

Greenhouse Gas Emissions Report

2020-2022



About This Report

This report is the first greenhouse gas emissions report published by JA Solar and its domestic and overseas subsidiaries (hereinafter referred to as “JA Solar” or “the Company”). It discloses the greenhouse gas emissions from the operations and value chain of the Company.

Accounting Boundary

The accounting boundary of this report is the domestic and overseas subsidiaries over which JA Solar has operational control. The subsidiaries are divided into 12 bases¹ and others² based on business type and geographical location.

Table 1 List of JA Solar Bases

No.	Base Name
1	Qujing Base
2	Yangzhou Base
3	Ningjin Base
4	Yiwu Base
5	Baotou Base
6	Xingtai Base
7	Hefei Base
8	Shanghai Base
9	Donghai Base
10	Yanjiao Base
11	Base in Malaysia
12	Base in Vietnam

¹ The 12 bases include all the domestic and overseas subsidiaries that have operational control over the production of photovoltaic products and new materials in the corresponding regions.

² Others include all photovoltaic power plant project companies and sales companies that have operational control in the current year.



Accounting Period

The accounting period for this report:

January 1, 2020 to
December 31, 2020

January 1, 2021 to
December 31, 2021

January 1, 2022 to
December 31, 2022

Accounting Methods and Verification Standards

The *Greenhouse Gas Protocol – A Corporate Accounting and Reporting Standard* and *Greenhouse Gases – Part 1: Specification with guidance at the organizational level for quantification and reporting of greenhouse gas emissions and removals* (ISO 14064-1:2018) are used as references for carbon emissions accounting. To enhance the credibility of the reported data, the Company has commissioned a third-party organization to conduct independent verification based on the *Greenhouse Gases – Part 3: Specification with guidance for the verification and validation of greenhouse gas statements* (ISO 14064-3:2019). The Greenhouse Gas Emissions Verification Statement that the Company has obtained can be found in the Appendix to this report.

In this report, “Scope 1 Emissions” refers to emissions from sources directly controlled or owned by the Company, which corresponds to the “direct greenhouse gas emissions” in ISO 14064-1:2018; “Scope 2 Emissions” refers to indirect emissions from the purchased electricity, heat and steam used by the Company, which corresponds to the “indirect greenhouse gas emissions from input energy” in ISO 14064-1:2018; “Scope 3 Emissions” refers to emissions from upstream and downstream value chains of the Company, which corresponds to “other indirect greenhouse gas emissions” in ISO 14064-1:2018.

Carbon Emissions Accounting Results

In 2022, JA Solar conducted carbon emissions data accounting for the domestic and overseas subsidiaries over which the Company has operational control to understand the impact of its operations and value chains, and it commissioned a third-party organization to carry out independent verification of Scope 1, Scope 2 and Scope 3 emissions in accordance with the Greenhouse Gas Part 3: Specification with guidance for the verification and validation of greenhouse gas statements (ISO 14064-3:2019). The greenhouse gas emissions of JA Solar within the scope of this report from the year 2020 to 2022 are shown in the following table:

Table 2 JA Solar’s Greenhouse Gas Emissions in the Past Three Years

Emission Category	Unit	2020	2021	2022
Scope 1 Greenhouse Gas Emissions	tCO ₂ e	30,965	35,406	45,268
Scope 2 Greenhouse Gas Emissions	tCO ₂ e	1,214,319	1,548,463	1,834,111
Scope 3 Greenhouse Gas Emissions	tCO ₂ e	7,595,100	10,299,525	15,702,382
Total Greenhouse Gas Emissions	tCO ₂ e	8,840,384	11,883,394	17,581,761
Carbon Emission Intensity within the scope of operation	tCO ₂ e per 100 million yuan	4,817.91	3,834.85	2,574.88

