



2023

Environmental, Social and Governance Summary Report

SHANGHAI AIKO SOLAR ENERGY CO., LTD.

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Chairman's Message

Welcome to the ESG Report prepared by AIKO. On behalf of the Board of Directors, I would like to extend our heartfelt thanks for your understanding and support. 2023 has been a year of highs and lows for the photovoltaic (PV) industry. We have navigated market turbulence, technology races, and trade disputes, but also soared to new heights in production and exports, diversified our offerings, and welcomed a renaissance of technological breakthroughs. PV enterprises remained resilient and moved steadfastly forward amid change and challenge. We are conscious that balanced growth demands an eye on both immediate needs and the horizon, and our operations reflect a blend of past wisdom and future vision. With our ambition to march in step with the nation's rhythm and resonate with the era's pulse, we remain committed to our mission of "empowering transformation towards a carbon-free era" featuring low-carbon transformation and sustainability.

We see corporate governance as the cornerstone of our steady progress. In 2023, we evolved the Strategy Committee to the Strategy and Sustainability Committee, broadened its ESG scope and set up a dedicated ESG Task Force. This led to a three-tiered sustainability management communication and coordination mechanism of governance, management, and execution, fully integrating sustainable work into daily operations to ensure our practices are systemic, regular, and enduring. We nurtured transparent conversations with stakeholders, directly addressing their needs. We also identified 19 material issues featured by "clean energy opportunities", achieving fruitful results spanning from internal governance to external value creation.

We anchor our enterprise on the principles of responsible management. Leading with R&D, refining our products, and forging alliances with suppliers, we champion a blueprint for low-carbon, secure production. We have established a comprehensive R&D innovation framework, invested RMB1.224 billion in technological innovation in 2023, and strengthened intellectual property and patent protection with 1,111 patents granted domestically and internationally. We managed raw materials with due diligence and issued *the Supplier Code of Conduct and the Statement on Responsible Sourcing of Minerals*, propelling development across the industrial chain. We have also been refining our manufacturing processes to make effective use of water and energy resources and to curb emissions and waste generation. With our prompt response to climate change, we strived to rise as a green standard-bearer in the industry.

We recognize value creation as the engine of our growth. From products to people, we contribute value to employees, customers, industries, and society's sustainability, sharing the carbon-free benefits with our partners. In 2023, we improved our All Back Contact (ABC) series, yielded R&D results, and broke through the limits of crystalline silicon cell technology, maximizing the value of every inch of sunlight. We grew alongside our employees and issued the *AIKO Labor Policy* and *AIKO Human Resources Development and Management Policy*, safeguarding employee rights and caring for their lives to breathe respect, belonging, and pride into the workforce. We also optimized customer service management, improved customer satisfaction, and effectively communicated and collaborated with partners at home and abroad to contribute more to the Company's sustainability and a future carbon-free society shared by all.

2024 marks a year of monumental change for the PV industry, a period ripe with strategic adjustments and technological leaps. The industry's sweeping transformations emerge from a confluence of firm commercial intent and the maturation of external contexts. At AIKO, our commitment is unwavering, grounded in our mission to lead and shape the industry's future. We meet uncertainty head-on with strategic resolve, pushing industry boundaries forward with pioneering technological disruptions. We are at the forefront of the zero-carbon energy revolution, steering our planet to an advanced green ecological civilization.

——Chairman of Shanghai Aiko Solar Energy Co., Ltd.

Chen Gang

About AIKO

Shanghai Aiko Solar Energy Co., Ltd. (stock code: 600732.SH) has been a pioneer in the new energy industry for 14 years, with a global team of leading research experts dedicated to the research and development of core PV technologies. We offer our global customers with high-efficiency and reliable solar cells, ABC (All Back Contact) modules, and scenario-based, integrated photovoltaic energy solutions that incorporate energy and digital technologies.



