JA SOLAR

JA Solar Technology Co., Ltd. 2023 Climate-Related Disclosure Report and TCFD Report

S&P Global

Acknowledging the data and insight provider to this report

About this Report

Time Frame

This report provides a detailed review of activities and performance from January 1, 2023, to December 31, 2023. Specific data may extend beyond this timeframe, as indicated by the corresponding annotations, to ensure the integrity and accuracy of the findings.

Organizational Scope

The scope of this report aligns with the disclosure parameters established in JA Solar Technology Co., Ltd.'s 2023 annual report. For ease of reference, terms such as "JA Solar" "the Company" and "we" are used interchangeably to denote "JA Solar Technology Co., Ltd."

Release Status

This document marks the inaugural Task Force on Climate-related Financial Disclosures (TCFD) report published by JA Solar Technology Co., Ltd. and its subsidiaries.

Reference Standards

This report incorporates the recommendations of the Financial Stability Board's Task Force on Climate-related Financial Disclosures (TCFD).

Data Sources

The data presented in this report is primarily derived from the Company's operational records and publicly disclosed documents, including quarterly and annual reports. Unless otherwise indicated, all monetary amounts are expressed in Chinese Yuan (CNY).

Climate Scenario Analysis Methodology

The scenario analysis presented in this report utilizes data from several authoritative sources, including the Science Based Targets Initiative (SBTi), the International Energy Agency (IEA), the International Renewable Energy Agency (IRENA), and the Intergovernmental Panel on Climate Change (IPCC). Carbon pricing information from S&P Global Sustainable1 encompasses current carbon taxes, emissions trading schemes, and fuel tax databases across 171 countries and states. S&P Global Sustainable1's The Climate Service (TCS) impact function library also sources climate impact functions. Industry data of photovoltaic modules is derived from S&P Global Market Intelligence's IHS Markit database. Company-level carbon intensity metrics are based on S&P Global's Trucost Carbon Dataset.

Content and Intelligence Provider for this Report

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Report Acquisition

This report is available for online reading in both Chinese and English versions. The electronic version can be accessed through the Company's official website at http://www.jasolar.com or by contacting esg@jasolar.com. If there are any discrepancies in interpretation between the Chinese and English texts, the Chinese version shall take precedence.

Content

Message from the Chairman

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In the context of the severe challenges brought by climate change, it has become a global consensus to vigorously develop green and clean energy applications. As a global leading photovoltaic solution provider, JA Solar has consistently practiced the G2G sustainable development concept of "Green to Green, Green to Grow, Green to Great", and worked with various stakeholders to make green and clean energy universally accessible to humanity, contributing to global climate governance.

We continuously provide efficient and reliable photovoltaic products and solutions worldwide, innovating application scenarios with a cumulative module shipment exceeding 224 GW across 165 countries and regions, promoting energy structure transformation and carbon reduction. We have established a climate and sustainable development governance system, set JA Solar's net-zero target roadmap, and built zero-carbon factories and zero-carbon products through energy consumption management, green electricity usage, resource recycling and photovoltaic module recycling. We have actively participated in various global climate change response organizations and launched the "Every Corner" sustainable development project at the United Nations Climate Change Conference. We also have a long-standing focus on climate governance, ecological construction, and other issues to jointly promote global sustainable development.

Addressing climate change is urgent. JA Solar will continue to uphold its mission of "facilitating solar energy for the benefit of all humanity," engage in responsible practices and collaborate with global partners in climate governance to build a green and beautiful planet together.

JIN Baofang

Chairman of JA Solar

Preface

0.1 Company Profile

JA Solar Technology Co., Ltd. ("JA Solar") is a leading global photovoltaic power generation solutions provider. Founded in 2005, JA Solar was listed on NASDAQ in 2007. Following its privatization and delisting from the US stock market in 2018, the Company was subsequently listed on the A-share market of the Shenzhen Stock Exchange in 2019 (stock code: 002459), established and registered in Ningjin County, Hebei Province, JA Solar headquarters in Beijing at No. 8 Building, Nuode Center, East Auto Museum Road, Fengtai District.

JA Solar operates 14 manufacturing bases worldwide and maintains 13 sales companies overseas. The Company has developed a vertically integrated industry chain encompassing silicon wafers, cells, modules, and photovoltaic power plants. With product sales and service networks spanning 165 countries and regions, JA Solar consistently ranks globally among the top companies in module shipments.

JA Solar has consistently prioritized technological innovation as its core driving force, embarking on a path of high-quality development. The Company's product technology has remained at the forefront of the industry. As of the end of 2023, JA Solar held 1,263 valid granted patents.

The Company has established a global modern enterprise management system supported by a core management team with deep expertise in photovoltaic industry technology, business development strategies, and future trends. Through continuous technological advancement, robust financial strength, and a comprehensive global sales and service network, JA Solar has garnered widespread recognition from domestic and international customers. Additionally, the Company has been featured in the "Fortune China 500" and "Global Top 500 New Energy Enterprises" for consecutive years.

0.2 Achievements During the Reporting Period

- **April 2023:** Ranked first in "Top 50 Private Listed Companies Leading in ESG Index" by the All-China Federation of Industry and Commerce.
- **June 2023:** Became the first private enterprise within China to join and sign a strategic cooperation agreement with the World Business Council for Sustainable Development (WBCSD).
- **June 2023:** Recognized as one of China's first supporters of the "Green Electricity 100% Initiative" (GE100%).
- **September 2023:** Joined the UN Global Compact (UNGC) 2023 Climate Ambition Accelerator (CAA) program.
- **September 2023:** Officially became the first private enterprise member of the WBCSD in China and the first member enterprise in the photovoltaic industry globally.
- **November 2023:** JA Solar's "Innovative Rural Household Power Station Solution" received the third prize in the "Energy Efficiency Optimization" category at the United Nations Industrial Development Organization's "Global Call 2023" competition.
- **Year 2023 -- Recognition:** Selected in the Ministry of Ecology and Environment's "2023 Typical Cases of China's Synergistic Effects of Pollution Reduction and Carbon Reduction Cases" and the "2023 Corporate Climate Action Case Collection".
- **Year 2023 -- S&P Global CSA Improvement:** Increased S&P Global's Corporate Sustainability Assessment (CSA) score from 19 to 39 (top 7%). After industry adjustments, it achieved a score of 42, of which the total score of the environmental indicator was 57, ranking among the top A-share listed companies within the photovoltaic industry.

01. Governance

1.1 Organizational Structure for Climate Governance

Climate change is exerting a widespread and profound influence on the global natural environment and economic landscape, presenting both transition and physical risks while creating new business opportunities. JA Solar prioritizes climate change issues by embedding climate governance within its organizational development framework. Under the leadership of the Board of Directors, the Company has established a closely integrated and clearly defined three-tier governance structure to address these challenges.

Table 1-1 The Three-level Governance Structure of JA Solar

Level	Governance Settings	Duty	Description of Duty
Board Level	Board of Directors	Guide strategy planning; conduct the supervising review	Develops the Company's climate governance structure and management mechanism.
	Strategy and Sustainable Development Committee		The governance structure leads and oversees the Company's efforts to address climate change. It approves the planning and target-setting for the Company's climate and ESG strategy.
Management Level	ESG and Sustainability Management Committee	Develop strategic targets; organize and coordinate	The governance structure formulates short-, medium-, and long-term targets for the Company's sustainable development. It is responsible for implementing the strategic directives of the Board of Directors and the Strategy and Sustainable Development Committee. Additionally, it facilitates ESG initiatives and conducts regular reviews to assess progress towards achieving ESG targets.
Executive level	ESG Management and Sustainability Department	Implement strategies; liaise with working groups	The governance structure undertakes all decisions related to ESG, climate, and sustainability, promoting the implementation of relevant measures. It collaborates with personnel across various departments and manufacturing bases to establish a coordinated and unified working mechanism.

1.2 Board-Level Climate Governance

Climate change has become the "new normal" for human society, prompting companies to increasingly invest in efforts to mitigate and adapt to its effects. Significant advancements in climate-related science and technology will make it necessary for board members to comprehensively understand the potential impacts of climate change on businesses, as well as the risks and opportunities facing the photovoltaic industry in the future. To this end, JA Solar has appointed independent directors with relevant knowledge and backgrounds, including:

Table 1-2 The Climate- and Sustainability-related Background of JA Solar's Independent Directors

Independent Director	Introduction
Mr. Zhao Yuwen	Since 2017, Mr. Zhao has served as the Honorary Director of the Photovoltaic Special Committee of the China Renewable Energy Society. He participates in JA Solar's energy development planning and strategic research.
Ms. Qin Xiaolu	As a senior accountant, Ms. Qin continuously monitors the Company's disclosure efforts related to TCFD and provides specific guidance on matters related to climate change.
Ms. Zhang Miao	Ms. Zhang previously worked as a prosecutor and director at the People's Procuratorate of Dongcheng District, Beijing. She is now a senior partner at Beijing Haotian Xinheng Law Firm, advancing JA Solar's legal compliance in climate change and ESG governance from a legal perspective.
Dr. Mohan Munasinghe	Dr. Munasinghe is a former Vice Chairman of the Intergovernmental Panel on Climate Change (IPCC), co-recipient of the 2007 Nobel Peace Prize, and winner of the 2021 "Blue Planet Award." He has been appointed as the Company's Principal Sustainability Advisor. His joining brings valuable expertise and experience to JA Solar's sustainable development efforts and enhances international communication.

JA Solar has established a stringent supervision and reporting mechanism for climate-related issues. Under the deployment of the Board and executives, the company operates cohesively, ensuring that awareness of climate risks and opportunities is communicated from top management to various business units, functional departments, and factories, ensuring a precise division of labor and effective management.

The Board of JA Solar closely monitors the updates to international sustainability disclosure standards such as GRI and IFRS, conducting timely research and discussions to identify deficiencies in the Company's disclosures relative to these new standards. They also assess whether additional resources are needed to align our disclosures closer with mainstream international climate-related disclosure standards.

In February 2023, JA Solar renamed the Strategic Committee under the Board of Directors to the Strategy and Sustainable Development Committee. This committee is responsible for leading and overseeing the Company's sustainability initiatives and approving the planning and target-setting for JA Solar's climate and ESG strategy.

The Strategy and Sustainable Development Committee decomposes sustainability-related goals annually while guiding and debriefing the ESG and Sustainability Management Committee. The Strategy and Sustainable Development Committee meets quarterly to supervise and evaluate the implementation of climate-related policies, systems, and plans, reporting regularly to the Board. In the event of significant climate incidents or policy changes, it provides timely ad hoc reports to the board and management, ensuring the company can respond swiftly. Through reports from the Strategy and Sustainable Development Committee, board members are well informed about the progress of climate issues and their impact on the company's operations, integrating climate risks and opportunities into business decisions and annual planning and strategy.

Through these supervision and reporting mechanisms, the company can dynamically adjust its strategies, maintaining a flexible and forward-looking oversight of uncertainties brought about by climate change.

1.3 Management- and Executive-Level Climate Governance

To further strengthen the management capabilities related to climate issues, JA Solar has established the ESG and Sustainable Development Management Committee. This committee is responsible for setting the company's short-, medium-, and long-term sustainability goals, implementing the strategic directives from the Board's Strategy and Sustainable Development Committee, and promoting the execution of ESG-related initiatives across various business sectors, while regularly reviewing the progress of ESG-related goals. The company has appointed Mr. Sun Guangbin as the Chief Sustainability Officer, who also serves as the Chairman of the ESG Management and Sustainability Department.

The ESG and Sustainability Department implements the resolutions of the ESG and Sustainable Development Management Committee, breaking down key ESG issues into actionable tasks. A dedicated working group on climate change has been established by the Department to address climate-related topics. The Department leads the collaboration among various departments, assisting and facilitating the implementation of climate change responses, such as conducting climate-related risk assessments, formulating and adjusting the company's carbon reduction strategy, etc.

02. Strategy

2.1 Climate Change Response Strategy

While climate change poses increasingly significant risks and society calls for climate actions, photovoltaic companies play a crucial role in climate transition. In response to the call for accelerated net-zero action, JA Solar has developed four key strategies to promote low-carbon transition and climate adaptation. In return, JA Solar supports the Paris Agreement through proactively advancing towards net-zero emissions:

- **Deploying Green Production:** By integrating photovoltaic buildings and self-use distributed photovoltaic power generation, JA Solar aims to comprehensively reduce energy consumption and greenhouse gas emissions of its parks throughout the construction and operational phases.
- **Working with Low-Carbon Partners:** JA Solar prioritizes selecting suppliers that provide environmentally friendly and low-carbon raw materials, establishing long-term cooperative relationships to ensure the stability and sustainability of these sources.
- **Cultivating Climate Awareness:** JA Solar actively promotes a green culture and implements green office practices to drive energy conservation and emission reduction in operational processes. This initiative focuses on enhancing employees' awareness of green initiatives and integrating low-carbon measures into daily activities.
- **Responding to Physical Risks:** JA Solar fully considers climate risks when selecting production bases and photovoltaic power stations. It comprehensively assesses the impact of these risks on business continuity, improves emergency response capabilities, and prepares emergency plans and drills.

2.2 Identification of Climate Risks and Opportunities

The first step for JA Solar in formulating its climate change response strategy is to identify and assess climate-related risks and opportunities in relation to the company's business. We conduct research and analysis based on the TCFD framework, examining the potentially significant impacts of climate risks on JA Solar's business, strategy, and financial planning, as well as the ways and timeframes of these impacts. The company evaluates the degree of impact by incorporating the quantitative climate scenario analysis results.

