shipment of Cells and Modules</td>
<td>GW</td>
<td></td>
<td>39.75</td>
<td></td>
</tr>
<tr>
<td><strong>Environmental Management</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amount of fines</td>
<td>$10^4 RMB</td>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Number of residents punished</td>
<td>Case</td>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Cases Brought through Dispute Resolution Mechanisms</td>
<td>Case</td>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><strong>Employee Environmental Training</strong></td>
<td>Number of Sessions</td>
<td></td>
<td>345</td>
<td></td>
</tr>
<tr>
<td>Number of Employees Participating</td>
<td>Participant</td>
<td></td>
<td>About 25,425</td>
<td></td>
</tr>
<tr>
<td>Integrated Energy Consumption</td>
<td>toe</td>
<td></td>
<td>537,311.85</td>
<td></td>
</tr>
<tr>
<td>Electricity Consumption</td>
<td>MWh</td>
<td></td>
<td>4,293,020.17</td>
<td></td>
</tr>
<tr>
<td>Natural Gas Consumption</td>
<td>tce</td>
<td></td>
<td>1,135,030.11</td>
<td></td>
</tr>
<tr>
<td>Coal Consumption</td>
<td>t</td>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Diesel consumption</td>
<td>t</td>
<td></td>
<td>273.26</td>
<td></td>
</tr>
<tr>
<td>Refinery Consumption</td>
<td>t</td>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>LPG Consumption</td>
<td>t</td>
<td></td>
<td>137.30</td>
<td></td>
</tr>
<tr>
<td>Heating Consumption</td>
<td>GJ</td>
<td></td>
<td>245,498</td>
<td></td>
</tr>
<tr>
<td>Integrated Energy Consumption (Renewable sources)</td>
<td>toe</td>
<td></td>
<td>391,109.07</td>
<td></td>
</tr>
<tr>
<td>Electricity Consumption</td>
<td>MWh</td>
<td></td>
<td>4,293,020.17</td>
<td></td>
</tr>
<tr>
<td>Market-based Purchase of Green Electricity</td>
<td>MWh</td>
<td></td>
<td>5.46</td>
<td></td>
</tr>
<tr>
<td>Other Purchased Power</td>
<td>MWh</td>
<td></td>
<td>3,144,951.46</td>
<td></td>
</tr>
<tr>
<td>In-plant Distributed Green Electricity Consumption</td>
<td>MWh</td>
<td></td>
<td>33,903.61</td>
<td></td>
</tr>
<tr>
<td><strong>Energy Intensity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integrated Energy Consumption Intensity</td>
<td>toe/10^8 RMB</td>
<td></td>
<td>716.15</td>
<td></td>
</tr>
<tr>
<td><strong>Self-owned PV Station</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scale of Self-owned PV Station - Centralized</td>
<td>MW</td>
<td></td>
<td>78.8</td>
<td></td>
</tr>
<tr>
<td>Scale of Self-owned PV Station - Distributed</td>
<td>MW</td>
<td></td>
<td>291.3</td>
<td></td>
</tr>
<tr>
<td>Self-generated Distributed PV Plant</td>
<td>MW</td>
<td></td>
<td>50</td>
<td></td>
</tr>
</tbody>
</table>

11 According to GRI303-5 standard, Water Consumption = Total Water Withdraw - Total Water Discharge
### Employment

#### Employees

<table>
<thead>
<tr>
<th>Primary Indicator</th>
<th>Unit</th>
<th>2022 Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees hired</td>
<td>Person</td>
<td>18,796</td>
</tr>
<tr>
<td>Under 30 years old</td>
<td>Person</td>
<td>9,754</td>
</tr>
<tr>
<td>30-50 years old</td>
<td>Person</td>
<td>9,041</td>
</tr>
<tr>
<td>Over 50 years old</td>
<td>Person</td>
<td>56</td>
</tr>
<tr>
<td>Male</td>
<td>Person</td>
<td>13,451</td>
</tr>
<tr>
<td>Female</td>
<td>Person</td>
<td>5,345</td>
</tr>
</tbody>
</table>