AIKO has been a pioneer in the new energy industry for

14 years

total shipments exceeded

120 GW

invested more than in R&D in 2023

RMB **1.224** billion

held a total of patents domestically and internationally

1,111 items

Our Business

Solar cells

In 2023, AIKO reached record sales in various overseas markets, leading in sales across South Korea, India and other countries and consistently ranking within the top three industry leaders in solar cell shipments for several years.

- PERC cell research and manufacturing
- Semiconductor monocrystalline production
- N-type high-efficiency cell R&D

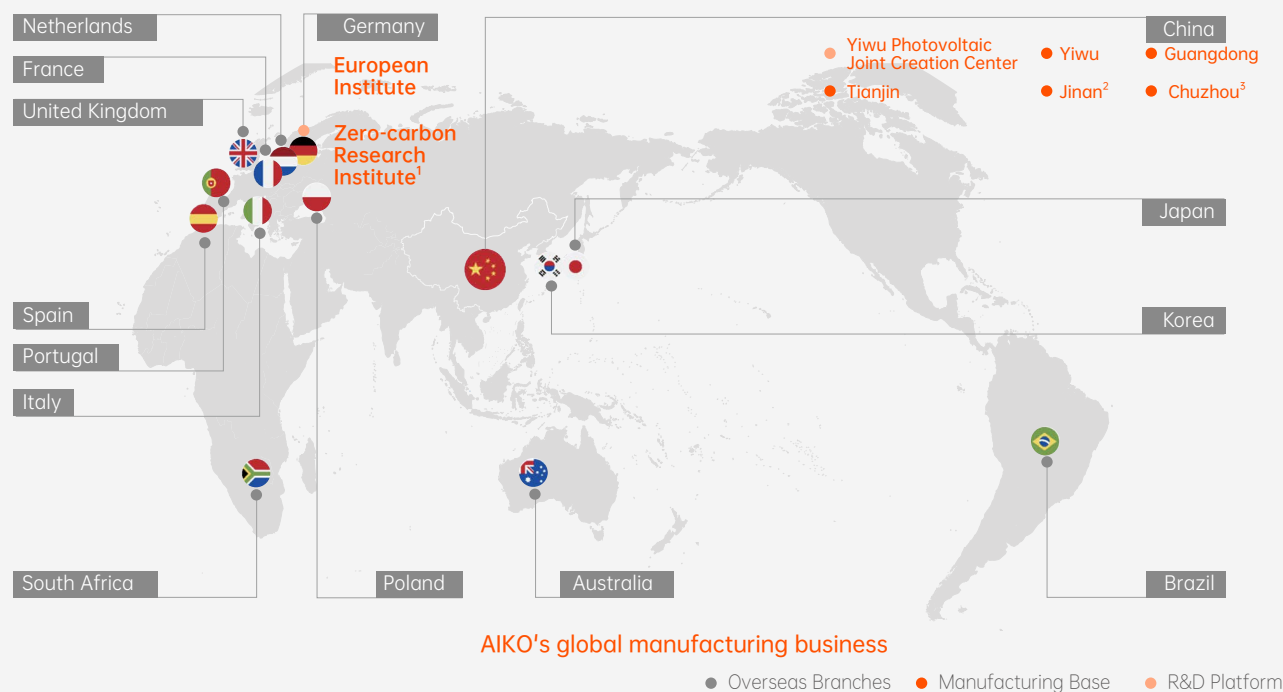
ABC cells and modules

In 2023, AIKO unveiled its ABC modules as in the Neostar series, Comet series, and Stellar series, covering the three major scenarios in residential, commercial and industrial, the utility-scale scenarios. The ABC module series tackled industry hurdles including silver-free coating technology and ultrafast laser patterning, and laid a solid foundation for building an all-around ABC technology ecosystem.

As of March 2024, our ABC module products have penetrated markets across 18 countries and regions, including China, Europe, Australia, Japan, and South Korea, partnering with over 160 customers and infusing a variety of sectors with next-generation PV technologies.