Table 2-1: Categories of Transition Risks and Their Impacts

Risk category	Risk factor	Risk description	Scope dimension	Time frame	Potential impacts	Impact magnitude
Policy and Legal Risks	Existing policy risk	The introduction of climate-related policies such as China's "14th Five-Year Plan for Industrial Green Development" and the EU's Net-Zero Industry Act has raised higher requirements for enterprises to practice green production and reduce product carbon footprints. The national carbon market is continuously evolving, and by 2025, it will include the steel, cement, and aluminum industries along with power generation companies. As a result, the carbon prices in the market may increase, which will impact JA Solar's operational costs.	Own operations	Short to long-term	Higher operating costs	Medium
	Emerging policy risk	Regulatory agencies worldwide are expected to impose higher requirements for climate information disclosure from publicly listed companies. Increasingly ambitious national emission reduction targets and net-zero actions will require companies to accelerate their climate transition, thereby raising their policy costs.	Own operations	Short to medium-term	Higher compliance costs, higher carbon pricing costs	Medium
	Legal risk	As governments and regulatory bodies around the world intensify their focus on climate issues, the introduction of laws and regulations related to climate matters has led to a continuous rise in legal cases concerning climate issues.	Own operations	Short to medium-term	Higher operating costs	Low

Risk category	Risk factor	Risk description	Scope dimension	Time frame	Potential impacts	Impact magnitude
Technology Risk	Technology Iteration	With the global renewable energy sector's rapid expansion, users increasingly demand higher efficiency and stability from photovoltaic modules. This ongoing focus on product carbon footprints underscores the urgent need for comprehensive lifecycle carbon footprint management.	Own operations	Short to medium-term	Higher operating costs, higher revenue volatility	Medium
	Technology research and development	The timing of technology development and application presents significant uncertainties. In the long term, outdated and costly capacities will be gradually optimized and phased out, reshaping the industry structure and initiating a new growth cycle. Inaccurate assessments of the photovoltaic industry's critical technological advancements and R&D directions could result in investment losses.	Own operations	Medium to long-term	R&D investment loss, asset stranding risk	Medium
Market Risk	Changes in market supply and demand	Carbon pricing pressures from upstream suppliers combined with consumers' demands for reduced carbon footprints in products will transform the dynamics of the existing supply chain.	Own operations	Short to long-term	Lower operating income	Low
Reputation Risk	Stakeholder expectations	Climate issues have garnered significant global attention. Inadequate responses to climate change may lead to negative perceptions among stakeholders, including investors, customers, the public, and the media, ultimately diminishing brand value.	Whole value chain	Short to medium-term	Diminish brand value and increase share price volatility	Low

Table 2-2: Categories of Physical Risks and their Impacts

Risk category	Risk factor	Risk description	Scope dimension	Time dimension	Potential impacts	Impact magnitude
Acute Risk	Extreme weather	Extreme weather events triggered by climate change, such as heavy rain, floods, and typhoons, pose significant threats to JA Solar's equipment and infrastructure across various production and operational bases, including its photovoltaic power stations. These events may disrupt the supply of raw materials and logistics for products, potentially causing delays in ongoing projects.	Whole value chain	Short to medium-term	Loss of own assets, higher operating costs	Low
Chronic Risk	Long-term natural risks	Chronic risks associated with climate change, such as persistent high temperatures, droughts, and rising sea levels, may adversely affect JA Solar's production and operational bases and photovoltaic power stations in climate-sensitive, water-sensitive, or low-lying areas. These risks could also have implications for employee health.	Own operations	Long term	Loss of own assets, cooling costs, lower employee engagement	Low

In addressing climate risks, JA Solar is actively identifying potential opportunities arising from climate change and capitalizing on the development prospects within the photovoltaic industry.

Table 2-3: Identification of Climate-related Opportunities

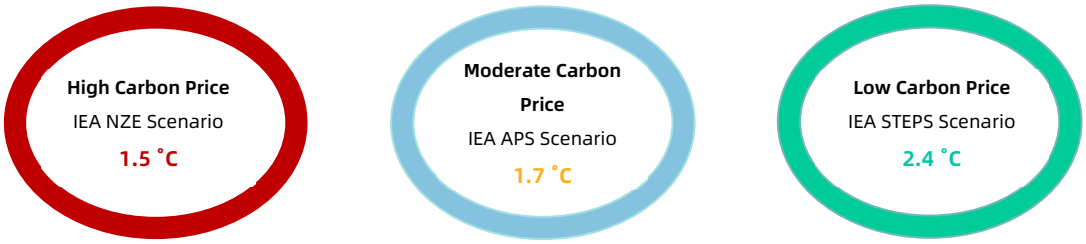
Potential opportunities	Opportunity description	Performance in 2023
Increased market for product applications	As the global "net-zero" target goal advances, the pace of energy transition accelerates, resulting in an expanded application of photovoltaic products. According to the 1.5 ℃ temperature rise control scenario outlined by the International Renewable Energy Agency (IRENA) in its Global Energy Transition Outlook 2023, the global installed capacity of renewable energy must exceed 11,000 GW by 2030, with solar photovoltaic and wind power accounting for approximately 90% of the new renewable energy generation capacity.	JA Solar has reached a significant milestone, with solar module shipments exceeding 57 gigawatts (GW) across 165 countries and regions, reinforcing its status as a global leader in the solar industry. The Company has launched two innovative product solutions for offshore photovoltaic modules: (1) Deep Blue 4.0 Pro (2) Azure Series These products are engineered to support various installation types, including pile-based setups on tidal flats and floating installations offshore. This versatility enhances the efficiency and adaptability of solar energy deployment in diverse environments, further advancing JA Solar's commitment to sustainable energy solutions.
Customer demand for low-carbon products	As the awareness of climate change grows, consumer behavior toward purchasing is evolving. Enterprises and individual consumers increasingly prioritize low-carbon and environmentally friendly options. This shift reflects a commitment to sustainability, driving demand for eco-friendly products and services across various sectors.	JA Solar has undertaken comprehensive lifecycle assessments of its products, achieving notable certifications: ○ **Carbon Footprint Certification:** The p-type and n-type Deep Blue 4.0 Pro mainstream offerings received certification from France's Certisolis. ○ **Environmental Product Declarations (EPD):** Certifications obtained from Norway and Italy. ○ **Recognition:** Several products were included in the inaugural batch of "green design products" for photovoltaic modules by the PRC Ministry of Industry and Information Technology. Furthermore, JA Solar is actively participating in developing green leadership certification standards, reinforcing its commitment to sustainability and environmental responsibility.
Improvement in energy use efficiency	JA Solar integrates photovoltaic power generation into daily operations and procures green electricity to minimize carbon emissions. This approach reduces operational carbon footprints and provides advantages in carbon trading and access to government incentives and subsidies. By prioritizing sustainable energy sources, JA Solar reinforces its commitment to environmental responsibility while enhancing its operational efficiency.	○ **Clean Energy Consumption:** Exceeded 1,790 gigawatt-hours (GWh). ○ **Installed Capacity:** Distributed power stations for self-generated and self-used power reached 138 megawatts (MW).
Improvement of financing efficiency	JA Solar is dedicated to enhancing its Environmental, Social, and Governance (ESG) ratings to gain inclusion in major international sustainable development indices, thereby attracting a broader investor base. The Company aims to secure additional low-carbon certifications, facilitating access to green loans at reduced interest rates. This strategy broadens financing channels and contributes to cost reduction, reinforcing JA Solar's commitment to sustainable growth and responsible investment practices.	○ **Wind ESG Rating:** "A" (Top 4% in the industry) ○ **CNI Index ESG Rating:** "AAA" (Top 1% in the industry) ○ **SynTao Green Finance ESG Rating:** "A-" (Top 3% in the industry) ○ **S&P Global CSA Score:** 42 (Top 7% in the industry; included in the Sustainability Yearbook 2024, China edition) ○ **Morningstar Sustainalytics ESG Risk Rating*:** Score improved from 37.1 to 30.5 ○ **CDP Climate Change Questionnaire:** First proactive response with a "B" rating

Note*: Morningstar Sustainalytics is an institute specializing in ESG research, rating, and data. Its ESG risk rating comprehensively evaluates the major ESG risks companies face and their risk management capability. A lower rating score indicates a lower level of risk.

2.3 Climate Scenario Analysis

JA Solar recognizes that accurately identifying climate risks is essential for effective climate risk management. The Company collects internal data while considering the geographical locations of its production bases. Collaborating with S&P Global, JA Solar conducts quantitative analyses based on internationally recognized climate scenarios. This comprehensive approach evaluates the financial impacts of climate risks, establishing a robust foundation for informed climate risk management strategies.

Three scenarios published by the International Energy Agency (IEA) are utilized for transition risks to assess potential impacts on operations and strategy.



Source: IEA, IRENA, OECD, S&P Global Sustainable1

Three scenarios published by the International Energy Agency (IEA) are employed to assess transition risks:

1. **Net-zero Emissions by 2050 Scenario (NZE):** This normative scenario outlines pathways to achieve net-zero CO_2 emissions in the global energy sector by 2050. It anticipates that developed economies will reach net-zero emissions earlier than other economies and align with sustainable development goals (SDGs) related to affordable modern clean energy and improved air quality by 2030. The scenario adheres to emission reduction targets from the Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report, aiming to limit global temperature increases to 1.5 ℃ (with a probability of 50%).
2. **Announced Pledges Scenario (APS):** The APS illustrates the extent to which countries' declared ambitions and targets can achieve the necessary emissions reductions for net-zero by 2050. It includes the latest commitments from all major countries regarding 2030 targets and long-term net-zero or carbon neutrality as of the end of August 2023. In the APS scenario assumptions, countries fully and timely implement their national targets. Under this scenario, by 2100, the global average temperature is projected to be 1.7 ℃ higher than pre-industrial levels (with a probability of 50%).
3. **Stated Policies Scenario (STEPS):** The STEPS scenario examines the current policy on the environment to provide insights into the mainstream direction of energy system development. The results of STEPS reflect a thorough review of policies and measures that are either actively implemented or announced, without automatically assuming that declared policies and climate goals will be achieved. The range of policies assessed in STEPS is broad, including Nationally Determined Contributions (NDCs) under the Paris Agreement. In the STEPS scenario, global temperatures are projected to rise 2.4 ℃ by 2100 (with a probability of 50%).

Based on the Representative Concentration Pathways (RCPs) and Shared Socioeconomic Pathways (SSPs) from the Intergovernmental Panel on Climate Change (IPCC), four major and future climate change scenarios have been selected to assess physical risks. These scenarios illustrate the various carbon emission trajectories resulting from human activities directly linked to the greenhouse effect.

High climate change scenario (SSP5-8.5):

In a low mitigation scenario, total greenhouse gas emissions will triple by 2075, and the global average temperature will rise by 3.3-5.7 ℃ by 2100.

Moderate-high climate change scenario (SSP3-7.0)

In a limited mitigation scenario, total greenhouse gas emissions will double by 2100, and the global average temperature will rise by 2.8-4.6 ℃by 2100.

Moderate climate change scenario (SSP2-4.5)

An intense mitigation scenario in which total greenhouse gas emissions stabilize at current levels by 2050 and then decline gradually until 2100. This scenario should lead to a global average temperature increase of 2.1-3.5 ℃ by 2100.

Low climate change scenario (SSP1-2.6):

A positive mitigation scenario in which total greenhouse gas emissions are reduced to net-zero by 2050, resulting in a 1.3-2.4 ℃ increase in global average temperature by 2100, consistent with the goals of the Paris Agreement.

JA Solar analyzed four scenarios, while focusing on physical risk analysis based on two critical boundary scenarios in this report: low emissions (SSP1-2.6) and very high emissions (SSP5-8.5).

- **SSP1-2.6:** This scenario examines potential outcomes aligned with the Paris Agreement targets, projecting a temperature increase of approximately 1.5-2.0 ℃ relative to pre-industrial levels.
- **SSP5-8.5:** Representing a worst-case scenario, it anticipates a rise in global average temperature by 3.3-5.7 ℃ by 2100.

These boundary scenarios provide critical insights into the future development of climate risks, enabling JA Solar to effectively prepare for necessary adaptation and mitigation measures. The corresponding temperature increases for the different scenarios are detailed in the table below.

	Recent, 2021-2040		Medium-term, 2041-2060		Forward, 2081-2100	
Scene	Best Valuation (℃)	Probable Range (℃)	Best Valuation (℃)	Probable Range (℃)	Best Valuation (℃)	Probable Range (℃)
SSP1-2.6	1.5	1.2-1.8	1.7	1.3-2.2	1.8	1.3-2.4
SSP5-8.5	1.6	1.3-1.9	2.4	1.9-3.0	4.4	3.3-5.7

2.3.1 Transition Risks and Financial Impacts

Transitioning to a low-carbon economy necessitates comprehensive policy, legal, and technological support, leading to significant market changes. Following the identification of relevant transition risks that impact operations, quantitative scenario analysis is employed to further investigate the financial implications of climate-related risks. This analytical approach enables JA Solar to assess potential financial outcomes and develop informed strategies to navigate the evolving landscape of climate change.

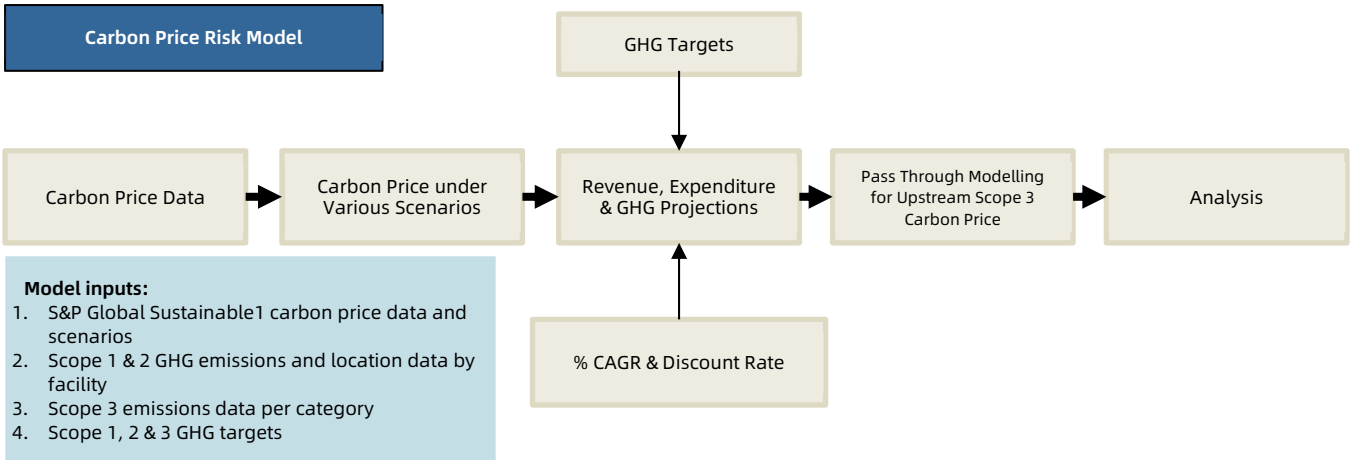
Policy Risk

An essential manifestation of climate-related policy risks is the implementation of actions and guidance aimed at limiting economically harmful activities that contribute to climate change. Governments worldwide are increasingly adopting carbon pricing mechanisms to integrate the costs of carbon emissions into business operating expenses, thereby constraining greenhouse gas emissions. Anticipated increases in carbon pricing are expected to elevate operational costs for companies. In response, JA Solar is concentrating on carbon market policies and assessing the potential impact of rising carbon prices on its operating expenses and profitability.

An analysis of carbon price pathways has been conducted under various climate transition scenarios outlined in the IEA's "World Energy Outlook 2023", integrated with commitments to reduce emissions in operational and upstream Scope 3 areas. Utilizing S&P Global's carbon price risk model, JA Solar has calculated the corresponding "carbon cost" pressures (see chart below).

Emission reduction targets aligned with a Paris Agreement 1.5 ℃ pathway have effectively mitigated the impact of rising carbon prices. Therefore, under the three climate transition scenarios from the IEA, there is a downward trend in carbon cost risk. Based on JA Solar's revenue and expenditure assumptions, the decline in carbon-adjusted operating profit margins remains minimal, demonstrating the company's resilience to policy risks.