#### Employment Satisfaction

<table>
<thead>
<tr>
<th>Primary Indicator</th>
<th>Unit</th>
<th>2022 Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>Person</td>
<td>104</td>
</tr>
<tr>
<td>Female</td>
<td>Person</td>
<td>13</td>
</tr>
<tr>
<td>Under 30 years old</td>
<td>Person</td>
<td>0</td>
</tr>
<tr>
<td>30-50 years old</td>
<td>Person</td>
<td>101</td>
</tr>
<tr>
<td>Over 50 years old</td>
<td>Person</td>
<td>10</td>
</tr>
<tr>
<td>Management Staff by Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>Person</td>
<td>21,285</td>
</tr>
<tr>
<td>Female</td>
<td>Person</td>
<td>8,615</td>
</tr>
</tbody>
</table>

#### Employees by Age

<table>
<thead>
<tr>
<th>Primary Indicator</th>
<th>Unit</th>
<th>2022 Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 30 years old</td>
<td>Person</td>
<td>2,013</td>
</tr>
<tr>
<td>30-50 years old</td>
<td>Person</td>
<td>101</td>
</tr>
<tr>
<td>Over 50 years old</td>
<td>Person</td>
<td>16</td>
</tr>
<tr>
<td>Other Employees</td>
<td>Person</td>
<td>27</td>
</tr>
</tbody>
</table>

#### Employees by Gender

<table>
<thead>
<tr>
<th>Primary Indicator</th>
<th>Unit</th>
<th>2022 Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>Person</td>
<td>21,285</td>
</tr>
<tr>
<td>Female</td>
<td>Person</td>
<td>8,615</td>
</tr>
</tbody>
</table>

#### Minorities

<table>
<thead>
<tr>
<th>Primary Indicator</th>
<th>Unit</th>
<th>2022 Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minority Employees</td>
<td>Person</td>
<td>944</td>
</tr>
</tbody>
</table>

#### Disabled Employees

<table>
<thead>
<tr>
<th>Primary Indicator</th>
<th>Unit</th>
<th>2022 Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disabled Employees</td>
<td>Person</td>
<td>27</td>
</tr>
</tbody>
</table>

### Diversity and Equal Opportunity

#### Training and Education

<table>
<thead>
<tr>
<th>Primary Indicator</th>
<th>Unit</th>
<th>2022 Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Training Hours per Employee</td>
<td>Hour</td>
<td>53.68</td>
</tr>
<tr>
<td>Average Training Hours of Senior Management</td>
<td>Hour</td>
<td>42.58</td>
</tr>
<tr>
<td>Average Training Hours of Middle Management</td>
<td>Hour</td>
<td>104.69</td>
</tr>
<tr>
<td>Average Training Hours of Elementary Employees</td>
<td>Hour</td>
<td>28.87</td>
</tr>
</tbody>
</table>

#### Career Development

<table>
<thead>
<tr>
<th>Primary Indicator</th>
<th>Unit</th>
<th>2022 Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees Receiving Regular Performance and Career Development Reviews</td>
<td>Person</td>
<td>29,900</td>
</tr>
</tbody>
</table>

---

12. This employee training data only covers a total of 2,357 employees registered on JA Solar's online learning platform.