Solutions

Leveraging the efficient ABC modules, coupled with mounting brackets, inverters, storage systems, and smart energy management, AIKO delivers all-in-one scenario-based, integrated photovoltaic energy solutions for residential, industrial and commercial clients.



¹ In April 2024, the Company planned to establish a zero-carbon research institute in Europe.

² In April 2023, the Company planned to invest in a 30 GW high-efficiency crystalline silicon solar cell project and a complementary 30 GW module project in Jinan, Shandong Province. By the end of the reporting period, the initial 10 GW ABC cell and module project in Jinan has secured land for the project and proceeded to early construction preparations.

³ In March 2024, the Company planned to invest in a 15 GW high-efficiency crystalline silicon solar cell capacity project in Chuzhou, Anhui Province.

Annual Awards

Intersolar AWARD
2023 Photovoltaics

Intersolar AWARD Organizing Committee

PVBL Most Innovative PV Solar
Enterprise Award 2023

Photovoltaic Brand Lab (PVBL)

APVIA Award ·
Technological Achievement

Asian Photovoltaic Industry Association

Red Dot Design Award

German Design Council

2023 ESG Transparency Award

EUPD Research

2023 Industry Product Innovation Award at
the 4th International Sci-tech Innovation Festival

International Sci-tech Innovation Festival Organizing
Committee

PVBL 2023 Top 100 Solar PV
Brands in the World

Photovoltaic Brand Lab (PVBL)

APVIA Award ·
Industrial Contribution

Asian Photovoltaic Industry Association

Photovoltaic Cell/Module Technology
Breakthrough Award at the 2023 China Good PV
Brand Ceremony

IN-EN.com

ESG Governance and Management

Under the oversight of the Board of Directors, AIKO's Strategy Committee was renamed as the Strategy and Sustainability Committee in 2023, augmenting its ESG responsibilities and authority. An ESG task force was also formed, resulting in an ESG management system orchestrated by the President's Office and collaboratively supported by various functional departments.

Governance level	Department in charge	Responsibilities
Supervision	Board of Directors	- Reviewing material ESG issues and the annual ESG report. - Assessing ESG risks and grasping ESG development opportunities.
Decision-making	Strategy and Sustainability Committee	- Overseeing ESG work plans, goals, execution, and achievement of objectives, providing management insights. - Integrating ESG with the Company's operational strategy, considering different ESG factors in the strategic layout process.
Management	ESG Task Force (coordinated by the President's Office)	- Reviewing the accuracy of ESG reports and performance data. - Coordinating the work of the ESG execution team. - Regularly reporting ESG progress to the Board of Directors.
Execution	Functional departments: Human Resources Department, Environmental Health and Safety (EHS) Department, Procurement Department, Quality Management Department, Legal Department, Factory Administration Department, and production bases	- Regularly reporting ESG work to the President's Office. - Responsible for collecting ESG-related data and preparing ESG reports. - Integrating ESG issues into the management of each department.

AIKO's ESG governance framework

Feature

Empowering Transformation Towards a Carbon-free Era

As the global climate crisis intensifies, various industries have responded to the government's call to promote the green transformation of society and achieve environmental sustainability. To meet the demand of the new era, AIKO starts from the concept of sustainability, focuses on R&D, quality management, employee caring, and customer service in the PV sector, supplies "unlimited" green energy for Carbon-free Society development.

SDGs:



Our Sustainable Business Philosophy

With a vision of "becoming a global leader in the PV industry", we are committed to pursuing long-term and effective growth. We mobilize all core resources into areas such as technological R&D, bottleneck solutions, and manufacturing upgrades. We prioritize value creation in our business processes for employees, society, and the environment, striving to offer more efficient and environmentally friendly PV products.