Figure 2-1: Carbon Price Risk Model Used for Policy Risk Analysis by JA Solar



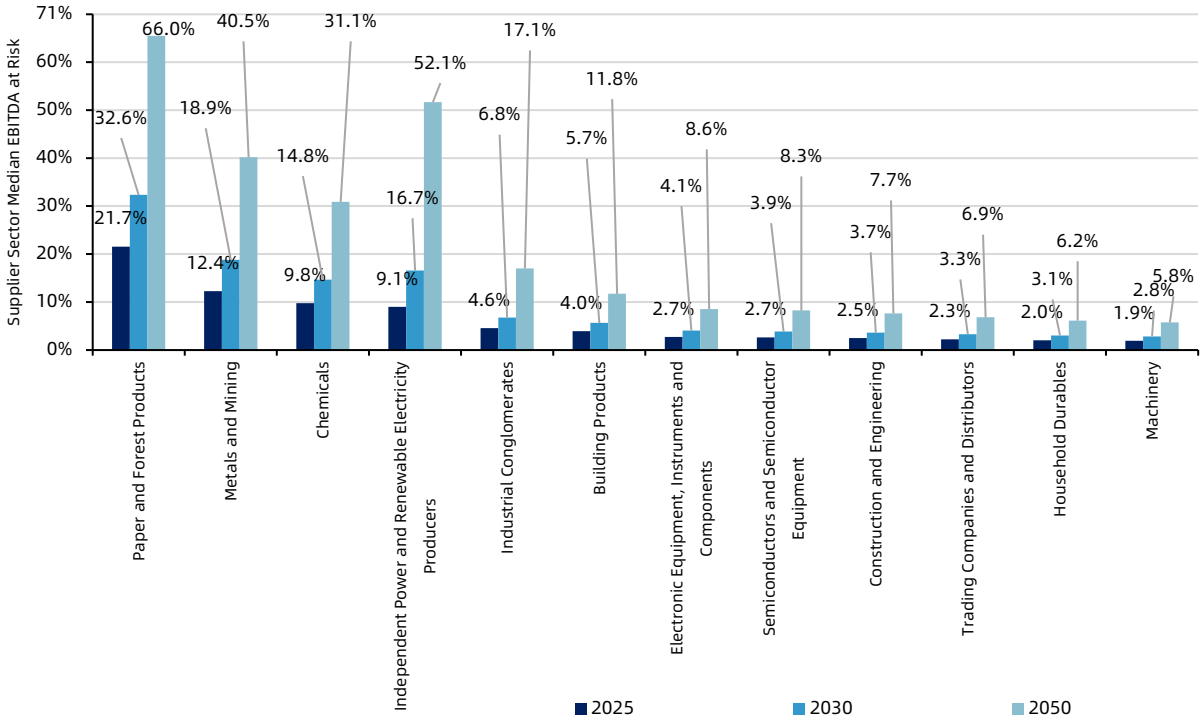
Market Risk

Climate change affects markets in diverse and complex ways, with one of the main impacts being the alteration of supply and demand dynamics for specific commodities, products, and services. China has included the power generation sector in its carbon market and outlined a timeline and roadmap for incorporating the cement, steel, and electrolytic aluminum industries, with plans to accelerate the inclusion of eight high-carbon industries in the future.

JA Solar's suppliers may also be affected by the evolving carbon market, potentially passing on future rising costs downstream. JA Solar uses the "EBITDA at risk" metric to calculate carbon pricing risks associated with different carbon pricing scenarios for its suppliers and assess the potential impact on current earnings if future greenhouse gas emission prices must be paid. If carbon taxes increase, suppliers may attempt to pass these additional costs onto customers through higher product prices. This assessment allows JA Solar to identify the parts of its supply chain with the highest carbon pricing risks, informing its procurement and supplier engagement strategies.

The chart below illustrates the average percentage of EBITDA at risk for suppliers across GICS industries under the high carbon price (NZE) scenario. Notably, carbon price risks are higher in three sectors: paper and forestry products, metals and mining, and chemicals. Carbon footprints, profit margins, and geographical exposure to unpriced carbon risks influence these three industries' risks. Although high potential risks exist in these three sectors, JA Solar's low reliance on procurement from these sectors results in an overall low-risk impact.

Figure 2-2: Average Percentage of EBITDA at Risk under High Carbon Price Scenario, by GICS Industry



Source: S&P Global Sustainable1 Research

Note 1 - EBITDA at Risk Indicator (Carbon Yield at Risk Indicator): The impact of the Company's potential carbon cost under the future carbon price scenario on the Company's current EBITDA %

Note 2 - GICS Industry Classification: The Global Industry Classification Standard (GICS) groups companies into specific economic sectors and industry groups that best define their business operations. It is an industry taxonomy developed by MSCI and S&P Global in 1999 for use by the global financial community.

Reputation Risk

Climate change is increasingly acknowledged as a significant source of reputational risk. Companies with higher exposure to this risk may encounter challenges in attracting talent, maintaining long-term customer relationships, securing operational licenses, and obtaining capital. To address this, JA Solar aims to transparently showcase its performance and efforts in the climate transition process, while considering key stakeholders' perspectives. This is based on metrics such as carbon emission intensity data, greenhouse gas transition pathways, and comprehensive climate strategy scores.

Table 2-4: Summary of Reputation Risk Exposure for JA Solar and Peers

Company	GICS Industry Group	S&P Global Carbon Global Standard Impact Classification	Carbon Intensity Decile Ranking	Scope 1 and 2 GHG Transition Pathway (°C)	Climate Strategy Score	Overall Climate-related Reputation Risk Exposure
JA Solar Technology Co., Ltd.	Semiconductors and Semiconductor Equipment	Medium	High	Consistent with <2 °C	Medium	Medium
Peer A	Semiconductors and Semiconductor Equipment	Medium	High	Consistent with >2 °C	Medium	High
Peer B	Semiconductors and Semiconductor Equipment	Medium	High	Consistent with <2 °C	Low	Medium
Peer C	Semiconductors and Semiconductor Equipment	Medium	High	Consistent with <2 °C	High	Medium

Note 1: The overall climate-related reputational exposure assessment is derived by combining the Company's GICS Industry Group Impact Classification and S&P Global Carbon Intensity Decile Ranking, Transition Pathway Alignment, and Climate Strategy Scores. The Climate Strategy Score is part of the S&P Global ESG Score. A higher climate strategy score indicates that a company has a more effective approach to managing climate-related risks and opportunities within its business operations, making it less likely to encounter pressure from investors and other stakeholders regarding these issues. The assessment is based on data from four companies for the year 2022 (the 2023 climate strategy scores for some companies have not been updated yet when the assessment was conducted).

Note 2: JA Solar utilized S&P Global's "Paris Agreement Alignment" analysis tool to align with the rigid overarching goal of the Paris Agreement, which is to "limit the increase in global average temperature to well below 2 °C compared to pre-industrial levels." This approach does not conflict with the higher ambition of "striving to limit the temperature increase to 1.5 °C above pre-industrial levels."

During the assessment of reputation risk, a comparative analysis was conducted of carbon emission intensity against three other leading publicly listed photovoltaic companies in China. JA Solar's current carbon intensity is slightly higher than two of its peers, while lower than a major peer in China. However, Looking ahead to the next 5-10 years, due to JA Solar's carbon reduction goals, the Company's carbon intensity will gradually decline.

Figure 2-3: 2023 Scope 1 and Scope 2 carbon Intensity for JA Solar and Domestic Peers – tCO_2e/mUSD

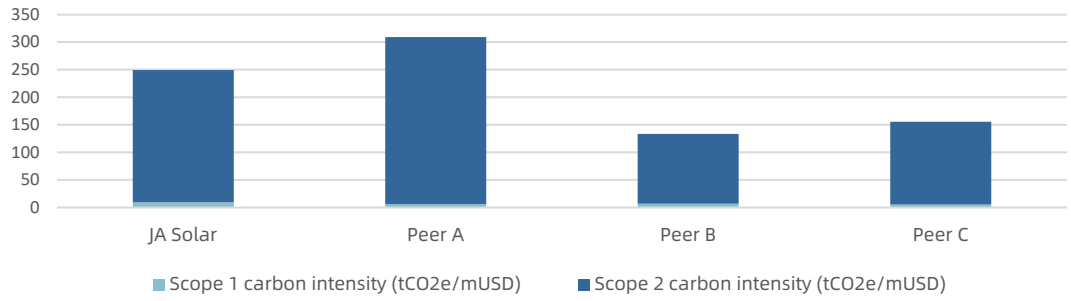
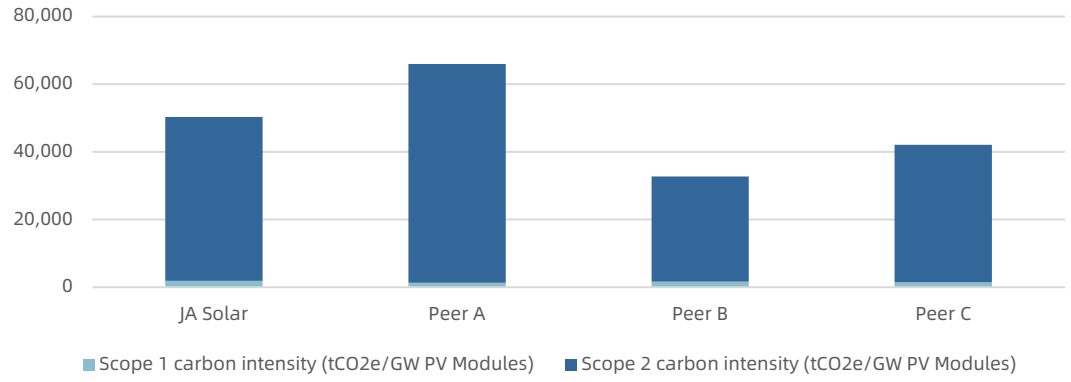


Figure 2-4: 2023 Scope 1 and Scope 2 carbon Intensity for JA Solar and Domestic Peers – tCO_2e/GW PV Modules

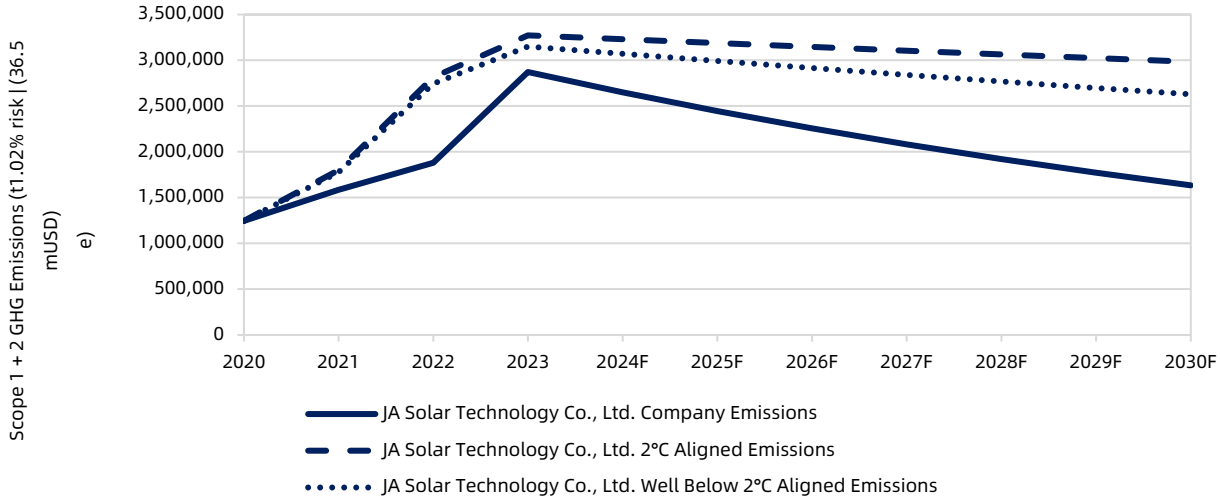


Note: Data for PV Module shipment is extracted from the financial reports of JA Solar and peers

Regarding the future transformation pathway, JA Solar collaborated with S&P Global using the Paris Alignment assessment method to evaluate whether JA Solar's emission reduction trajectory over time is sufficient to align with the Paris Agreement 2 °C pathway.

Thanks to JA Solar's established decarbonization targets and actions, our Scope 1 and Scope 2 greenhouse gas transition pathways show a declining trend in emissions from 2023 to 2030. Given that JA Solar's SBTi targets are aligned with the 1.5 ℃ trajectory of the Paris Agreement, this trend is consistent with a carbon emissions pathway below 2 ℃, thereby indicating a lower reputational risk.

Figure 2-5: 2020-2030 Scope 1 and Scope 2 Greenhouse Gas Transition Pathway Assessment (Based on SBTi GEVA Method)



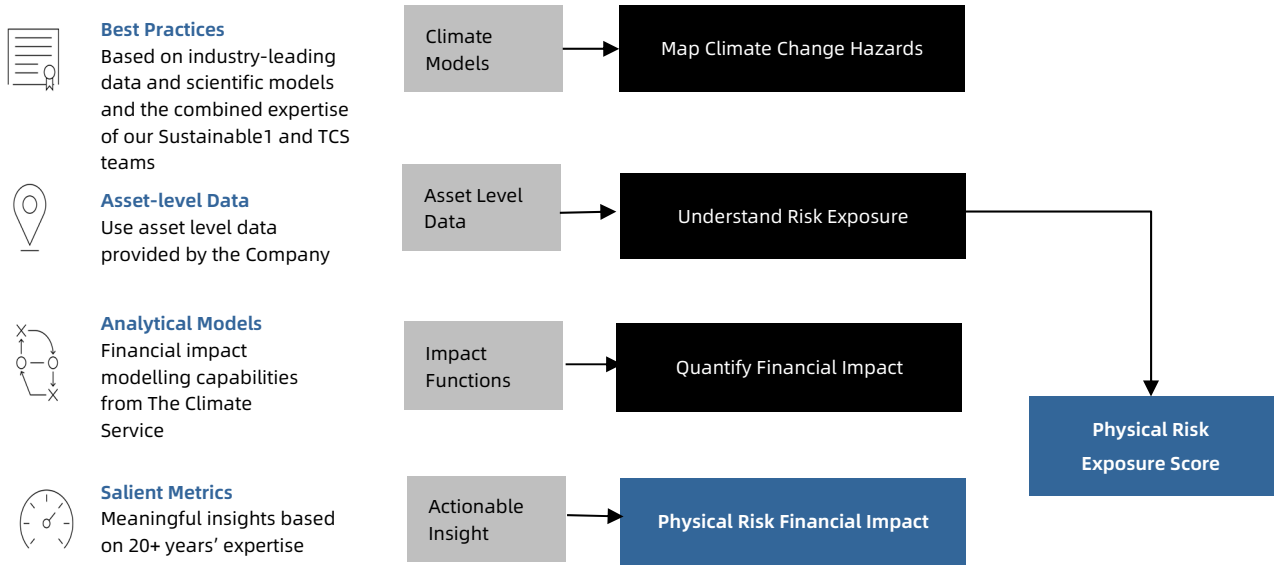
Note - Paris Alignment: S&P Global Sustainable1 assesses corporate emission pathways and temperature heterogeneity through its database, which tracks companies' emissions and activity levels, including forward-looking indicators over a medium-term (5-10 years) timeframe. S&P Global Sustainable1's proprietary Paris Alignment assessment employs two essential methods emphasized by the Science-Based Targets Initiative (SBTi): the Sectoral Decarbonization Approach (SDA) and the Greenhouse Gas Emissions per Unit of Value-Added (GEVA)method. GEVA is particularly suitable for companies with lower emissions or diversified business activities. Many companies engage in various business activities, most of which do not have uniquely defined transition pathways in climate scenarios. For these companies, GEVA applies the principle of carbon intensity contraction, which aligns the emission reductions with the overall economy's required reduction rate based on each company's unique baseline year emission intensity. It utilizes a non-industry-specific economy-wide 2 ℃ scenario, where the denominator for emission intensity is based on financial metrics (revenue indicators).