### Topics

<table>
<thead>
<tr>
<th>Topic</th>
<th>Primary Indicator</th>
<th>Unit</th>
<th>2022 Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occupational Health</td>
<td>Workers Covered by an Occupational and Safety Management System</td>
<td>--</td>
<td>100%</td>
</tr>
<tr>
<td>Occupational Health and Safety</td>
<td>Training on Occupational and Safety Session</td>
<td>--</td>
<td>9,721</td>
</tr>
<tr>
<td></td>
<td>Employees Participated in Occupational and Safety Training</td>
<td>Participant</td>
<td>362,733</td>
</tr>
<tr>
<td>Work-related Injuries</td>
<td>Rate of Work Loss Accidents per Million Working Hours</td>
<td>--</td>
<td>0.47</td>
</tr>
<tr>
<td></td>
<td>Work-related Ill Health</td>
<td>Person</td>
<td>0</td>
</tr>
<tr>
<td>R&amp;D Investment</td>
<td>Number of R&amp;D Personnel</td>
<td>Person</td>
<td>2,276</td>
</tr>
<tr>
<td></td>
<td>Cumulatively Authorized Patents</td>
<td>Patent</td>
<td>1,260</td>
</tr>
<tr>
<td></td>
<td>NewlyAuthorized Patents</td>
<td>Patent</td>
<td>215</td>
</tr>
<tr>
<td>Customer Protection</td>
<td>Supplier Environmental Assessment</td>
<td>Supplier</td>
<td>120</td>
</tr>
<tr>
<td></td>
<td>Number of Suppliers Identified as having Significant Actual and Potential Negative Environmental Impacts</td>
<td>Supplier</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Supplier Social Assessment</td>
<td>Supplier</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Number of Suppliers Identified as having Significant Actual and Potential Negative Social Impacts</td>
<td>Supplier</td>
<td>0</td>
</tr>
<tr>
<td>Anti-corruption and Business Ethics</td>
<td>Percentage of Operational Sites Covered with Corruption Risk Assessment</td>
<td>--</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>Incidents of Violation of Anti-corruption Related Regulations</td>
<td>Incident</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Anti-corruption and Business Ethics Training</td>
<td>Employee Participated in Anti-corruption Related Training</td>
<td>Participant</td>
</tr>
<tr>
<td></td>
<td>“Anti-corruption Related Training Session”</td>
<td>Session</td>
<td>4</td>
</tr>
<tr>
<td>Information Security and Privacy Protection</td>
<td>Number of Substantiated Complaints of Invasion of Customer Privacy and Loss of Customer Data</td>
<td>Compliant</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Information Security Training</td>
<td>Information Security Training Session</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Employees Participated in Information Security Training</td>
<td>Participant</td>
<td>5,263</td>
</tr>
<tr>
<td>Corporate Governance</td>
<td>Number of the Board of Directors</td>
<td>Person</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Number of female in the Board of Directors</td>
<td>Person</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Number of male in the Board of Directors</td>
<td>Person</td>
<td>6</td>
</tr>
<tr>
<td>Local Communities</td>
<td>Public Donation</td>
<td>--</td>
<td>167.51</td>
</tr>
<tr>
<td></td>
<td>Donations of “Three Major Projects for the Benefit of the People”</td>
<td>10^4RMB</td>
<td>20.56</td>
</tr>
</tbody>
</table>
**GRI STANDARD** | **DISCLOSURE** | **LOCATION**
---|---|---
GRI 303: Emissions 2016 | 303-1 Interactions with water as a shared resource | 2.16 Green Manufacturing
| 303-2 Management of water discharge-related impacts | 2.16 Green Manufacturing
| 303-3 Water withdrawal | Key Performance Table
| 303-4 Water discharge | Key Performance Table
| 303-5 Water consumption | Key Performance Table

GRI 304: Biodiversity 2016 | 304-1 Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas | 2.16 Green Manufacturing

GRI 305: Water and Effluents 2018 | 305-1 Direct (Scope 1) GHG emissions | Addressing Climate Change Key Performance Table
| 305-2 Energy indirect (Scope 2) GHG emissions | Addressing Climate Change Key Performance Table
| 305-3 Other indirect (Scope 3) GHG emissions | Addressing Climate Change Key Performance Table
| 305-4 GHG emissions intensity | Addressing Climate Change Key Performance Table

GRI 306: Waste 2020 | 306-1 Waste generation and significant waste-related impacts | 2.16 Green Manufacturing
| 306-2 Management of significant waste-related impacts | 2.16 Green Manufacturing
| 306-3 Waste generated | 2.16 Green Manufacturing Key Performance Table
| 306-4 Waste diverted from disposal | 2.16 Green Manufacturing Key Performance Table
| 306-5 Waste directed to disposal | 2.16 Green Manufacturing Key Performance Table