We focus on technological innovation. While considering the diversified needs of our customers, the company actively responds to climate change and continuously develops environmentally friendly new technologies, products and processes. In 2023, we developed 9 provincial-level innovation platforms, and were dedicated to pushing the boundaries of crystalline silicon cell technology through ABC cell technology, aiming to bring its photoelectric conversion efficiency closer to the theoretical limit of 29.56%. As of the release of this report, ABC cell average mass production efficiency surpassing 27%, ABC module mass production delivery efficiency surpassing 24.2%.

We put quality in the first place. We always require ourselves with stricter quality standards, build a three-in-one model integrating "zero-defect concept, ISO 9001 standard and process change" based on Crosby's 4P solution, and establish a full value chain quality management system, which promotes the company to continuously improve product performance, technological innovation and management optimization. By 2023, AIKO has established a full value chain quality management system, with 100% coverage of ISO 9001 quality management system certification in all bases.

We strive to better respond to employee and customer needs. We adhere to the culture of "customer-centered" and the principle of "coming from customers to customers". 2023, AIKO was recognized by 7 customers with 100% scores, the top three in all the surveys in of customer comprehensive satisfaction surveys accounted for 42.8%, and the first ranked in the annual quality performance evaluation of major customers accounted for 55.3%, effectively realizing the overall customer complaint rate decreased by 73%, the customer complaint resolved reached 100%, and the customer satisfaction survey result was 91 points.



Designing and Manufacturing Better Products

To better promote the transformation of the PV industry, AIKO upgrades its technology and products, embeds eco-friendly concepts throughout the entire product lifecycle, has developed and implemented silver-free technology in mass production, effectively addressing the looming "silver consumption" challenge as the solar industry moves into the terawatt era. At the same time, we analyze the requirements of different ecological environments for products, aiming to create products that are more environmentally adaptable and eco-friendly.

AIKO's selected innovation achievements in 2023

Innovations	Stage of production	Technological progress
Lightly-doped magnetic field applied czochralski method (LD-MCZ)	Silicon wafer	• Address challenges brought by resistivity control and breakage control. • Increase the ABC cell efficiency above the 27% threshold.
Full area illuminated and all passivating cell technology	ABC cell	• Generate power with maximum efficiency through all c-Si atoms electricity-producible technology.
Ultra-fast laser patterning technology	ABC cell	• One-step laser patterning helps mass produce 25GW cells with lower cost, higher production efficiency and better quality.
Ag-free metallization technology	ABC cell	• Use lower-cost materials like copper, nickel, and tin, instead of silver for electrode production, effectively reducing product exposure to silver price fluctuations.
0BB (busbar-less) string welding technique	ABC module	• Alloying fine busbars with copper tape through welding, to improve the reliability and reduce packaging losses of modules. This is the first large-scale industrialization of cell interconnection and module string welding technology under the 0BB concept passing through rigorous quality and reliability assessment.
Straight-line string technique	ABC module	• Significantly improve the overall quality of ABC modules to ensure better reliability, lower performance degradation and better weather resistance. • ≤ 1% performance degradation in the first year. • ≤ 0.35%/year of performance degradation in the following years.

Ag-free metallization technology

Against the backdrop of the silver shortage, AIKO focuses on innovation and has developed silver-free metallization technology, which employs electrochemical and chemical methods to plate copper, nickel, and tin. The technology has achieved higher conversion efficiency at lower costs and overcome the challenges of traditional cell production, paving the way for sustainable development in the cell industry and bringing a more promising future to the sector.

Three major application scenarios



The shading optimization function of ABC modules effectively reduces the power loss due to dust accumulation by reducing the frequency of cleaning, and it performs exceptionally well in high-temperature desert conditions, with a power output decrease of only 0.26% for every degree Celsius temperature increase, compared to 0.29% decrease for TOPCon modules.



The partial shading optimization feature of ABC modules can increase installed capacity by an additional 5.8% or more and reduce shading losses from mountain shadows and weed obstructions.