2.3.2 Physical Risks and Financial Impacts

In recent years, the frequency of floods and extreme weather events, including high temperatures, has increased significantly. JA Solar is acutely aware of the potential impacts of extreme weather and natural disasters on assets nationwide. Given that weather patterns vary widely, even within the same country, a detailed assessment of physical risks focusing on different geographical locations and asset categories is conducted.

To evaluate these physical risks, collaboration with S&P Global is employed, utilizing a systematic approach that includes:

Figure 2-6: S&P Global Physical Risk Financial Impact Analysis Methodology



JA Solar evaluated 133 company assets, with 92% located in China and the remainder primarily in Vietnam, Japan, Germany, South Africa, and the United States. The assessment focused on the financial impact–both absolute values (in million USD) and relative

values (as a percentage of asset value)—of eight physical risks: tropical cyclones, droughts, wildfires, extreme temperatures, water stress, fluvial flooding, coastal flooding, and pluvial flooding, spanning from the 2020s to the 2090s in ten-year intervals.

For each asset type, S&P Global's physical risk impact function model was utilized to calculate the financial impact of each risk on asset value, considering various pathways of climate hazards. The analysis indicates that in the 2030s (2030-2040), the total asset loss percentages under the SSP5-8.5 and SSP1-2.6 scenarios are 2.04% and 1.87%, respectively, reflecting a low level of financial impact brought by physical risk.

Figure 2-7: Financial Impact of Physical Risks on JA Solar

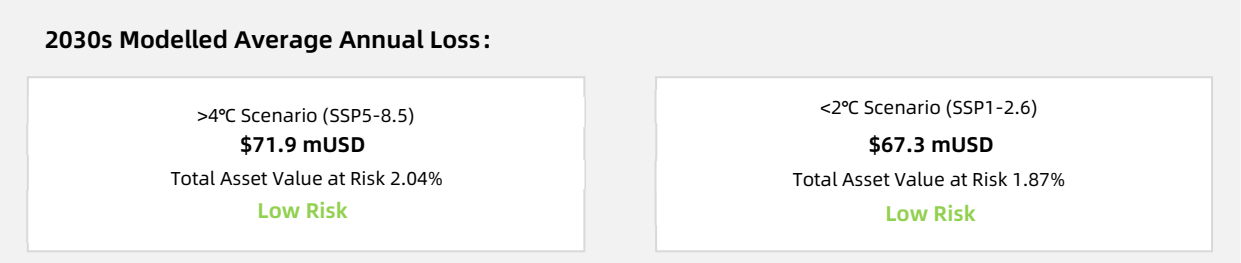
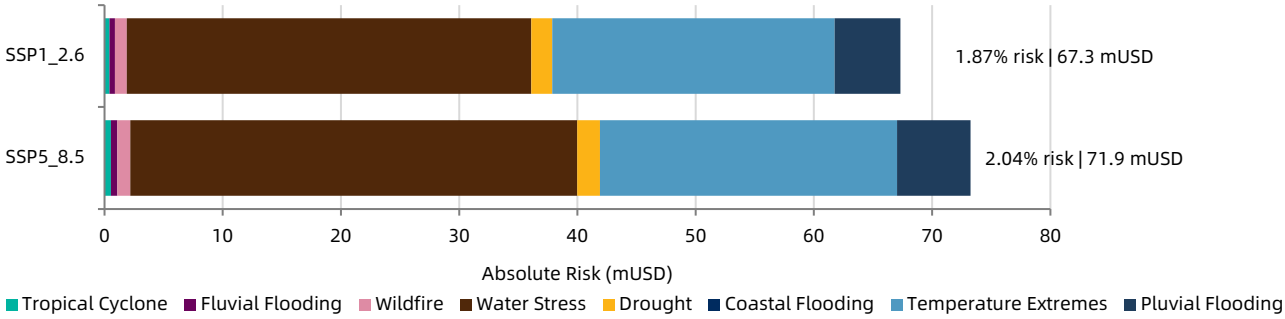


Figure 2-8: Modelled Average Annual Loss of JA Solar by Physical Risk Hazard



Under the SSP5-8.5 scenario, the financial impact of each climate disaster in the 2030s is low. The table below shows the risk exposure levels of various climate disasters for JA Solar from the 2020s to the 2090s (for instance, 100% of JA Solar's assessed assets is considered having a "low" risk exposure level to the tropical cyclone hazard).

Table 2-5: Impact Levels of Eight Major Physical Risks on JA Solar from 2020 to 2090

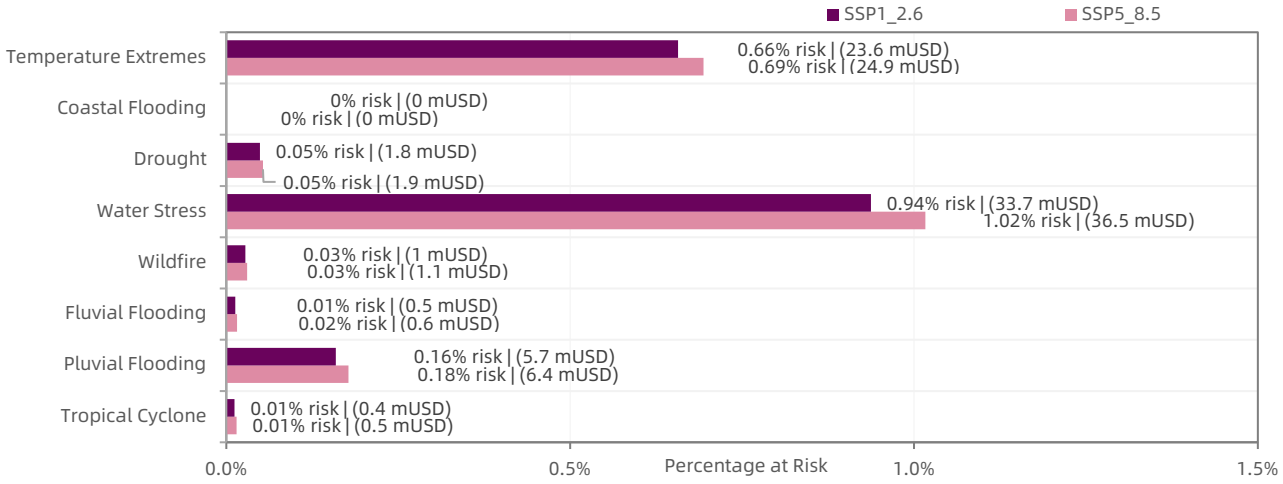
Climate Hazard	High Physical Risk (% of Assets)	Moderate Physical Risk (% of Assets)	Low Physical Risk (% of Assets)
Tropical Cyclone	0%	0%	100%
Drought	0%	0%	100%
Wildfire	0%	0%	100%
Temperature Extremes	0%	0%	100%
Water Stress	0%	0%	100%
Fluvial Flooding	0%	0%	100%
Coastal Flooding	0%	0%	100%
Pluvial Flooding	0%	0%	100%
Total	**0%**	**0%**	**100%**

Note: Risk Exposure Classification Thresholds Definition -- High > 15%, 15% > Medium > 10%, Low < 10%.

Source: S&P Global Sustainable1 Research

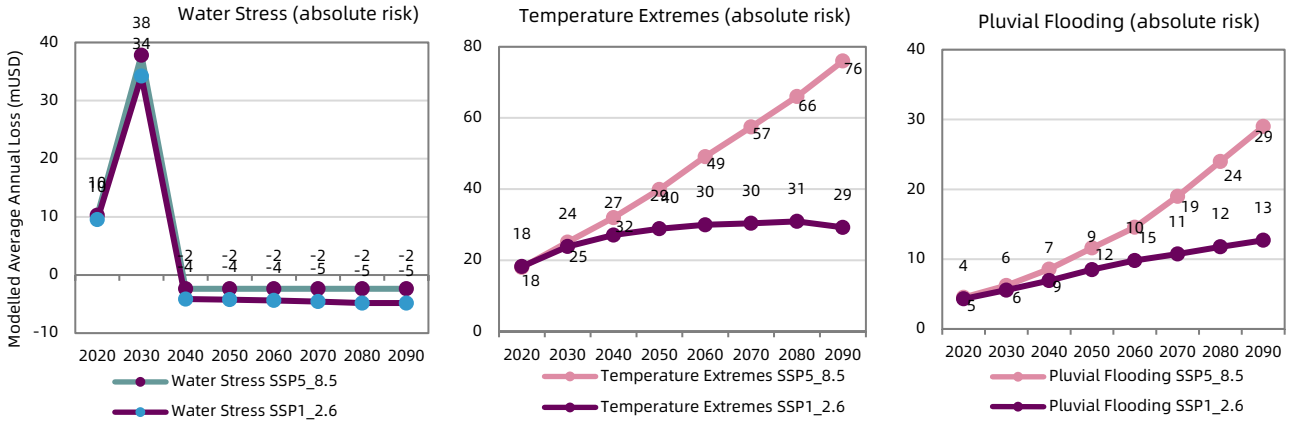
In collaboration with S&P Global, JA Solar analyzed representative climate hazards, assessing their absolute and relative financial impacts under both SSP1-2.6 and SSP5-8.5 scenarios. The data indicates that, in terms of relative risk impact percentages, JA Solar faces overall low impacts from climate disasters. Relatively speaking, water resource stress becomes more pronounced in the 2030s; from a medium to long-term perspective, the impact of extreme temperatures (high heat) is increasing rapidly.

Figure 2-9: Relative and Absolute Financial Impacts of Various Climate Hazards faced by JA Solar (SSP1-2.6 & SSP5-8.5)



Source: S&P Global Sustainable1 Research

Figure 2-10: The top three Climate Hazards measured by Absolute Risk and their Magnitude Over Time



Source: S&P Global Sustainable1 Research

Table 2-6: Absolute risk (MUSD) by decade (SSP5 - 8.5)

Low Risk | Moderate Risk | High Risk

Climate Hazards	2020	2030	2040	2050	2060	2070	2080	2090
Coastal Flooding	0	0	0	0	0	0	0	0
Drought	1	2	3	3	4	5	6	7
Fluvial Flooding	0	1	1	1	1	2	2	3
Temperature Extremes	18	25	32	40	49	57	66	76
Tropical Cyclone	0.3	0.5	0.8	0.8	0.8	0.8	0.8	0.8
Water Stress	9	37	-1*					
Wildfire	0.8	1	2	2	3	3	4	4
Pluvial Flooding	5	6	9	12	15	19	24	29
Total Physical Risk	35	72	46	58	72	86	102	120

*Water stress is reflected as a negative value between 2040 and 2050. This may be due to increased water supply in some asset locations compared with the historical average. A potential rise in future temperatures may lead to increased rainfall, which could enhance water supply in some areas.

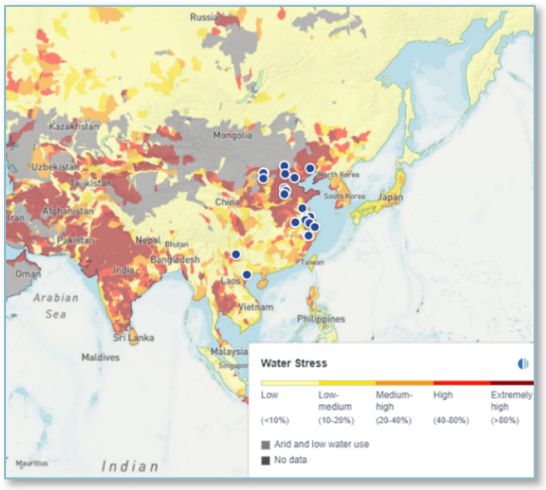
Note 1: Risk exposure classification thresholds are calculated where the relative risk exceeds the following threshold criteria: High >15%, 15% > Moderate > 10%, Low < 10%.

Note 2: Water stress and tropical cyclone-related risk are only modelled to the 2040s and are assumed to remain unchanged from 2040 levels to the end of the century.

In the short term, extreme heat, drought, and potential water difficulties due to water stress are the primary physical risks to JA Solar. To address these challenges, the Company has implemented the latest version of the water risk assessment tool, Aqueduct 4.0, developed by the World Resources Institute (WRI). This tool provides a comprehensive overview for quantifying risks associated with water resources.

Our water risk assessment shows the geographical distribution of water stress for JA Solar's major operational sites: (1)Extremely High-Risk Areas: 52.4%; (2) High-Risk Areas: 19%; (3) Medium-High-Risk Areas: 23.8%; (4) Medium-Low-Risk Areas: 0%; (5) Low-Risk Areas: 4.8%. In response, JA Solar has adopted multiple mitigation measures to reduce both water consumption and indirect carbon emissions associated with water extraction: JA Solar conducts water usage assessments across all production bases to identify opportunities to improve water efficiency; utilizes sensor-operated water valves and water-saving devices to reduce consumption; conducts treatment of wastewater from monocrystalline processing and slicing workshops using concentrated water reuse systems, enabling maximum recovery and reuse.

Figure 2-11: Water Resource Stress Distribution Map of JA Solar



As indicated in the two tables below, among the top 20 assets ranked by relative physical risk, all of JA Solar's assets have a low relative risk exposure; geographically, JA Solar's relative risk in China is 2.1%, primarily influenced by extreme temperatures and water resource stress. The risk levels across all countries are low, while China and Vietnam, where JA Solar's assets are densely distributed, are exposed to the highest relative physical risk.