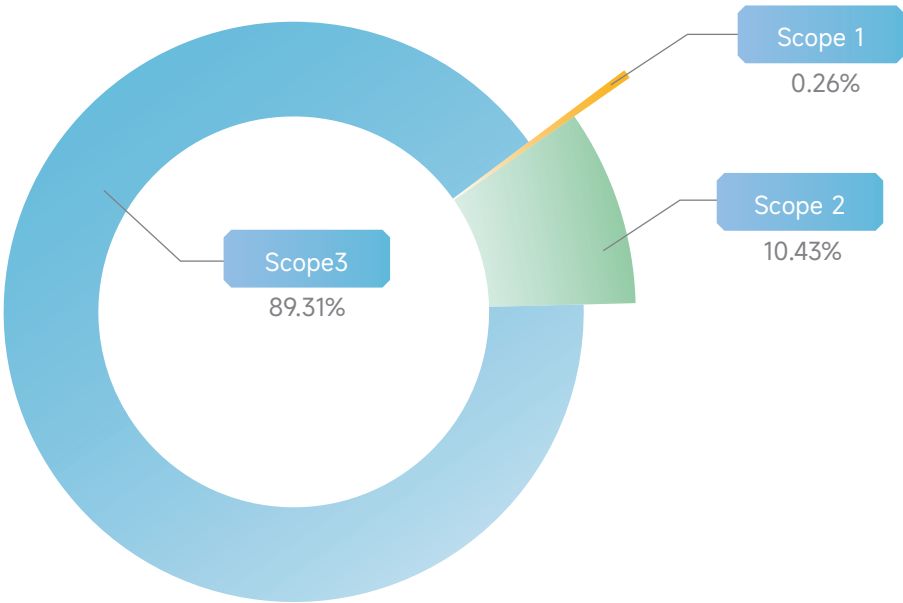
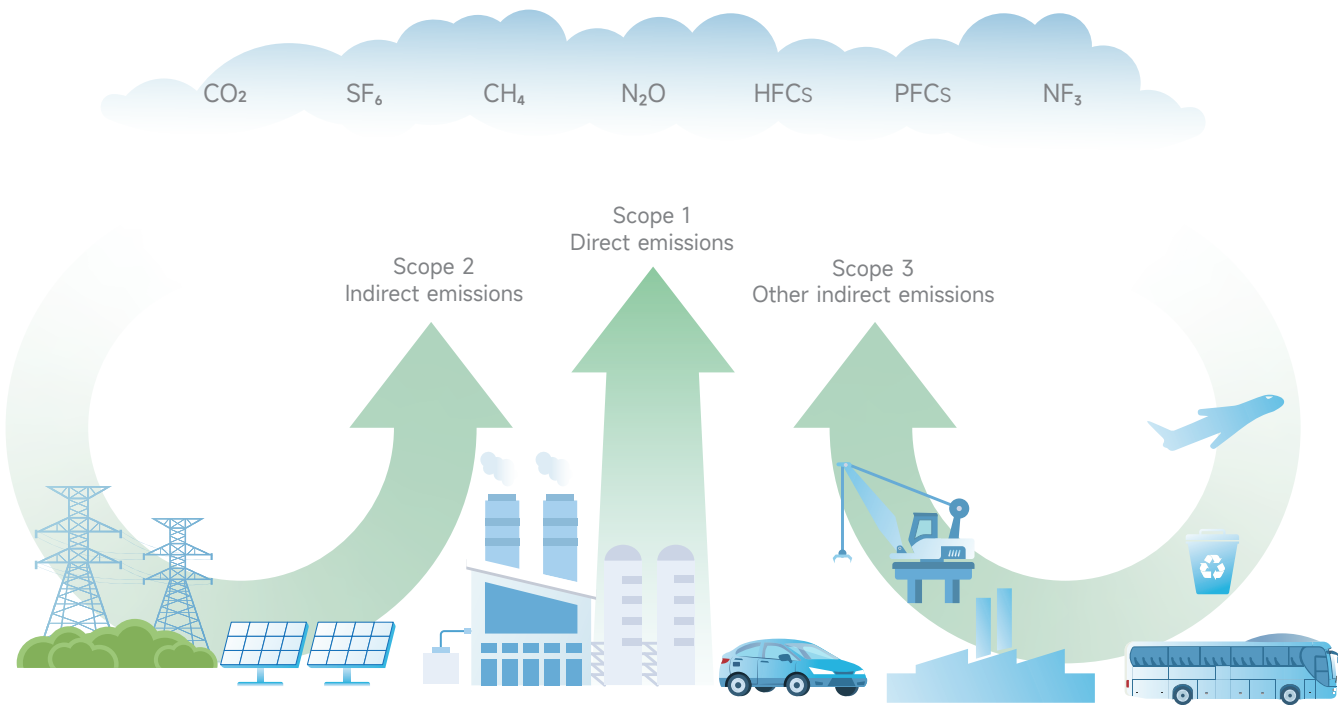