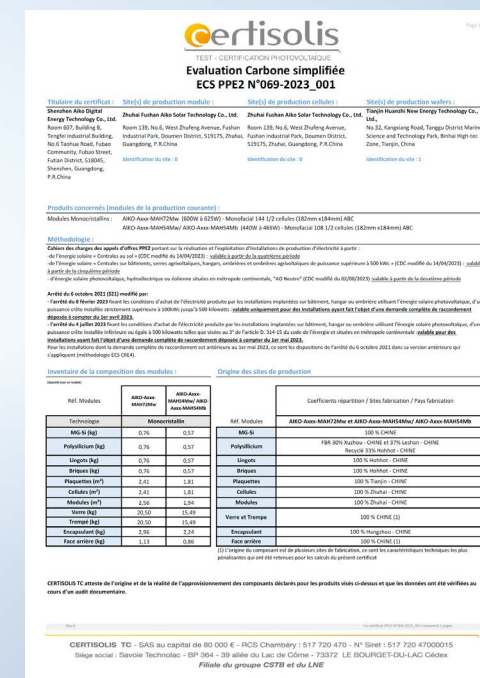


ABC modules' innovative high-resistance water encapsulation technology, along with anti-corrosion frames and waterproof cap design, can effectively mitigate the negative impacts of mudflat environment on components.

Moreover, for the same area, ABC modules have a power output over 5.8% higher than TOPCon modules, which not only saves resources but also enhances product efficiency.

Carbon footprint certification

AIKO remains steadfast in advancing our products' carbon footprint verification to proactively answer the global call for low-carbon, eco-friendly actions. Significant strides were made in 2023, as our second generations of ABC Neostar and Comet single and dual-glass products were certified by the French agency Certisolis with a carbon footprint certification.



AIKO's products received Certisolis's carbon footprint certification

Pushing Forward the Development of a Carbon-free Society

We are well aware that a carbon-free society requires the deep integration of PV energy with other energy models and the extension and improvement of the PV supply chain and industrial chain. Therefore, we collaborated closely with top international research institutions, governments, businesses, and other sectors of society to secure significant technological edges in key areas; We responded to market demand by setting new design standards for the industry to jointly push forward the development of a zero-carbon society.

International cooperation

As a technology leader, AIKO has always been driving the rapid progress of technologies in the PV industry to achieve higher product efficiency and better product quality. From P-type PERC cells, and N-type TOPCon/ TOPCon+ cells, to ABC cells, we have been advancing the technological innovation of the whole industry chain including silicon wafers, cells, modules, and terminal solutions. In doing so, we have actively organized and promoted the industry-university-research (IUR) cooperation and development in the entire industry and contributed to the incubation and application of cutting-edge technologies in PV and related fields.

AIKO built the "Global Joint PV Innovation Center" by pooling the top R&D forces of leading enterprises, research institutions, and universities in the industry to build a collaborative innovation ecosystem with "efficient solar cell technology R&D" at the core. By the end of the reporting period, more than 10 leading enterprises in the PV industry chain had set up joint laboratories in the **Global Photovoltaic Joint PV Innovation Center**, covering fields such as solar cell technology, equipment, raw and auxiliary materials, and testing and inspection.

AIKO set up the **European Research Institute** and cooperated with the Fraunhofer Institute for Solar Energy Systems and other leading PV R&D institutions in the world to jointly carry out the basic theory and mass production technology research of the whole PV industry chain and promote the iterative update of products. By the end of the reporting period, the European Research Institute had successfully certified the efficiency of solar PV conversion, which theoretically reaches the threshold of 65%. This achievement has laid the theoretical foundation for the engineering and technological innovation of fourth-generation multi-layer cells.



Cooperation in building a zero-carbon society

We signed a strategic cooperation agreement with Austria-based Burgenland Energie to establish a joint innovation center focused on "climate neutrality" technologies and solutions and initiated a series of innovative projects, making the cooperation an important example and inspiration for the international community in collectively pursuing sustainable development goals.