Table 2-7: Relative Physical Risk of JA Solar Assets by Country/Region (SSP5-8.5 Scenario – 2030s)

#	Country	Asset Value USD millions	Modeled Average Annual Loss (in $M)	Relative Risk (%)	Risk Exposure Classification	Tropical Cyclone	Drought	Wildfire	Temperature Extremes	Water Stress	Fluvial Flooding	Pluvial Flooding	Coastal Flooding
1	China	3302	68.8	2.1%	Low	0.0%	0.1%	0.0%	0.7%	1.1%	0.0%	0.0%	0.2%
2	Vietnam	288	3.1	1.1%	Low	0.0%	0.0%	0.1%	0.8%	0.0%	0.1%	0.0%	0.2%
3	Germany	0.03	0.0002	0.6%	Low	0.0%	0.0%	0.0%	0.4%	0.0%	0.1%	0.0%	0.1%
4	Japan	2	0.01	0.5%	Low	0.0%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%
5	United States	0.004	0.00002	0.4%	Low	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%	0.1%
6	Brazil	0.02	0.0001	0.4%	Low	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.1%
7	Australia	0.001	0.000004	0.3%	Low	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%
8	South Africa	0.02	0.00005	0.2%	Low	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.1%

Table 2-8: Top 20 JA Solar Assets ranked by Relative Physical Risk (SSP5-8.5 Scenario – 2030s)

#	Asset Name	Country	Asset Value USD millions	Modeled Average Annual Loss (in $M)	Relative Risk 2030 (%)	Risk Exposure Classification	Tropical Cyclone	Drought	Wildfire	Temperature Extremes	Water Stress	Fluvial Flooding	Pluvial Flooding	Coastal Flooding
1	Baotou JA Solar Technology Co., Ltd.	China	324.8	28.8	9%	Low	0%	0%	0%	1%	7%	0%	0%	0%
2	Baotou Jingxu Carbon Technology Co., Ltd.	China	1.4	0.1	8%	Low	0%	0%	0%	0%	7%	0%	0%	0%
3	Baotou JA Carbon Technology Co., Ltd.	China	0.6	0.1	8%	Low	0%	0%	0%	0%	7%	0%	0%	0%
4	Renxian Jingsheng Agricultural Technology Co., Ltd.	China	0.1	0.0	6%	Low	0%	0%	0%	6%	0%	0%	0%	0%
5	Shanghai Jinglong Solar Technology Co., Ltd.	China	18.4	0.9	5%	Low	0%	0%	0%	1%	3%	0%	0%	0%
6	Jing Hai Yang Semiconductor Materials (Donghai) Co., Ltd.	China	30.8	1.5	5%	Low	0%	0%	0%	1%	3%	0%	0%	0%
7	Donghai JA Solar Technology Co., Ltd.	China	5.0	0.2	5%	Low	0%	0%	0%	1%	3%	0%	0%	0%
8	JA (Donghai) New Material Technology Co., Ltd.	China	0.0	0.0	4%	Low	0%	0%	0%	0%	3%	0%	0%	0%
9	Shanghai JA Solar Technology Co., Ltd.	China	29.4	1.2	4%	Low	0%	0%	0%	0%	3%	0%	0%	0%
10	Qujing Jinglong Electronic Materials Co., Ltd.	China	66.8	2.0	3%	Low	0%	0%	0%	1%	2%	0%	0%	0%
11	Qujing JA PV Technology Co., Ltd.	China	441.8	13.5	3%	Low	0%	0%	0%	1%	2%	0%	0%	0%
12	Qujing JA Solar Technology Co., Ltd	China	48.0	1.5	3%	Low	0%	0%	0%	1%	2%	0%	0%	0%
13	Shanghai JA Solar PV Technology Co., Ltd.	China	5.9	0.2	3%	Low	0%	0%	0%	2%	0%	0%	0%	0%
14	Beijing Jinghong Energy Conservation Technology Co., Ltd.	China	3.2	0.0	2%	Low	0%	0%	0%	1%	0%	0%	0%	0%
15	Yiwu Jingcheng PV Material Co., Ltd	China	28.8	0.4	1%	Low	0%	0%	0%	1%	0%	0%	0%	0%
16	Yiwu JA Solar Technology Co., Ltd.	China	432.0	5.9	1%	Low	0%	0%	0%	1%	0%	0%	0%	0%
17	Hefei JA Solar Technology Co., Ltd.	China	103.8	1.4	1%	Low	0%	0%	0%	1%	0%	0%	0%	0%
18	JA (Yangzhou) Solar Technology Co., Ltd.	China	206.4	2.7	1%	Low	0%	0%	0%	1%	0%	0%	0%	0%
19	Jiangsu JA Convention Center Co., Ltd	China	2.6	0.0	1%	Low	0%	0%	0%	1%	0%	0%	0%	0%
20	Shijiazhuang JA PV Technology Co., Ltd.	China	6.3	0.1	1%	Low	0%	0%	0%	1%	0%	0%	0%	0%

2.4 Climate Resilience

Climate change has a significant impact on the growth of corporate capacity and production costs, presenting inherent risks and opportunities that must be addressed. JA Solar optimizes its climate strategies based on results from climate scenario analysis, exploring tailored response measures to enhance business continuity and demonstrate climate resilience while seizing opportunities that arise from climate change. The Company's climate strategy is viewed as a critical competitive advantage, considering the entire value chain to improve operational models through responsible actions and co-create a green future with value chain partners. Furthermore, this strategy aligns with five United Nations Sustainable Development Goals (SDGs), reinforcing JA Solar's commitment to sustainability and responsible business practices.

Table 2-9: JA Solar's Climate Strategies and Responses to the United Nations Sustainable Development Goals

SDGs	The Four Strategies	Category	Measures
	Deploying Green Production Working with Low-Carbon Partners Cultivating Climate Awareness Responding to Physical Risks	Wastewater management	○ Establishment of a reclaimed water recycling system to treat and reuse water in production processes, significantly reducing wastewater discharge. ○ Development of wastewater treatment and reuse systems for the deep processing and efficient recycling of domestic sewage, including specialized treatment for wastewater from battery production and acid mist tower. ○ Utilize advanced supporting facilities such as quartz sand filters, ultrafiltration units, reverse osmosis systems, and pH adjustment devices to manage wastewater disposal generated during production effectively.
		Green energy development	○ JA Solar is committed to enhancing the accessibility of clean energy through technological innovation and smart manufacturing of photovoltaic products. The Company is also initiating "grid parity" projects for photovoltaics, aiming to promote fairness and justice in the global energy transition. These initiatives reflect JA Solar's dedication to advancing sustainable energy solutions and ensuring equitable access to clean energy.
		Surrounding ecology maintenance	○ Utilize online monitoring equipment for categorized monitoring and strict management of emissions from production, controlling wastewater and waste discharge to minimize impacts on surrounding communities. ○ Organize climate-related lectures and exhibitions on campuses and communities to raise public awareness of climate change.
		Resource recycling and reuse	○ Build pure water and reclaimed water systems at production bases. ○ Construct rainwater harvesting facilities within the factory to utilize collected rainwater for landscaping and other purposes. ○ Actively explore the recycling and reuse of materials such as cardboard, plastics, and sludge.
		Mitigate transition risks and adapt to physical risks	○ Conducts climate scenario analysis to identify associated risks and opportunities. ○ Establishes greenhouse gas reduction targets and action plans grounded in scientific methods. ○ Integrates climate risks into business continuity plans to enhance resilience. ○ Provides climate-related training for suppliers to improve their awareness and capacity in managing climate risks. ○ Increases the share of renewable energy consumption by expanding the scale of self-generated distributed photovoltaic power.

03. Risk Management

Climate change poses significant threats to human survival and development and the safety of corporate assets and operations. The United Nations IPCC Sixth Assessment Report indicates that current climate trends will result in frequent and severe extreme weather events, pushing sensitive species and ecosystems toward irreversible tipping points. Urgent global actions to mitigate and adapt to climate change are essential.

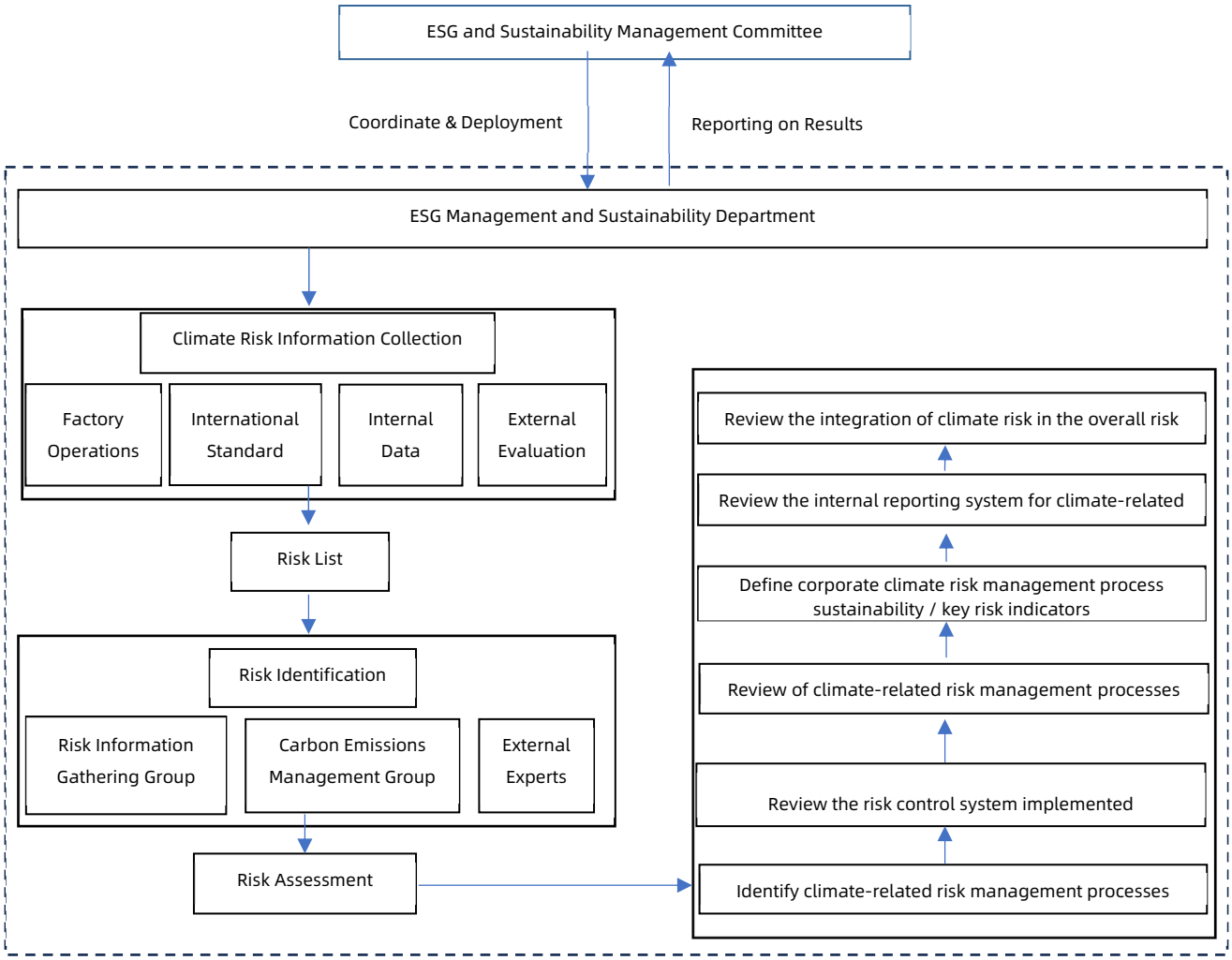
In response, JA Solar integrates climate risks into its Enterprise Risk Management (ERM) framework, continuously enhancing the identification, measurement, and monitoring of these risks through climate scenario analysis. This proactive approach strengthens the Company's climate risk management capabilities and supports its commitment to sustainability.

3.1 Identification and Assessment of Climate Risks

During the reporting period, the ESG and Sustainability Management Committee at JA Solar oversaw the analysis of climate scenarios. The ESG Management and Sustainability Department coordinated the collection of internal data from all functional departments to conduct a thorough climate scenario analysis to identify climate risks. Concurrently, collaboration with S&P Global facilitated the quantification of potential climate risks using advanced climate models. This systematic approach highlights JA Solar's commitment to effective climate risk management and sustainability.

3.1.1 Process for Identifying Climate Risks

Figure 3-1: Climate Risk Identification Flowchart



JA Solar evaluates the likelihood of risk occurrence and determines risk levels by assessing the financial impact. A dedicated risk information collection team, established by the ESG Management and Sustainability Department, gathers climate-related data. Following thorough analysis and evaluation, the department generates climate-related control indicators. This information is compiled annually and presented to the Strategy and Sustainability Management Committee before being submitted to the Board of Directors for evaluation. This structured process underscores JA Solar's commitment to effective climate risk management and governance.

3.1.2 Transmission of Climate Risks

According to the Global Risks Report 2023 published by the World Economic Forum (WEF), natural disasters and extreme weather events are the second most severe global risks for the next two years. Furthermore, climate-related risks occupy six positions in the top ten risks for the next decade, with the failure to take climate action ranked highest. JA Solar acknowledges that climate risks are inherently more challenging to predict than traditional risks. During the reporting period, an analysis based on actual operating conditions and scenario assessments identified the following transmission of climate factors and traditional risks:

Table 3-1: Analysis of Climate Risk Transmission Mechanism to Traditional Risks in the Company

Climate Factors	Transmission of Traditional Risk Types	Impacts	Likelihood	Magnitude	Risk Exposure Test Frequency	Risk Mitigation Measures
- Failure to adapt to changes in policies and regulations increases litigation risk for debtors。 - Failure to adapt to technological changes leads to decreased profitability for debtors.	Credit Risk	Increased expected loss rate on accounts receivable and an increase in negative debts.	Low	Medium	Semi-annually	Incorporate climate issues into regular meetings, guiding debtor companies to commit to net-zero carbon emissions and assisting them in establishing goals and plans to address transition risks (e.g., gradually reducing coal and oil/gas energy use), lowering their credit risk.
- Damage to debtor's fixed assets due to more frequent extreme weather. - Accelerated depreciation of the Company's assets and decline in collateral values due to climate change.	Liquidity Risk	Increased difficulty for the Company in obtaining sufficient funds at reasonable costs to meet debt repayment and other payment obligations due to debtors' failure to fulfill obligations.	Low	Medium	Semi-annually	Identify potential stranded assets due to climate change and assist debtors in enhancing their capacity to respond to physical risks, thereby reducing their liquidity risk.

Climate change is a significant factor contributing to three company-specific risks. An analysis has been conducted to evaluate the transmission of these risks, including their likelihood, resulting impacts, magnitude, and the Company's risk appetite. The findings are outlined as follows:

Table 3-2: Analysis of Climate Risk Transmission Mechanism to Company-Specific Risks

Climate Factors	Transmission of Traditional Risk Types	Impacts	Likelihood	Magnitude	Risk Exposure Test Frequency	Risk Mitigation Measures
The uncertainties of realizing current climate policy goals may result in lower-than-expected solar installation capacity targets. The COP28 conference set the target of tripling global renewable energy capacity (including solar capacity) by 2030, compared to 2022, to achieve net-zero goals by 2050. However, significant uncertainties and challenges in reaching this target include insufficient investment in transmission networks, grid constraints that slow down new installations, and inadequate energy storage, among other demand-side issues. According to S&P Global's Commodity Insights research, the world must add at least 1 billion kilowatts of renewable energy capacity yearly, more than double the current annual installation increment. Given the market challenges, the EU and Latin American markets may not reach the goal until the 2040s.	Demand-side Risk of Photovoltaic Products	Increased uncertainty about sales revenue and operations	Medium	Low	Annually	Enhance communication with government agencies and industry associations to optimize production capacity in response to market changes. Stay informed about policy and market developments, as well as the growth of solar power installations to formulate appropriate market strategies and manage risks effectively.
In the context of global energy transition and climate change, the strategic importance of renewable energy has increased, and international trade barriers against renewable energy industries have intensified., leading to more varied requirements and restrictions for the export of photovoltaic (PV) products in overseas markets. In 2024, the United States increased tariffs on Chinese PV modules and batteries from 25% to 50%. At the same time, it reinstated tariffs on PV products from Southeast Asia to curb the re-export of products to those countries. Countries like Turkey and India also imposed anti-dumping duties on Chinese PV module exports. Additionally, the European Union has introduced the Net-Zero Industry Act and the Critical Raw Materials Act, which plan to impose restrictions on the sourcing and raw materials of PV products.	International Trade Protection Risk for Photovoltaic Products	Decreased stability of product export sales revenue growth	High	High	Semi-annually	Monitor changes in the international landscape and enhance global communication. Conduct in-depth research on newly introduced photovoltaic-related policies and strengthen compliance with international trade regulations. Deploy overseas factories, and promote the integration of production and marketing in overseas regions.
Climate risks are impacting supply chains. Physical risks, including floods, heatwaves, and other climate-related disasters, could substantially affect the sources of raw materials and upstream fixed assets and infrastructure. Regarding transition risks, suppliers face increasing pressure from rising carbon prices, which may lead to higher raw material costs for JA Solar.	Raw Material Supply Risk of Photovoltaic Products	Increased cost of production and products not being delivered on time	Medium	Low	Semi-annually	Maintain reasonable raw material reserves, develop contingency plans, and diversify the geographical distribution of raw material suppliers. Strengthen supplier management and selection processes and conduct timely monitoring of the raw materials market.