Figure 1 Share of Emissions by Scope in 2022

- Total (tCO₂e)
- Carbon intensity (tCO₂e/hundred million)
- Percentage of green electricity usage

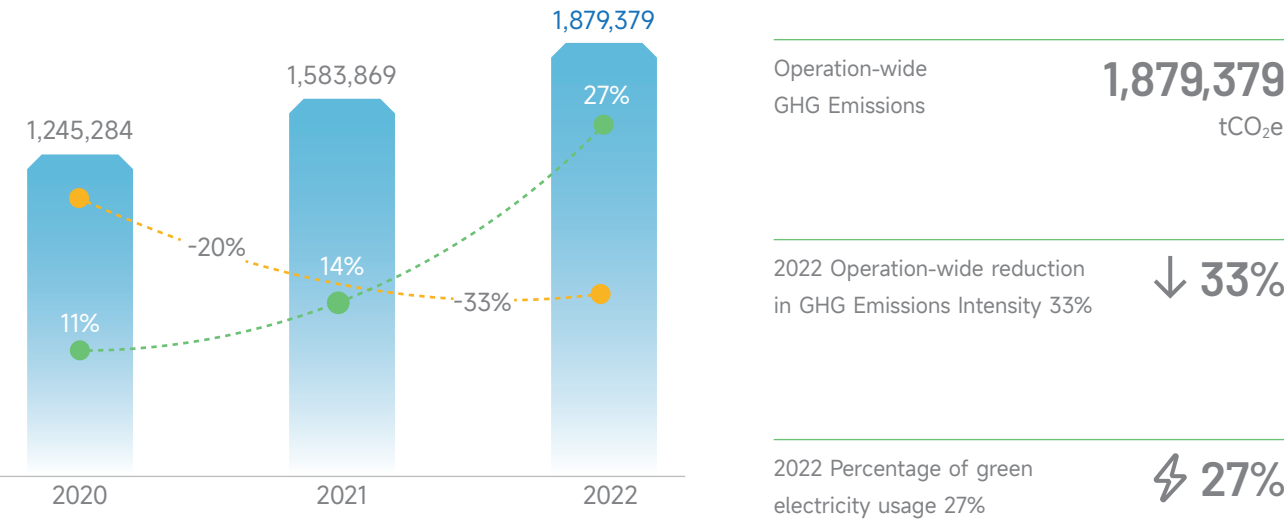


Figure 2 Greenhouse Gas Emissions within the Scope of Operation (Scope 1 and Scope 2) in 2020-2022