Planning Map for Austria-based Burgenland Energie Project

In the Dangan Island project, we took into account the unique geographical environment and energy demand of the island and established an electricity infrastructure combined with a smart energy management cloud platform, realizing a multi-energy complementary micro-grid platform and net-zero emissions for the entire island. Our experience and insights from this initiative have contributed to the development of zero-carbon societies in island regions worldwide.



Planning Map for Zero-Carbon Island Solution in Dangan Island Project

In this report, AIKO will show the company's persistent efforts and remarkable achievements in the field of sustainable development from **Good Governance**, **Responsible Management**, and **Value Creation**, while also highlighting our firm determination and long-term plan to promote the development of the zero-carbon society.

01⁷ GOOD GOVERNANCE

With an effective governance structure as the foundation, AIKO constantly reinforces risk management and control ability, and conduct business ethically, fostering a solid guarantee for corporate operation and long-term value creation.

In response to



SDG16

- **1,597** employees participated in internal control training
- **0** incidents of information security breaches or privacy leaks
- Business ethics training reached a **100%** employee coverage rate
- Sent integrity initiative declarations to **500** key suppliers



1.1

Enhancing Corporate Governance

AIKO has put in place a corporate governance structure with clearly delineated organizational framework and well-defined responsibilities. Meanwhile, we keep engaging with our stakeholders as we improve our corporate governance.



Governance structure:

In 2023, the Strategy Committee was renamed as the Strategy and Sustainability Committee, with its scope of responsibility and authority broadened to encompass ESG issues.



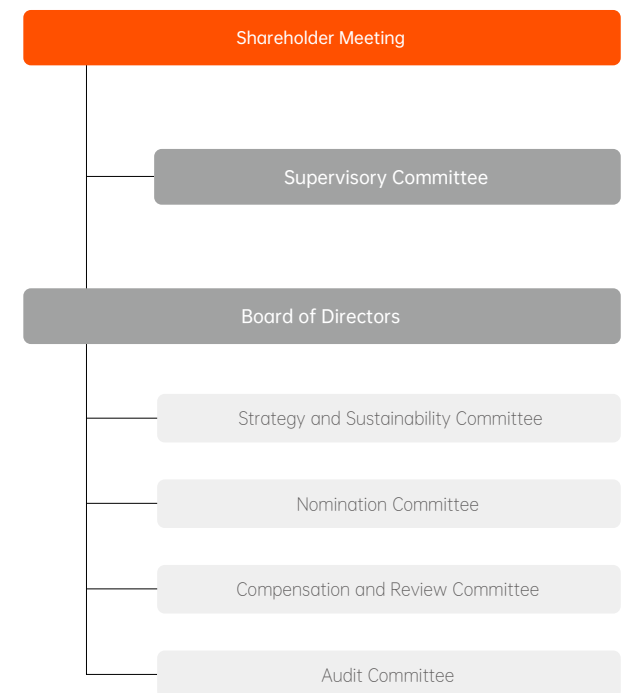
Board diversity:

A 3-year average tenure for directors is stipulated by AIKO, with reappointment allowed upon completion of the first term. Independent directors are limited to a maximum tenure of 6 years. We take into account various factors when electing members, including industry experience, educational and academic background, competency, and gender. We have a total of six directors, three of whom are independent and one of whom is a woman.



Compensation for senior managers:

AIKO internal documents such as the *Compensation Incentive Policy and Performance Management Rules*. Salaries, bonuses, and performance reviews of senior managers for the year are reviewed by the Compensation and Review Committee. This includes fixed compensation, and variable compensation. Additionally, we have incorporated ESG indicators into the performance reviews for senior managers' compensation. These indicators cover various facets such as environmental protection, ecological conservation, employee occupational safety and health, and corporate governance.