Climate risks are inherently interconnected with traditional risks and can trigger systemic risks through various transmission mechanisms. JA Solar integrates climate risk into its Enterprise Risk Management (ERM) framework to address this complexity. This approach facilitates the management of each risk type individually and establishes a comprehensive risk management system to identify and assess overall risks. By doing so, JA Solar ensures that risks remain within acceptable limits, reinforcing its commitment to effective risk management and sustainability.

3.2 Climate Risk Management

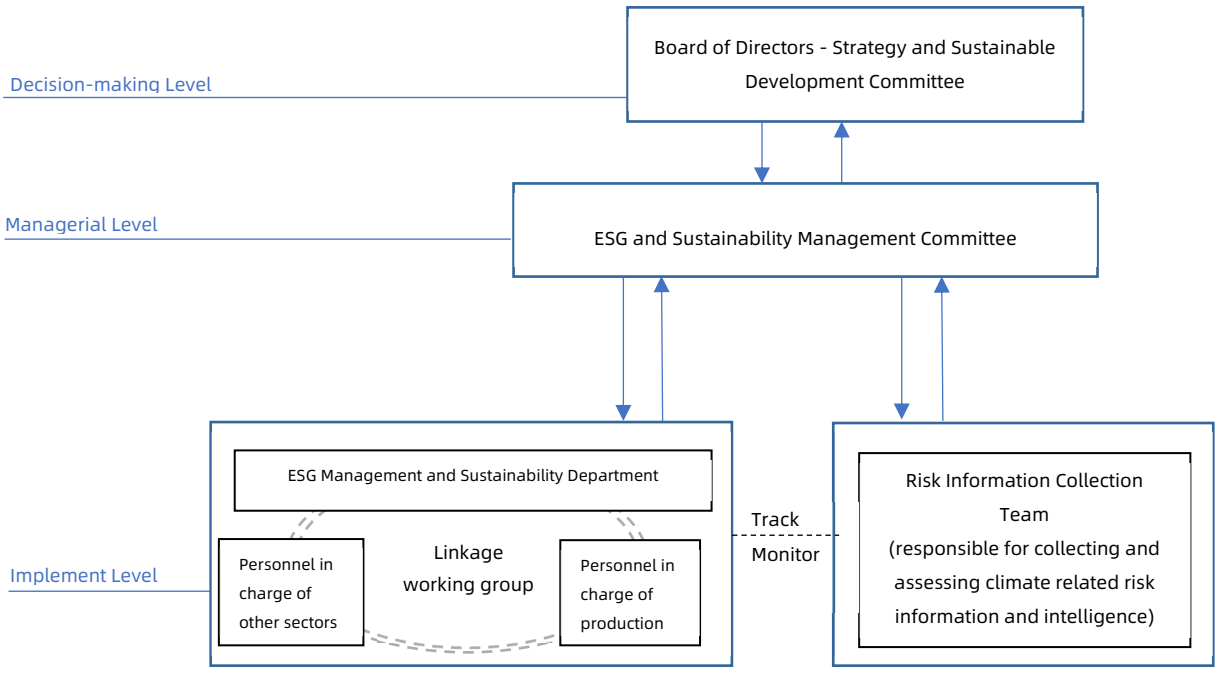
As a leading company in the photovoltaic industry, JA Solar acknowledges that strengthening global climate action will expand new energy markets across various countries, presenting unprecedented development opportunities for its core business operations. However, the Company is also confronted with multiple transition and physical risks associated with climate change. To proactively address these challenges and capitalize on opportunities, JA Solar considers climate risk management a vital component of its operational strategy. This commitment underscores the Company's dedication to sustainability and resilience in a rapidly evolving energy landscape.

3.2.1 Organizational Structure for Climate Risk Management

The ESG and Sustainability Management Committee serves as the highest management authority for climate risk management. It is tasked with implementing the resolutions of the Board of Directors and the Strategy and Sustainable Development Committee regarding climate initiatives. Within this framework, the committee leads and coordinates the management of climate risks and opportunities.

The ESG and Sustainability Department monitors the progress of climate-related initiatives, including the implementation of climate risk management across all departments and business units, the adjustment of the Company's carbon reduction plans, and resource planning. Furthermore, a risk information collection team has been established to gather internal data and create a climate risk database, providing a solid foundation for climate scenario analysis and information disclosure.

Figure 3-2: Climate Risk Management Organizational Structure



3.2.2 Mitigation of Transition Risks

In alignment with the TCFD framework, JA Solar has categorized its transition risks into the following major categories: (1) Policy Risks (existing policy risks, emerging policy risks, legal risks), (2) Technology Risks, (3) Market Risks, and (4) Reputational Risk. This

structured approach enables JA Solar to effectively identify and manage the various transition risks associated with climate change, reinforcing its commitment to sustainability and proactive risk management.

Existing Policy Risk

In 2020, President Xi Jinping announced at the 75th UN General Assembly that China aims to peak carbon emissions by 2030 and achieve carbon neutrality by 2060, known as the national 30·60 goals. In 2021, the Central Committee of the Communist Party and the State Council issued guidelines to comprehensively implement this new development philosophy and achieve these carbon goals. With increasing regulatory scrutiny, the national carbon market reached a historic milestone on April 24, 2024, when carbon prices exceeded 100 CNY/ton.

In response to the national 30·60 goals, JA Solar adopts a lifecycle approach in its production processes. The Company optimizes a green product management system that spans from raw material acquisition to recycling, aiming to minimize energy consumption and greenhouse gas emissions while promoting the development of a high-quality circular economy.

Emerging Policy Risk

Internationally, the ISSB has introduced IFRS S1 and S2 disclosure standards, mandating the disclosure of sustainability-related financial information and climate-related data. Domestically, Chinese stock exchanges have established guidelines for sustainability reporting, creating unified standards for listed companies. Since 2016, JA Solar has consistently published social responsibility and ESG reports, showcasing annual improvements in its ESG ratings.

The Company actively monitors and analyzes new climate-related policies while providing relevant training to suppliers to effectively manage emerging policy risks. This proactive approach underscores JA Solar's commitment to transparency and responsible business practices in the face of evolving regulatory landscapes.

Legal Risk

In recent years, a notable increase in climate change litigation has targeted companies across various industries, addressing multiple aspects of corporate behavior related to production, operations, and investment. As governments and regulators prioritize climate issues, changes in existing laws and the emergence of new climate-related regulations may transform civil protests against high-emission and high-pollution enterprises into legal actions.

JA Solar strictly adheres to industry standards, as well as national and local laws, guided by several key regulations, including the Environmental Protection Law, the Environmental Impact Assessment Law, and various laws concerning air and water pollution, soil pollution prevention, solid waste management, cleaner production, and energy conservation in the People's Republic of China. The Company adheres to all relevant and applicable laws in the regions where its overseas manufacturing facilities are located.

JA Solar continuously refines its ISO 14001 environmental management system to enhance energy efficiency and resource utilization and formulates internal management policies to ensure legal compliance in its global operations. The Company has disclosed in its annual reports from 2021 to 2023 that it has not faced any administrative penalties for environmental issues, reflecting its commitment to responsible environmental stewardship.

Technology Risk

Photovoltaic products are crucial in transitioning to low-carbon, energy-efficient economies, positioning "technological risk" as a potential "technological opportunity." The photovoltaic industry is experiencing rapid technological evolution, with emerging technologies such as n-type Topcon and HJT gaining market share and affecting existing P-type capacities. The timing of technology development and application presents significant uncertainty.

In response, JA Solar is committed to product innovation and increasing research and development (R&D) investments. In 2023, the Company reported an 8.57% increase in R&D personnel and a 13.44% rise in R&D expenses. Additionally, JA Solar launched a new generation of n-type components, the DeepBlue 4.0 Pro, which has achieved excellent performance and received multiple international green product certifications. This proactive approach underscores JA Solar's dedication to maintaining its competitive edge in a rapidly evolving market.

Market Risk

The transition to a low-carbon, energy-efficient economy presents significant market opportunities for photovoltaic products. However, challenges such as the emergence of international trade barriers, and price reductions due to supply-demand imbalances continue to pose risks. To cope with market risks, JA Solar constantly expands new businesses, new markets, new products, new services, and enhance the influence within the scope of smart energy and upstream auxiliary industry, in addition to its core business of photovoltaic product manufacturing.

- The **Photovoltaic Product Business Group** will focus on enhancing competitive advantages and consolidating its leading position in photovoltaic manufacturing.
- The **Intelligent Energy Business Department** will concentrate on expanding its installed base and new business ventures to increase industry influence.
- The **Photovoltaic New Materials Business Department** will work on cost reduction and revenue increase while exploring new markets and developing innovative products and services through synergies with the main business.

Additionally, recognizing that upstream suppliers may pass on potential climate risk costs, the Company regularly assesses resource needs and supply chain stability, ensuring adequate reserves of essential raw materials. By expanding self-generated distributed photovoltaic power, JA Solar reduces reliance on external electricity, mainly from non-renewable sources, thereby mitigating the impact of climate risks on upstream energy prices.

Reputational Risk

Climate issues have garnered significant global attention, and an inadequate response to climate change may result in negative perceptions of the Company among investors, the public, clients, and the media, leading to potentially diminishing brand value. To mitigate this risk, JA Solar is committed to complying with laws and regulations while strengthening communication with stakeholders on climate issues. The Company enhances the disclosure of information related to sustainable development and works to improve its ESG ratings. Additionally, JA Solar is considering incorporating climate indicators into customer satisfaction surveys to maintain its strong reputation and positive public image.

3.2.3 Adaptation of Physical Risks

In alignment with the TCFD framework, JA Solar categorizes physical risks into two broad categories: Acute Physical Risks & Chronic Physical Risks.

Acute Physical Risk

As global temperatures rise, the frequency and intensity of extreme weather events—such as extreme temperatures, heavy rainfall, floods, and typhoons—are increasing, posing risks to human health, corporate assets, and supply chain stability. To address these challenges, JA Solar collaborates with S&P Global to conduct qualitative and quantitative scenario analyses for its operational bases in various locations. This analysis identifies the likelihood of exposure to acute physical risks and the potential disruptive effects.

Based on these scenario analyses, JA Solar has developed plans to mitigate acute physical risks over the next five years. For existing operating bases, climate contingency plans have been formulated. These include selectively stockpiling flood control sandbags and heat-relief supplies based on specific geographic conditions. This reinforces high-rise fall-prone facilities, clearing evacuation routes, and identifying safe assembly points. For newly constructed operational bases, consultations with geographic experts will inform site selection, incorporating considerations for flood, earthquake prevention and other climate risks. Additionally, training is provided to staff to enhance business continuity in the face of these challenges.

Chronic Physical Risk

Chronic physical risks refer to long-term changes in weather patterns, such as sustained high temperatures, which can lead to rising sea levels or chronic heat waves. These changes may adversely affect the Company's water supply, increase air conditioning costs, and impact employee health. Various JA Solar entities incorporate water consumption targets into their environmental management indicators to address these challenges. They promote refined water management practices and assess water stress to continuously reduce overall total water consumption for sustainable use.

Additionally, the Company invests in low-energy air-conditioning equipment. It maintains reasonable temperature controls in production workshops and office areas to ensure that employees are in a safe and comfortable working environment. JA Solar also emphasizes the recycling of water resources, the generation and use of distributed photovoltaic power, and the procurement of green energy. JA Solar aims to achieve net-zero emissions and mitigate chronic physical risks at their source by actively reducing carbon emissions and collaborating with partners across the value chain.

3.3 Emerging Risk Management

Emerging risks refer to newly arising or potential future risks characterized by uncertain potential harm and challenging-to-assess impacts. Over time, these risks can evolve from weak signals into significant trends with considerable dangers. In light of the uncertainties surrounding climate-related policies and international dynamics, JA Solar recognizes that it faces corresponding emerging risks. This awareness underscores the importance of proactive monitoring and adaptive strategies to navigate the evolving landscape of climate-related challenges effectively.

3.3.1 PV Industrial Policy and the Risk of Supply-Demand Imbalance

The growth of the photovoltaic industry is significantly influenced by global policies affecting the solar sector. In the domestic market, although the photovoltaic industry has entered an era without subsidies, the introduction of new industrial policies related to grid integration and energy storage could lead to uncertainties for the transformation and upgrading of the domestic photovoltaic industry, as well as for the operations of solar companies. According to incomplete statistics from the China PV Industry Association, by the end of 2023, China's domestic production capacity for silicon wafers, batteries, and modules exceeded 800 GW, with respective production outputs reaching 622 GW, 545 GW, and 499 GW, surpassing global additions. This rapid growth has resulted in observable oversupply and declining prices across various segments of the photovoltaic sector, with component bid-winning prices falling by more than 40% compared to the beginning of the year.

Long-term uncertainties surrounding industrial policies and market demand may impact JA Solar's sales revenue. The Company has established a comprehensive industrial chain encompassing solar photovoltaic silicon rods, wafers, cells, modules, photovoltaic power plant development, construction, operation, and materials and equipment. JA Solar is committed to R&D in photovoltaic technology, focusing on developing innovative crystalline silicon solar cell structures to significantly enhance photoelectric conversion efficiency and approach theoretical limits, thereby meeting the diverse needs of the downstream market. Furthermore, JA Solar will strengthen communication with government departments and industry associations to emphasize the PV industry's critical role in achieving carbon peak and neutrality, thereby addressing risks associated with policy and supply-demand imbalances at various levels.

3.3.2 International Trade Protection Risks

As global attention to climate change intensifies, photovoltaic power, a critical renewable energy source, is increasingly confronted with rising domestic policy trends characterized by localism and trade protectionism. In March 2023, the EU introduced the Net-Zero Industry Act and the Critical Raw Materials Act, imposing restrictions on the origins and materials of photovoltaic products.

In addition to traditional barriers such as anti-dumping and anti-subsidy measures, new trade barriers based on carbon emissions and environmental standards are emerging. Notable examples include the European Carbon Border Adjustment Mechanism (CBAM). Given the short-term challenges brought by these barriers, the stability of JA Solar's export sales revenue might be impacted.