Green and Low-Carbon Initiative

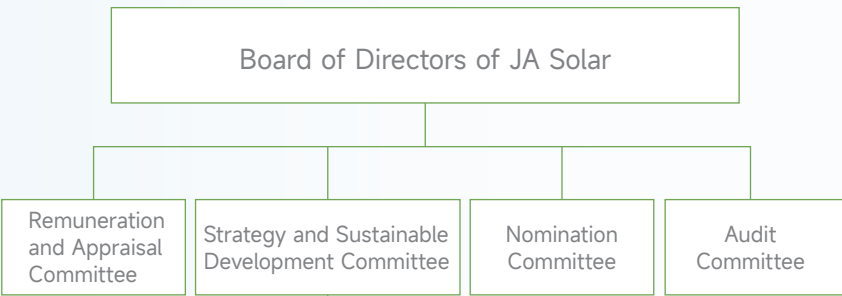
As one of the world’s leading photovoltaic companies in terms of module shipments, JA Solar improves its organizational structure, constantly promotes its green and low-carbon transformation, steadily raises the proportion of green power usage, comprehensively implements green manufacturing, proactively boosts energy usage efficiency, vigorously enhances the coordinated efficiency of pollution reduction and carbon emissions reduction, and incorporates the concept of green and low-carbon development into the entire production and operation management cycle. In downstream links, JA Solar is responding to China’s national policies on developing new clean energy and the strategy of adjusting the national energy structure to support China’s strategy of “carbon peaking and carbon neutrality”. JA Solar is working closely with major power companies to facilitate governments worldwide to increase the ratio of power generated by new energy and is integrating with various industries through the “photovoltaic plus” model to help clients achieve low-carbon transformation. JA Solar is also developing the smart energy business in many regions. By 2022, the Company possesses **963MW** of photovoltaic power plants with an annual green power generation of over **800million** KWh.

Improved Organizational Structure

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

Board of Directors

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



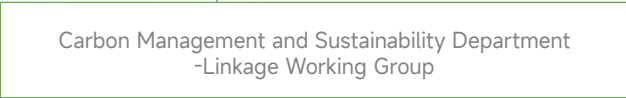
Management Leadership

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



Executive Leadership

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



Green Manufacturing

Energy conservation and emission reduction



JA Solar fully fulfills the requirements of energy conservation and environmental protection as well as pollution reduction and carbon emissions reduction. The Company also actively carries out equipment energy conservation upgrade, waste heat recovery, renewable energy alternatives and other emission reduction actions.

The Company proactively advances the construction of distributed photovoltaic power plants in its production bases across the world, and increases the proportion of self-generated and self-consumed green power. The Company's clean power usage was 1,148.93GWh in 2022. The installed capacity of the Company's self-generated and self-consumed distributed power plants reached 50MW, and the proportion of green power usage stood at 26.76%. In addition, the Company prioritizes the regions with excellent energy structures in the process of building up new production capacity and implements green manufacturing in an all-round way to provide zero-carbon products and establish zero-carbon industrial parks.

Green Logistics and Packaging



JA Solar actively explores three-dimensional warehouse and multimodal transportation mode, and works with logistics suppliers to explore the creation of a new model of green logistics. In terms of on-site transportation, the Company promotes the "fuel to electricity" project for forklift trucks. This reduces the carbon footprint of on-site transportation segments, thus progressing towards a zero-carbon green factory. In terms of off-site transportation, the Company explores fast, stable, and safe green transportation methods including sea rail intermodal transportation and barge mass transportation, tries to develop local supply chains, and promotes localized procurement, so as to lower carbon emissions generated in transportation.

The Company positively explores green packaging and the recycling of packaging materials. In 2022, its manufacturing bases continued to advance the recycling of waste pulp and the reproduction of carton packaging. It also explored the method of recycling packaging materials with its suppliers and realized the recycling of silicon packaging by using silicon cardboard boxes instead of the original packaging.

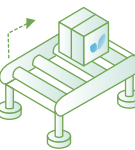
Green Office



JA Solar attaches great importance to the impact of employees' office work on the environment, and has created internal systems such as the "Management System for Office and Logistics Supplies", "Lighting Safety Management System" and "Enterprise Water Conservation Management System" to promote electricity saving, paper saving and green travel to create a low-carbon and environmentally friendly green office environment.

The Company, represented by its global management headquarters in Beijing, has been increasing the proportion of its new energy vehicles and implementing carbon reduction in daily work through initiatives such as electricity saving, paperless office and centralized garbage collection and recycling. In 2022, the Company verified the greenhouse gas emissions of Scope 1 and Scope 2 of the headquarters for the year 2021, and offset the greenhouse gas emissions that could not be eliminated by purchasing the Verified Carbon Units (VCUs) produced by the Liangdu reforestation VCS+CCB certification project, achieving carbon neutrality at the operating level in 2021.