GRI 308: Waste 2020 | 308-1 New suppliers that were screened using environmental criteria | 2.16 Green Industry Chain
| 308-2 Negative environmental impacts in the supply chain and actions taken | 2.16 Green Industry Chain

**GRI STANDARD** | **DISCLOSURE** | **LOCATION**
---|---|---
GRI 403: Occupational Health and Safety 2018 | 403-1 Occupational health services | 5.3 Employee Care and Communication
| 403-2 Worker participation, consultation, and communication on occupational health and safety | 5.4 Occupational Health and Safety
| 403-3 Worker training on occupational health and safety | 5.4 Occupational Health and Safety
| 403-4 Promotion of worker health | 5.4 Occupational Health and Safety
| 403-5 Prevention and mitigation of occupational health and safety impacts directly linked by business relationships | 5.4 Occupational Health and Safety
| 403-6 Workers covered by an occupational health and safety management system | 5.4 Occupational Health and Safety

**GRI STANDARD** | **DISCLOSURE** | **LOCATION**
---|---|---
GRI 404: Training and Education 2016 | 404-1 Average hours of training per year per employee | 5.2 Promoting Employee Development
| 404-2 Programs for upgrading employee skills and transition assistance programs | 5.2 Promoting Employee Development
| 404-3 Percentage of employees receiving regular performance and career development reviews | Key Performance Table

GRI 405: Diversity and Equal Opportunity 2016 | 405-1 Diversity of governance bodies and employees | 5.1 Equal Employment and Rights Protection

GRI 407: Freedom of Association and Collective Bargaining 2016 | 407-1 Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk | 5.3 Employee Care and Communication

GRI 409: Child Labor 2016 | 409-1 Operations and suppliers at significant risk for incidents of child labor | 6.2 Management of Suppliers
| 409-2 Forced or Compulsory Labor 2016 | 6.2 Management of Suppliers

GRI 413: Local Communities 2016 | 413-1 Operations with local community engagement, impact assessments, and development programs | 6.1 Exploiting Industrial Revitalization
| 413-2 Supporting Healthcare | 6.3 Expanding Education Development
| 413-3 Conducing Employee Volunteer Activities | 6.5 Local Communities

GRI 414: Supplier Social Assessment 2016 | 414-1 New suppliers that were screened using social criteria | 4.3 Supplier Access
| 414-2 Negative social impacts in the supply chain and actions taken | 4.2 Management of Suppliers

GRI 416: Customer Health and Safety 2016 | 416-1 Assessment of the health and safety impacts of product and service categories | 3.2 Product Quality and Safety

GRI 418: Customer Privacy 2016 | 418-1 Substantiated complaints concerning breaches of customer privacy and losses of customer data | 3.3 Customer Service
| 418-2 Information Security and Privacy Protection | 3.4 Customer Service
| 418-3 Customer Service Key Performance Table | 5.4 Occupational Health and Safety
Assurance Statement of GHG emissions

Certificate No. : CGC-CC&SS-CN20230002

Company Name : JA Solar Technology Co., Ltd.

Address : Ningjin County, Xingtai City, Hebei Province

Reporting Period : 01/01/2022-31/12/2022


Reporting Boundary : GHG emissions from global operations

GHG Included : CO₂, CH₄, N₂O, HFCs, PFCs, SF₆, NF₃

Direct GHG emissions (Category 1) : 45,268 KtCO₂e
Indirect GHG emissions from imported energy (Category 2) : 1,834,111 KtCO₂e
Total GHG emissions quantified above : 1,879,379 KtCO₂e

The organization verifies in accordance with ISO 14064-3 that the above organization-level GHG accounting complies with the selected standards and that the results are accurate, conservative, and credible.

China General Certification Center
1234567890

Assurance Statement of GHG emissions

Certificate No. : CGC-CC&SS-CN20230003

Company Name : JA Solar Technology Co., Ltd.