In response, the Company has adopted a globalized development strategy. While closely monitoring mature photovoltaic markets, including China, Europe, the United States, and Japan, JA Solar has also established a presence in emerging markets such as Southeast Asia, Australia, Latin America, the Middle East, and Africa. Its diversified sales network across 165 countries helps mitigate the risks associated with localized trade protectionism. Additionally, JA Solar actively tracks new international regulations and enhances compliance in global trade to navigate these evolving challenges.

3.4 Enterprise Climate Culture Cultivation

Corporate culture embodies the values employees uphold in their business activities, and the engagement of every employee is crucial for effectively addressing climate risks and advancing the net-zero goals. JA Solar prioritizes the development of a group-wide risk culture that encompasses climate risk. In addition to regular training on traditional risk management, the Company conducts specialized training on climate laws and regulations, emergency response, and disaster preparedness. This training enhances employees' understanding of climate change-related legislation and ensures compliance with legal requirements, thereby minimizing the impact of climate risks on business continuity.

JA Solar participates in international initiatives and implements diverse cultural activities to foster awareness of environmental protection and to promote green, low-carbon practices. These include organizing environmental protection knowledge competitions and regular educational campaigns. In 2023, the Company conducted 434 environmental protection training sessions with 45,402 attendances. Additionally, JA Solar has appointed 52 carbon managers to monitor and manage carbon emissions. In addition, JA Solar actively participates in domestic and international climate change initiatives, sharing innovative practices and leading efforts in climate action.

Case: "JA Solar and Me" Climate Ambition Accelerator (CAA) Initiative

The Climate Ambition Accelerator (CAA) is the UN Global Compact's action-oriented climate capacity-building program. It is designed to equip corporate members with the knowledge and expertise to accelerate their decarbonization efforts. In 2023, JA Solar officially joined the CAA initiative and organized an internal awarding activity titled "JA Solar and Me" to explore best practices for low-carbon emission reduction and green living.

Following the launch of this initiative, employees across all bases actively participated in various activities, including environmental protection knowledge contests, speeches, and mystery box challenges, aimed at enhancing awareness of environmental protection and fully implementing sustainable development principles.

Additionally, JA Solar established an online learning platform in collaboration with the United Nations Global Compact Institute, providing all employees free access to environmental protection and sustainable development courses. Upon completion, participants receive certificates, further enhancing their awareness and knowledge. This initiative aims to align with the international community's efforts and cultivate green talent equipped with the necessary skills to address climate change effectively.

Case: Training on "Carbon Asset Management"

From March 7 to March 10, 2023, JA Solar conducted a company-wide training program focused on "Carbon Asset Management." The training covered various topics, including carbon trading theory, carbon market development, carbon emission allowance assets, carbon credit assets, management strategies and practices, and ESG theory and practice.

Participants who successfully completed the training and assessment received certificates, including a thematic training certificate issued by the Education and Training Center of the Ministry of Human Resources and Social Security of the People's Republic of China and the "Low-carbon Professional Talent Training Completion Certificate" from the Beijing Green Exchange. This initiative underscores JA Solar's commitment to enhancing employee expertise in carbon asset management and promoting sustainable practices within the organization.

04. Metrics and Targets

4.1 Profile of Greenhouse Gas Carbon Emission

JA Solar recognizes the critical role of climate change actions in sustainable business development. The Company actively identifies climate-related risks and opportunities, integrating climate change strategies into its business development and ESG goals. JA Solar is committed to advancing efforts to tackle climate change, participating in joint climate actions, and contributing to achieving global climate governance objectives. The Company aims to accelerate the collective transition towards a net-zero future through these initiatives.

4.1.1 Energy Consumption

Table 4-1: JA Solar's energy consumption in 2022-2023

Metrics	Unit	2022	2023
Integrated energy consumption	tons of standard coal equivalent (TCE)	537,311.85	799,359.32
- Total energy consumption from non-renewable sources	tons of standard coal equivalent (TCE)	396,108.76	579,009.62
- Total energy consumption from renewable sources	tons of standard coal equivalent (TCE)	141,203.09	220,349.70
Proportion of energy consumption from renewable sources	%	26.3	27.6

Table 4-2: JA Solar's other essential energy performance in 2023

Metrics	Unit	Performance in 2023
The scale of self-constructed power stations	Megawatt	2,165
Proportion of self-generated and self-consumed power	Percentage(%)	1.03
The installed capacity of self-generated and self-consumed distributed power stations	Megawatt	138
Clean energy usage	MWh	1,792,918.65

JA Solar has established and implemented an efficient energy management system that leverages industrial internet technology to comprehensively analyze energy data throughout the product life cycle. This approach aims to identify energy-saving opportunities in each segment. In 2023, the Company actively promoted the use of clean energy across all production sites, significantly reducing energy consumption and greenhouse gas emissions through self-generation and self-consumption of distributed photovoltaic power and green power procurement.

Additionally, JA Solar conducts annual energy conservation training for employees, enhancing their understanding of the importance of reducing energy consumption in their daily work and raising awareness of energy conservation practices. These initiatives reflect JA Solar's commitment to sustainability and efficient energy management.

Case: Comprehensive energy-saving technology transformation of Baotou base

JA Solar's Baotou site has implemented a comprehensive energy-saving technology renovation on existing equipment to further reduce energy consumption and greenhouse gas emissions in its production process. This renovation encompasses various systems, including the air-powered heating system, the heating system for water heat pump units, and the argon recovery process. These initiatives are projected to save over 4,700 tons of standard coal equivalent (TCE) annually. Notably, the air-powered heating system located in the dormitory area effectively enhances energy efficiency, with an expected annual electricity savings of approximately 740,000 kilowatt-hours. These efforts demonstrate JA Solar's commitment to sustainability and operational efficiency (Figure: Argon Recovery Project).

4.1.2 Greenhouse Gas Emissions

Guided by JA Solar's G2G sustainability philosophy, the Company actively promotes the development of climate-related strategies and targets while enhancing the disclosure of climate-related metrics, including Scope 1, Scope 2, and Scope 3 emissions. This includes establishing targets to measure performance and identifying key indicators to assess progress. JA Solar has also implemented intelligent carbon management practices through comprehensive planning, budgeting, forecasting, and analysis control of carbon emissions. All production sites have conducted greenhouse gas inventories following ISO 14064-1:2018 and the GHG Protocol, obtaining third-party verification statements. These initiatives reflect JA Solar's commitment to transparency and accountability in its climate action efforts.

Table 4-3: JA Solar's 2022-2023 greenhouse gas emissions

Metrics	unit	2022	2023
Scope 1: Direct greenhouse gas emissions	tCO_2e	45,268	109,178
Scope 2: Indirect greenhouse gas emissions from energy			
- Market-based	tCO_2e	1,834,111	2,762,785
- Location-based	tCO_2e	2,470,009	3,573,450
Scope 3: Other indirect greenhouse gas emissions			
- Category 1: Purchased goods and services	tCO2e	14,023,155	19,142,262
- Category 2: Capital goods	tCO2e	/	3,159,341
- Category 3: Fuel and energy-related activities	tCO2e	101,799	489,806
- Category 4: Upstream transportation and distribution	tCO2e	291,376	717,898
- Category 5: Waste generated in operations	tCO2e	64,128	73,677
- Category 6: Business travel	tCO2e	2,171	8,269
- Category 7: Employee commuting	tCO2e	/	38,436
- Category 8: Upstream leased asset	tCO2e	59,425	30,609
- Category 9: Downstream transportation and distribution	tCO2e	945,097	6,474
- Category 10: Processing of sold products	tCO2e	175,741	247,934
- Category 11: Use of sold products	tCO2e	0	0
- Category 12: End-of-life treatment of sold products	tCO2e	39,490	47,813
- Category 13: Downstream leased assets	tCO2e	/	2
- Category 14: Franchises	tCO2e	0	0
- Category 15: Investments	tCO2e	/	389,335

Note: Calculated using the operational control approach

Table 4-4: JA Solar's other climate-related performance in 2023

Metrics	Unit	Performance in 2023
Greenhouse gas emission intensity of operating scope	tCO2/ 100 million CNY	3,521.45
Proportion of green electricity used	Percentage (%)	28
Carbon emissions avoided	CO_2e	Over 37 million

4.2 Response to Climate Change

As a responsible corporate citizen, JA Solar considers ESG an essential commitment and actively participates in ESG and climate-related ratings from domestic and international institutions, including WIND, S&P Global, and CDP. This engagement demonstrates the Company's dedication to sustainable development.

JA Solar addresses climate change topics with various stakeholders, including suppliers, customers, and communities. Initiatives such as supplier seminars, sustainability reports highlighting the Company's carbon reduction efforts, and partnerships with educational institutions to develop sustainability and ecological education courses are vital components of this approach. JA Solar aims to enhance climate and low-carbon awareness within and throughout its value chain through internal and external communications.

4.2.1 Influence in Climate Initiative

JA Solar actively engages in consultations and closed-door meetings on ESG and climate-related issues organized by the China Securities Regulatory Commission (CSRC) and other governmental agencies. The Company collaborates closely with industry associations and value chain partners, pooling resources with organizations such as the China Photovoltaic Industry Association,

the New Energy Chamber of Commerce, the Sustainable Markets Initiative (SMI) China Council, the International New Energy Solution Platform (INES), and the International Investment Alliance for New Energy (IIARE).

Through these interactions with domestic and international climate-related organizations, JA Solar demonstrates its influence in climate action and works collaboratively toward a sustainable future.

From November 30 to December 12, 2023, JA Solar participated in the 28th Conference of the Parties to the UN Framework Convention on Climate Change (COP28) in Dubai, where the Company launched the "Every Corner" sustainability plan. This initiative includes a donation agreement with the UN Refugee Agency (UNHCR) to provide clean energy to families in need and active participation in the "One Hundred Million Haloxylon Ammodendron" desertification prevention project initiated by the SEE Foundation.

These actions reflect JA Solar's commitment to achieving global climate goals. Across all of its operational scope, the Company aligns with the Paris Agreement and is dedicated to limiting the global average temperature increase to within 1.5 ℃ above pre-industrial levels, ensuring that all Board members are informed of the results.

4.2.2 Supplier management

JA Solar is committed to collaborating with upstream and downstream partners to reduce carbon emissions. The Company encourages suppliers to disclose their carbon footprints, utilize green electricity, and conduct carbon footprint verification. Prioritizing suppliers with low carbon and ESG risks, JA Solar advocates responsible procurement through its "JA Solar Responsible Sourcing Policy."

The Company rigorously monitors the sustainability of raw materials and promotes localized, low-carbon procurement to minimize environmental impact. Procurement staff undergo regular ESG training, and their purchasing practices are reviewed for compliance with the Responsible Sourcing Policy. Periodic audits of existing suppliers are conducted, with corrective measures implemented for those violating ESG regulations. If required improvements are not implemented within a specified timeframe, cooperation with those suppliers will be discontinued.

To enhance the decarbonization capabilities of its supply chain, JA Solar conducted online training for silicon material suppliers in June 2023 as part of the CDP Supply Chain Decarbonization Project, covering 69% of supplier procurement amounts. Through these initiatives, JA Solar aims to lead the industry internationally and work collaboratively with supply chain partners to address climate change challenges.

4.2.3 Incorporate climate indicators into remuneration policies

JA Solar incentivizes the management of climate risk-related issues by incorporating climate-related metrics into the performance evaluations of general managers and other senior management. Failure to meet these metrics has an impact on critical performance scores, while achievements in meeting these metrics result in bonuses based on a percentage of salaries. The executive teams of the group and its subsidiaries are actively involved in establishing performance improvement reward mechanisms, which include using unit product energy consumption as a critical assessment indicator, setting annual project goals, and tracking progress every month.

Key performance indicators (KPIs) include: (1) Implementation of climate-related targets; (2) Execution of emission reduction initiatives; (3) Reduction of emission intensity; (4) Improvement in energy efficiency; (5) Increased share of low-carbon energy in total energy consumption; (6) Increased share of renewable energy in total energy consumption; (7) Strengthened cooperation with suppliers on climate-related issues; (8) Performance on climate-related sustainability indices (e.g., S&P Global CSA, DJSI, CDP Climate Change Score); (9) Implementation of employee awareness campaigns or training programs related to climate issues.

These initiatives reflect JA Solar's commitment to integrating climate considerations into its operational framework and promoting sustainable practices across the organization.

4.2.4 Industrial Upgrading

JA Solar utilizes innovative technologies, including industrial robots, the Internet of Things (IoT), and Artificial Intelligence (AI), to develop digital and smart factories. This approach employs advanced production processes and equipment to enhance energy

efficiency, reduce energy consumption and carbon emissions, and improve waste and water resource recycling, while promoting green and intelligent manufacturing.

Operating 14 production bases globally, JA Solar has established a vertically integrated value chain encompassing silicon wafers, cells, modules, and photovoltaic power plants. The Company focuses on R&D and manufacturing solar products that convert sunlight into electricity for residential, commercial, and utility-scale power generation. Based on module shipment volumes in 2023, JA Solar anticipates generating over 75 billion kWh of clean electricity annually, avoiding more than 37 million tons of CO_2 equivalent emissions.

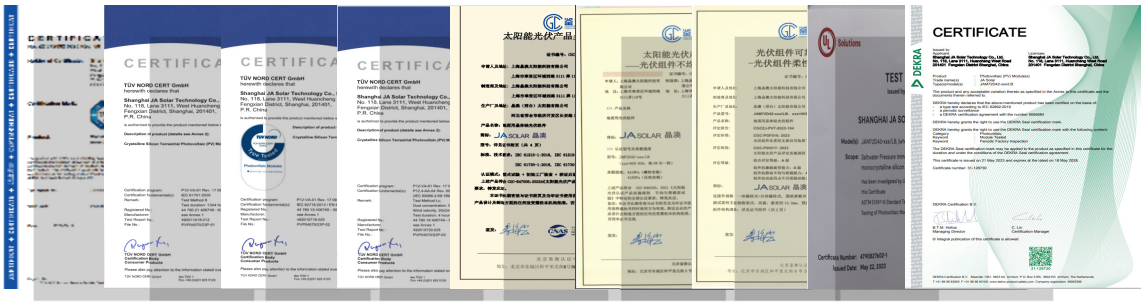
Table 4-5: Revenue from products and services designed for a low-carbon economy in 2023 (unit: RMB)

Project type	2022	2023
Photovoltaic modules	78,174,617,903.22	70,344,583,284.97
Photovoltaic power plant operation	843,274,457.51	423,039,306.76
other	2,538,284,876.25	2,221,777,983.45

JA Solar is dedicated to delivering industry-leading photovoltaic power generation solutions, contributing to the industry's high-quality development and facilitating the energy transition. In 2023, the Company invested RMB 4.446 billion in R&D, representing approximately 5.45% of its overall revenue.