Product Disassembly and Recycling



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

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

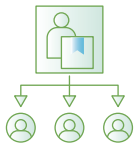
Green Products



JA solar continuously improves the technology conversion rate of PV products, while actively fulfilling its social responsibilities to create green and low-carbon products.

The Company appoints experts in the product technology R&D department responsible for product carbon footprint research and management. Currently, all the Company's mainstream products have passed the French Certisolis carbon footprint certification. 182mm(the module size) mainstream products have obtained the Italian UL EPD (Environment Product Declaration) environmental protection product declaration certification. The core technology "High-efficiency PERC Single Crystal Solar Cell and Module Technology" has been selected into Green Technology Promotion Catalogue (2020) issued by the National Development and Reform Commission. Several products have also been included in the first batch of "Green Design Products" for PV cells and modules by the Ministry of Industry and Information Technology.

Supplier Management



JA Solar is devoted to coordinating its upstream and downstream partners to reduce carbon emissions and encourage its suppliers to disclose their carbon footprint, utilize green power, and complete carbon footprint certification. In October 2022, the Company improved its Management and Control Procedure for Auxiliary Material Procurement and included factors such as disclosure of carbon emissions, use of green power, and possession of carbon footprint certification into the scorecard for new suppliers' development, introduction and qualification assessment. Suppliers with the above-mentioned supporting documents will have certain advantages in bidding. Additionally, JA Solar has signed a strategic partnership agreement with the Carbon Disclosure Project (CDP), becoming the first photovoltaic enterprise in the world to join the CDP Supply Chain Program. JA Solar will continue to facilitate carbon emissions reduction performance throughout its supply chain and improve its suppliers' ability to cope with climate change risks.

Enhancing the Influence of Green and Low-Carbon

April 2022

JA Solar continued to promote green and low-carbon development throughout the product lifecycle, explored the possibility of disassembling and recycling products, joined hands with multiple parties to launch the “center for development and cooperation of photovoltaic recycling industry” and became the vice-chairman unit of the center. The company has been engaged in establishing and improving the system for the photovoltaic recycling sector.

August 2022

JA Solar joined the Sustainable Market Initiative (SMI) China Council and participated in the inaugural meeting of the China Council. During the event, Chinese and foreign enterprises conducted exchanges and discussions on sustainable development topics such as carbon finance and green and low-carbon transformation, further consolidating the wisdom and strength of all parties to speed up a “green recovery” of the world economy.



October 2022

JA Solar concluded a strategic cooperation agreement with the China Beijing Green Exchange to conduct in-depth cooperation in multiple fields such as voluntary emission reduction market and enterprises' low-carbon development, and explore new approaches for the photovoltaic industry to cope with climate change.



October 2022

JA Solar attended the “Zero-Carbon Mission International Climate Summit 2022” and signed a strategic cooperation agreement with the World Wildlife Fund (WWF).



November 2022

JA Solar joined the Science Based Targets initiative (SBTi) to help limit global warming to around 1.5° C and realize the net zero carbon emissions no later than 2050.



November 2022

JA Solar participated in the events during the 27th session of the Conference of the Parties to the UNFCCC (COP27). Chairman Jin Baofang attended the “China Pavilion” event and proposed JA Solar’s sustainable development concept “Green to Green, Green to Grow, Green to Great”. During COP27, JA Solar also hosted and took part in multiple forums, demonstrating the Company’s ambition for climate change to the world. In addition, the Company voluntarily joined the China Corporate Climate Action (CCCA) to promote carbon emission reduction, green transformation, and green innovation.



November 2022

JA Solar, the only representative of Chinese private enterprises, participated in the Sustainable Market Initiative (SMI) Global Council Networking Event and attended the meeting with King Charles III of the UK.



December 2022

JA Solar became the first photovoltaic enterprise in the world that joined the CDP Supply Chain Program.



June 2023

JA Solar became one of the first initiative support enterprises that joined China's "Green Electricity 100%" action.