Address : Ningjin County, Xingtai City, Hebei Province

Reporting Period : 01/01/2022-31/12/2022


Reporting Boundary : Other indirect GHG emissions from global business activities

GHG Included : CO₂, CH₄, N₂O, HFCs, PFCs, SF₆, NF₃

Indirect GHG emissions from transportation (Category 3) : 1,236,644 KtCO₂e
Indirect GHG emissions from products used by an organization (Category 4) : 14,248 KtCO₂e
Indirect GHG emissions associated with the use of products from the organization (Category 5) : 235,231 KtCO₂e
Indirect GHG emissions from other sources (Category 6) : Not quantified
Total GHG emissions quantified above : 15,782,982 KtCO₂e

The organization verifies in accordance with ISO 14064-3 that the above organization-level GHG accounting complies with the selected standards and that the results are accurate, conservative, and credible.

China General Certification Center
1234567890
ASSURANCE STATEMENT

SGS-CSI3C’S REPORT ON SUSTAINABILITY ACTIVITIES IN THE JA SOLAR TECHNOLOGY CO., LTD. 2022 SUSTAINABILITY REPORT AND ESG REPORT

NATURE AND SCOPE OF THE ASSURANCE/VERIFICATION

SGS-CSI3C’s standards technical services co., ltd. (hereinafter referred to as SGS) was commissioned by JA SOLAR TECHNOLOGY CO., LTD. (hereinafter referred to as JA Solar) to conduct an independent assurance of the Chinese version of JA Solar Technology Co., Ltd. 2022 Sustainability Report and ESG Report for 2022 (hereinafter referred to as the Report).

INTENDED USERS OF THIS ASSURANCE STATEMENT

This Assurance Statement is provided with the intention of informing all JA Solar’s Stakeholders.

RESPONSIBILITIES

The information in the Report and its presentation are the responsibility of the Strategy and Sustainable Development Committee of JA Solar.

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

ASSURANCE STANDARDS, TYPE AND LEVEL OF ASSURANCE

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

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

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

- SGS ESG & SRA verification regulations (based on GRI Principles and guidance in AA1000)

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

SCOPE OF ASSURANCE AND REPORTING CRITERIA

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

- GRI Standards 2021 (Reference)
- SZSE <Shenzhen Stock Exchange Self-Regulatory Guidelines for Listed Companies on the Shanghai Stock Exchange No. 1 - Standardized Operation>
Feedback

This is the fifth sustainability report or social responsibility report that JA Solar Technology Co., Ltd. has published. We seek your feedback and suggestions to continuously enhance our sustainability efforts and CSR capabilities and practices. Please complete the feedback form and return it to us using one of the following methods.

Tel.: 010-63611888
Email: esg@jasolar.com
Add.: Building 8, Noble Center, East Auto Museum Road, Fengtai District, Beijing, China

Your information
Name:________________________________________________________
Organization Name:____________________________________________
Title:_________________________________________________________
Tel:___________________________________________________________
Email:________________________________________________________

1. Which stakeholder group do you belong to?
☐ Customer ☐ Shareholder and Investor ☐ Employee ☐ Supplier and Partner ☐ Government and Regulator ☐ Community ☐ Non-governmental organization ☐ Other

2. What is your overall comment on our sustainability report?
☐ Very Good ☐ Good ☐ Average ☐ Poor ☐ Very Poor

3. What do you think of disclosing our significant impact on the economy, society and environment in this report?
☐ Excellent ☐ Good ☐ Average ☐ Poor ☐ Very Poor

4. What do you think of the clarity, accuracy, and completeness of the information, data and indicators disclosed in this report?
☐ Very Good ☐ Good ☐ Average ☐ Poor ☐ No idea

5. Have you obtained the information you wanted from this report?
☐ Yes ☐ No

6. Which aspect of this report are you most satisfied with?

7. What other information would you like to learn more about?

8. What other suggestions do you have for our future reports?
Developing solar power to benefit the planet

Environmental considerations for report publication
Paper: Printed on environmentally friendly paper
Ink: Using environmentally friendly ink to reduce air pollution