JA Solar launched a new generation of n-type high-efficiency PV modules this year, Deep Blue 4.0 Pro. This innovative product introduces a more inclusive silicon wafer size of 182mmx199mm. It allows a single wafer to simultaneously produce four mainstream version modules, making it suitable for various application scenarios. Certified by authoritative third-party organizations, both domestically and internationally, DeepBlue 4.0 Pro modules have passed tests for salt spray, ammonia, sand, and dust, demonstrating recognized power generation, safety, and reliability across diverse applications.

Compared to P-type modules and earlier n-type products, the Deep Blue 4.0 Pro series offers reduced Balance of System (BOS) costs and a lower Levelized Cost of Electricity (LCOE). With an approximate combined gain of 0.2%, its low-light power generation capabilities provide enhanced value to customers. In 2023, shipments of DeepBlue 4.0 Pro modules reached 8.739 GW, resulting in an estimated avoidance of 5.66 million tons of CO_2 equivalent emissions (Note 1) compared to baseline scenarios (Note 2).



Note 1: In calculating avoided carbon emissions, it is assumed that JA Solar's photovoltaic modules generate electricity for 1,300 hours per year. The grid emission factors for major overseas sales regions are based on the emission factors published by the European Commission and the US Environmental Protection Agency (EPA) in January 2024, while emission factors for other regions are based on those published by the Ministry of Ecology and Environment of the People's Republic of China in April 2024.

Note 2: If no module products are produced, coal-fired power plants would provide the electricity generated by the module products. The carbon dioxide emissions produced by these power plants represent the CO_2 emissions that JA Solar avoids by producing module products.

4.3 Carbon Reduction Targets and Actions

In the context of global energy transition and climate change, the innovative development of the renewable energy industry, particularly photovoltaics, is crucial for addressing climate challenges. JA Solar actively promotes green and low-carbon manufacturing, creates sustainable products throughout its life cycle, and supports sustainable investment and financing initiatives. The Company aims to achieve 100% sustainability-related certifications from mainstream suppliers by 2030. It is committed to reaching net-zero greenhouse gas emissions by 2050, aspiring to become the world's leading sustainable company.

Since formally joining the Science Based Targets Initiative (SBTi) in 2022, JA Solar has established greenhouse gas (GHG) emission reduction targets and action plans based on scientific methodologies. The Company submitted its SBTi targets for review in July 2024, with certification anticipated to be completed in early 2025.

JA Solar's SBTi target for Scope 1 and Scope 2:

- **Short-term Goal:** JA Solar aims to reduce Scope 1 and Scope 2 GHG emissions by 58.8% by 2034, based on the 2023 base year.
- **Long-term Goal:** JA Solar is committed to achieving a 90% reduction in absolute Scope 1 and Scope 2 GHG emissions by 2050, compared to the 2023 base year.

These targets underscore JA Solar's dedication to mitigating climate change impact and advancing its sustainability initiatives.

JA Solar's SBTi target for Scope 3:

- **Short-term Goal:** JA Solar commits to reducing Scope 3 GHG emissions from purchased goods and services per megawatt (MW) of photovoltaic product produced by 63.8% before 2034, based on the 2023 base year.
- **Long-term Goal:** JA Solar aims to achieve a 97% reduction in Scope 3 GHG emissions from purchased goods and services, capital goods, fuel and energy-related activities, upstream transportation and distribution per MW of photovoltaic product produced by 2050, compared to the 2023 base year.

Additionally, JA Solar's net-zero plan encompasses carbon reduction projects, supplemented by carbon offsets to mitigate emissions further. These initiatives reflect the Company's commitment to sustainability and its proactive approach to climate change.

Carbon Emission Reduction Case 1: Yiwu base low-carbon park project

JA Solar Smart Energy has developed a systematic low-carbon solution tailored to the park's resources and demands, centered on a "source-grid-load-storage" model. This approach addresses four key dimensions: zero carbon on the source side, carbon reduction on the grid side, low carbon on the load side, and responsive carbon reduction. The goal is to comprehensively lower energy consumption and greenhouse gas emissions throughout the park's construction and operation. JA Solar aims to establish an industry benchmark low-carbon park by focusing on these dimensions, emphasizing comprehensive energy flexible management, operational carbon reduction, and environmental protection. This innovative model should generate 28.76 million kWh of photovoltaic green electricity annually, reducing approximately 16,000 tons of Scope 2 carbon emissions in the operational scope (Note 1). Additionally, the energy-saving rate of the power station is projected to exceed 10%, with adjustable resources comprising more than 15% of the total capacity.

Carbon Emission Reduction Case 2: Green Logistics

JA Solar is committed to adopting low-carbon and green transportation modes, including combined road-rail and water-land transport while exploring clean energy sources such as biomass fuel and methanol. The Company is also actively promoting the "oil-to-electric" project for forklifts used in on-site transportation, aiming to reduce the carbon footprint of logistics operations. This initiative facilitates a synergistic development of lower logistics costs alongside green logistics practices. In 2023, JA Solar successfully arranged approximately 377 MW of shipments via road-rail transport, reducing the Company's Scope 3 emissions. This customized transportation solution meets project requirements and reinforces JA Solar's commitment to sustainability and environmental responsibility.

Carbon Offset Case: Purchasing a carbon offset product that is recognized by the country

JA Solar actively promotes clean energy at its production facilities, significantly decreasing energy consumption and greenhouse gas emissions within its operations (Note 2). This is achieved through self-generation and self-consumption of distributed photovoltaic power, along with the procurement of green energy. As one of the first supporters of China's "100% Green Energy" initiative (GE100%), the Company explores green power procurement at pilot sites and encourages renewable electricity consumption across China.

When evaluating potential office locations or production bases, JA Solar takes into consideration local green power supply capacity, usage ratios, and relevant policy support to enhance the Company's use of green energy and reduce carbon emissions, thereby contributing positively to environmental protection. In 2023, JA Solar's clean energy consumption surpassed 1,790 GWh.

Moreover, to promote sustainable development, JA Solar has joined the "Forward Faster" initiative of the United Nations Global Compact (UNGC), pledging to invest corporate resources in various dimensions, including climate action, SDG financing and investment, and the development of permanent carbon removal technology.

Note 1, 2: Operational Scope GHG emissions include direct GHG emissions (Scope 1) and indirect GHG emissions from energy (Scope 2).

4.4 Respond to Stakeholder Concerns

Responding to climate change has become a consensus within the global community. JA Solar is committed to strengthening stakeholder communication and focusing on climate change issues. Each year, the Company conducts an ESG materiality assessment, applying the double materiality principle to fully consider the critical concerns of both internal and external stakeholders. The assessment results are independently verified by SGS-CSTC Standards Technical Services Co., Ltd and submitted to the Board of Directors for review before being integrated into the Enterprise Risk Management (ERM) framework.

As detailed in JA Solar's 2023 Sustainability and ESG Report, key material topics that have been identified include energy management, supply chain management, and community impact and development. The Company further analyzes the impact of its carbon reduction performance on external stakeholders, reinforcing its commitment to transparency and accountability in addressing climate change.

Table 4-6: Impact of JA Solar's Carbon Reduction Performance on Stakeholders

Category/ Material topics	Energy Management	Supply Chain Management	Community Impact and Development
Causes of the Impact	The Company's operations, product life cycles, and supply chain activities involve energy use, which directly or indirectly generates greenhouse gas emissions.	The Company's procurement activities and daily supply chain operations generate carbon emissions.	The Company mainly produces Photovoltaic products and emphasizes interaction with local people in its operational activities, exploring further channels to jointly promote low-carbon development.
Impact Areas	The natural environment, the public, and customers.	The natural environment, suppliers, and customers.	The public and consumers.
Topic Relevance on External Stakeholders	Positive: The Company's Photovoltaic products enable customers to use renewable energy, and the Company is also expanding the scale of self-generated and self-consumed distributed Photovoltaic power generation to reduce carbon emissions and mitigate climate risks jointly.	Positive: By prioritizing the procurement of environmentally friendly raw materials, incorporating carbon-related scores into supplier access scoring considerations, and producing products with a low carbon footprint, which can directly or indirectly contribute to the low carbon development of the entire supply chain.	Positive: The Company actively organizes climate-related lectures, exhibitions and other activities on campuses and in communities to demonstrate JA Solar's steps toward net-zero, raise the public's awareness of climate change, and build a low-carbon social atmosphere.
	Negative: Greenhouse gas emissions from the use of non-renewable energy sources can cause climate change in the long term, with potential negative impacts on external stakeholders.	Negative: Greenhouse gas emissions from waste disposal methods such as incineration can cause climate change in the long term, with potential negative impacts on external stakeholders.	
Output Metric	During the reporting period, JA Solar shipped more than 57GW of modules, avoiding more than 37 million tons of carbon dioxide equivalent (CO_2e) based on the emission factors of each country's power grid.	During the reporting period, JA Solar offered suppliers two climate-related training sessions.	During the reporting period, JA Solar organized eight climate-related publicity activities on campus and in the community.

Category/ Material topics	Energy Management	Supply Chain Management	Community Impact and Development
Impact Valuation	Reduce the social cost of carbon emissions by avoiding greenhouse gas emissions.	Enhance suppliers' awareness and capability of low-carbon environmental protection through relevant training.	Through relevant activities, raise the community's awareness of climate change and knowledge of energy saving and carbon reduction in daily life.
Impact Metric	Using a global average social cost of carbon at $185/ton of CO_2 (Note 1), JA Solar reduced the social cost of carbon emissions by approximately RMB48.39 billion during the reporting period.	Up to 80% of leading material suppliers have passed the ISO14001 environmental management system certification during the reporting period.	During the reporting period, thanks to the relevant activities organized by JA Solar, approximately 1,000 individuals gained awareness and knowledge about low-carbon practices from our activities.

Note 1: Reference: Rennert, K., Errickson, F., Prest, B.C *et al.* Comprehensive evidence implies a higher social cost of CO_2– Nature 610, 687–692 (2022).

Looking into the Future

JA Solar is committed to advancing efforts to tackle climate change by collaborating with various stakeholders in climate action, contributing to achieving global climate governance goals, and accelerating the transition toward a zero-carbon future. The Company will thoroughly implement the G2G sustainable development concept, strategy, and vision, focusing on green and low-carbon initiatives.

JA Solar aims to promote the green transformation of critical processes, including product design, supplier management, raw material procurement, manufacturing, and logistics. The Company will explore sustainable practices throughout the entire industry chain and product life cycle, reinforcing its commitment to environmental stewardship and sustainable development.

Appendix

Appendix 1: TCFD Framework Comparison Table

Index	Corresponding chapters
Governance	
a) Describe the boards' oversight of climate-related risks and opportunities	1.1, 1.2
b) Describe management's role in assessing and managing climate-related risks and opportunities	1.3
Strategy	
a) Describe the climate-related risks and opportunities identified by the organization in the short, medium and long term	2.2, 2.3
b) Describe the impact of climate-related risks and opportunities on the organization's operational, strategic and financial planning	2.2.1, 2.2.2
c) Describe the resilience of the organization's strategy, taking into account different climate-related conditions, including 2 ℃ or lower temperatures	2.2.
Risk Management	
a) Describe the organization's process for identifying and assessing climate-related risks	3.2.1
b) Describe the organization's processes for managing climate-related risks	3.3.1
c) Describe how the process of identifying, assessing, and managing climate-related risks is integrated into the organization's overall risk management	3.2.2
Metrics and Targets	
a) Disclose the metrics used by the organization to assess climate-related risks and opportunities following its strategy and risk management processes	4.1.1
b) Disclosure of greenhouse gas (GHG) emissions and associated risks for direct emissions (Scope 1), indirect emissions (Scope 2), other indirect emissions (Scope 3) (if required).	4.1.2
c) Describe the goals used by the organization to manage climate-related risks and opportunities, and how performance compares to the targets	4.3

Appendix 2: Third-Party Independent Assurance Report


证书编号：cbgex-cn-2024031

Carbon Neutrality Certificate

“零碳工厂”运营碳中和证书

兹证明，曲靖晶澳太阳能科技有限公司在2023年度运营过程中，抵围一产生的12211.65吨温室气体排放量（已扣除采购绿色电力和绿色电力证书对应的范围二排放），通过注销自愿碳标准（VCS）机制下的验证碳单位（VCUs），实现2023年度运营碳中和。

Qujing JA Solar Technology Co., Ltd. emitted 12211.65 tons of CO_2e directly from 01/01/2023 to 31/12/2023 (zero emission from scope 2 due to purchasing equivalent volume of renewable energy and Green Electricity Certificate). We hereby certify that Qujing JA Solar Technology Co., Ltd. has operational carbon neutrality by cancelling equivalent volume of Verified Carbon Units (VCUs) to offset emissions from other source.

北京绿色交易所有限公司

2024年5月30日


鉴衡认证

CHINA GENERAL CERTIFICATION

温室气体排放验证声明

Verification Statement of GHG emissions

证书编号：CGC-CC&SS-CN20240013

企业名称：晶澳太阳能科技股份有限公司

Company Name：JA Solar Technology Co., Ltd.

地址：河北省邢台市宁晋县

Address：Ningjin County, Xingtai City, Hebei Province

报告周期：2023 年 1 月 1 日 – 2023 年 12 月 31 日

Reporting Period：01/01/2023- 31/12/2023

温室气体排放量化标准：ISO 14064-1:2018 Greenhouse gases — Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals

Applied Standards：

报告边界：全球运营范围内的温室气体排放量

Reporting Boundary：GHG emissions from global operations

温室气体类别：☒CO_2 ☒CH_4 ☒N_2O ☒HFCs ☒PFCs ☒SF_6 ☒NF_3

GHG Included：

温室气体排放量：直接温室气体排放量（类别 1）：109,178 tCO_2e

GHG Emissions：来自输入能源的间接温室气体排放量（类别 2）：2,762,708 tCO_2e

以上经量化的总排放量：2,871,963 tCO_2e

本机构根据 ISO 14064-3 验证，上述组织层面温室气体核算符合选定的标准，结果准确、保守、可信。

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.

北京鉴衡认证中心有限公司

China General Certification Center

2024年05月13日


鉴衡认证

CHINA GENERAL CERTIFICATION

温室气体排放验证声明

Verification Statement of GHG emissions

证书编号：CGC-CC&SS-CN20240014

企业名称：晶澳太阳能科技股份有限公司

Company Name：JA Solar Technology Co., Ltd.

地址：河北省邢台市宁晋县

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报告周期：2023 年 1 月 1 日 – 2023 年 12 月 31 日

Reporting Period：01/01/2023- 31/12/2023

温室气体排放量化标准：ISO 14064-1:2018 Greenhouse gases — Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals

Applied Standards：

报告边界：全球经营活动范围内的其他间接温室气体排放量

Reporting Boundary：Other indirect GHG emissions from global business activities

温室气体类别：☒CO_2 ☒CH_4 ☒N_2O ☒HFCs ☒PFCs ☒SF_6 ☒NF_3

GHG Included：

温室气体排放量：

GHG Emissions：

本机构根据 ISO 14064-3 验证，上述组织层面温室气体核算符合选定的标准，结果准确、保守、可信。

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北京鉴衡认证中心有限公司

China General Certification Center

2024年05月13日

Disclaimer

JA SOLAR
晶 澳 太 阳 能

JA Solar Technology Co., Ltd.
2023 Climate-Related Disclosure Report and TCFD Report

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