Appendix: Verification Information (2020)



鉴衡认证
CHINA GENERAL CERTIFICATION

温室气体排放验证声明
Assurance Statement of GHG emissions

证书编号 :
Certificate No. :

CGC-CC&SS-CN20220034

企业名称 :
Company Name :

晶澳太阳能科技股份有限公司
JA Solar Technology Co., Ltd.

地址 :
Address :

河北省邢台市宁晋县
Ningjin County, Xingtai City, Hebei Province

报告周期 :
Reporting Period :

2020 年 1 月 1 日 – 2020 年 12 月 31 日
01/01/2020- 31/12/2020

温室气体排放量
化标准 :
Applied Standards :

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

报告边界 :
Reporting Boundary :

全球运营范围内的温室气体排放量
GHG emissions from global operations

温室气体类别 :
GHG Included :

☒CO₂ ☒CH₄ ☒N₂O ☒HFCs ☐PFCs ☒SF₆ ☐NF₃

温室气体排放量 :
GHG Emissions :

直接温室气体排放量 (类别 1) : 30,965 tCO₂e
来自输入能源的间接温室气体排放量 (类别 2) : 1,214,319 tCO₂e
以上经量化的总排放量: 1,245,284 tCO₂e

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

2022 年 09 月 15 日



鉴衡认证
CHINA GENERAL CERTIFICATION

温室气体排放验证声明
Assurance Statement of GHG emissions

证书编号 :
Certificate No. :

CGC-CC&SS-CN20220042

企业名称 :
Company Name :

晶澳太阳能科技股份有限公司
JA Solar Technology Co., Ltd.

地址 :
Address :

河北省邢台市宁晋县
Ningjin County, Xingtai City, Hebei Province

报告周期 :
Reporting Period :

2020 年 1 月 1 日 – 2020 年 12 月 31 日
01/01/2020- 31/12/2020

温室气体排放量
化标准 :
Applied Standards :

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

报告边界 :
Reporting Boundary :

全球经营活动范围内的其他间接温室气体排放量
Other indirect GHG emissions from global business activities

温室气体类别 :
GHG Included :

☒CO₂ ☒CH₄ ☒N₂O ☒HFCs ☐PFCs ☒SF₆ ☐NF₃

温室气体排放量 :
GHG Emissions :

运输产生的间接温室气体排放量 (类别 3) : 416,454 tCO₂e
组织使用的产品产生的间接温室气体排放量 (类别 4) : 6,963,569 tCO₂e
组织产品的使用有关的间接温室气体排放量 (类别 5) : 215,077 tCO₂e
其他来源的间接温室气体排放量 (类别 6) : 未量化
以上经量化的总排放量: 7,595,100 tCO₂e

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

2022 年 12 月 30 日

Appendix: Verification Information (2021)



鉴衡认证
CHINA GENERAL CERTIFICATION

温室气体排放验证声明
Assurance Statement of GHG emissions

证书编号 :
Certificate No. :

CGC-CC&SS-CN20220035

企业名称 :
Company Name :

晶澳太阳能科技股份有限公司
JA Solar Technology Co., Ltd.

地址 :
Address :

河北省邢台市宁晋县
Ningjin County, Xingtai City, Hebei Province

报告周期 :
Reporting Period :

2021 年 1 月 1 日 – 2021 年 12 月 31 日
01/01/2021- 31/12/2021

温室气体排放量
化标准 :
Applied Standards :

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

报告边界 :
Reporting Boundary :

全球运营范围内的温室气体排放量
GHG emissions from global operations

温室气体类别 :
GHG Included :

☒CO₂ ☒CH₄ ☒N₂O ☒HFCs ☐PFCs ☒SF₆ ☐NF₃

温室气体排放量 :
GHG Emissions :

直接温室气体排放量 (类别 1) : 35,406 tCO₂e
来自输入能源的间接温室气体排放量 (类别 2) : 1,548,463 tCO₂e
以上经量化的总排放量: 1,583,869 tCO₂e

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

2022 年 09 月 15 日



鉴衡认证
CHINA GENERAL CERTIFICATION

温室气体排放验证声明
Assurance Statement of GHG emissions

证书编号 :
Certificate No. :

CGC-CC&SS-CN20220043

企业名称 :
Company Name :

晶澳太阳能科技股份有限公司
JA Solar Technology Co., Ltd.

地址 :
Address :

河北省邢台市宁晋县
Ningjin County, Xingtai City, Hebei Province

报告周期 :
Reporting Period :

2021 年 1 月 1 日 – 2021 年 12 月 31 日
01/01/2021- 31/12/2021

温室气体排放量
化标准 :
Applied Standards :

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

报告边界 :
Reporting Boundary :

全球经营活动范围内的其他间接温室气体排放量
Other indirect GHG emissions from global business activities

温室气体类别 :
GHG Included :

☒CO₂ ☒CH₄ ☒N₂O ☒HFCs ☐PFCs ☒SF₆ ☐NF₃

温室气体排放量 :
GHG Emissions :

运输产生的间接温室气体排放量 (类别 3) : 612,426 tCO₂e
组织使用的产品产生的间接温室气体排放量 (类别 4) : 9,286,298 tCO₂e
组织产品的使用有关的间接温室气体排放量 (类别 5) : 400,801 tCO₂e
其他来源的间接温室气体排放量 (类别 6) : 未量化
以上经量化的总排放量: 10,299,525 tCO₂e

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

2022 年 12 月 30 日

Appendix: Verification Information (2022)



鉴衡认证
CHINA GENERAL CERTIFICATION

温室气体排放验证声明
Assurance Statement of GHG emissions

证书编号 :
Certificate No. :

CGC-CC&SS-CN20230002

企业名称 :
Company Name :

晶澳太阳能科技股份有限公司
JA Solar Technology Co., Ltd.

地址 :
Address :

河北省邢台市宁晋县
Ningjin County, Xingtai City, Hebei Province

报告周期 :
Reporting Period :

2022 年 1 月 1 日 – 2022 年 12 月 31 日
01/01/2022- 31/12/2022

温室气体排放量
化标准 :
Applied Standards :

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

报告边界 :
Reporting Boundary :

全球运营范围内的温室气体排放量
GHG emissions from global operations

温室气体类别 :
GHG Included :

☒CO₂ ☒CH₄ ☒N₂O ☒HFCs ☐PFCs ☒SF₆ ☐NF₃

温室气体排放量 :
GHG Emissions :

直接温室气体排放量 (类别 1) : 45,268 tCO₂e
来自输入能源的间接温室气体排放量 (类别 2) : 1,834,111 tCO₂e
以上经量化的总排放量: 1,879,379 tCO₂e

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

2023 年 03 月 17 日



鉴衡认证
CHINA GENERAL CERTIFICATION

温室气体排放验证声明
Assurance Statement of GHG emissions

证书编号 :
Certificate No. :

CGC-CC&SS-CN20230003

企业名称 :
Company Name :

晶澳太阳能科技股份有限公司
JA Solar Technology Co., Ltd.

地址 :
Address :

河北省邢台市宁晋县
Ningjin County, Xingtai City, Hebei Province

报告周期 :
Reporting Period :

2022 年 1 月 1 日 – 2022 年 12 月 31 日
01/01/2022- 31/12/2022

温室气体排放量
化标准 :
Applied Standards :

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

报告边界 :
Reporting Boundary :

全球经营活动范围内的其他间接温室气体排放量
Other indirect GHG emissions from global business activities

温室气体类别 :
GHG Included :

☒CO₂ ☒CH₄ ☒N₂O ☒HFCs ☐PFCs ☒SF₆ ☐NF₃

温室气体排放量 :
GHG Emissions :

运输产生的间接温室气体排放量 (类别 3) : 1,238,644 tCO₂e
组织使用的产品产生的间接温室气体排放量 (类别 4) : 14,248,507 tCO₂e
组织产品的使用有关的间接温室气体排放量 (类别 5) : 215,231 tCO₂e
其他来源的间接温室气体排放量 (类别 6) : 未量化
以上经量化的总排放量: 15,702,382 tCO₂e

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

2023 年 03 月 30 日