AIKO's Structure for the Shareholder Meeting, Supervisory Committee, Board of Directors, and the Specialized Committees under the Board of Directors

1.2

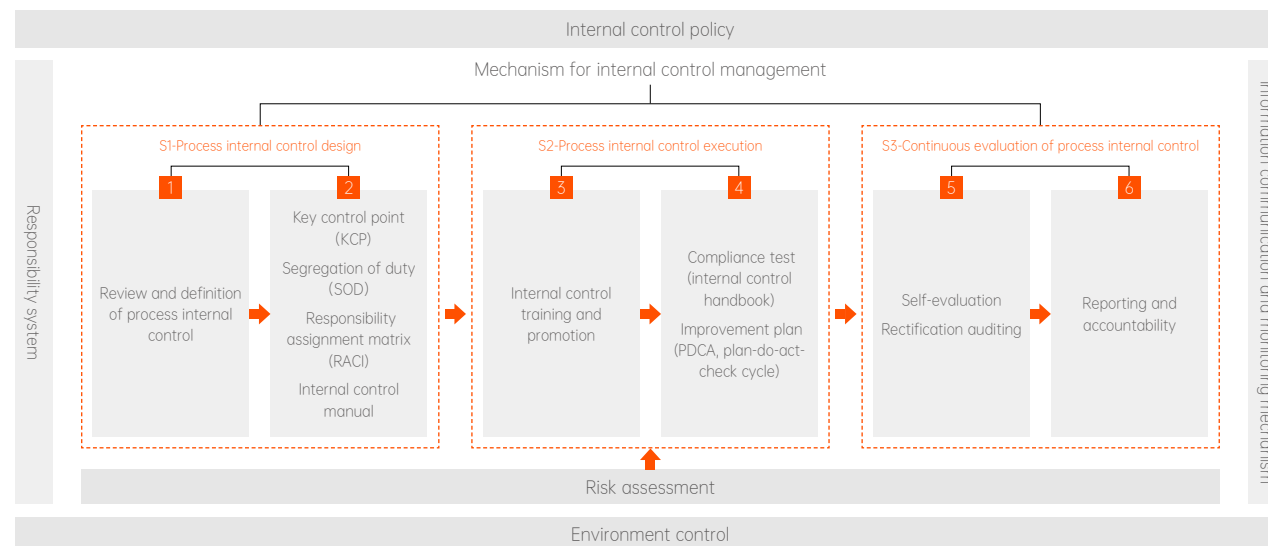
Overall Risk Management and Control

AIKO developed its own risk management and internal control system to ensure standardized business operation and build a positive corporate image.

Internal control and compliance

AIKO has established internal control mechanism with the two-tier audit management system consisting of the Audit Committee and the Audit Department. Through identifying key control points and focusing on the effectiveness of execution, and by employing appropriate measures such as segregation of duties and proper authorization, we effectively ensured accuracy and reliability of internal control monitoring data.

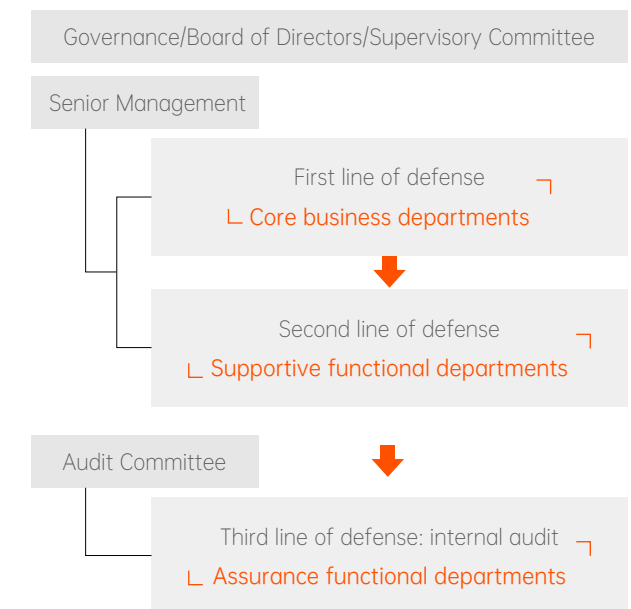
In 2023, we conducted engineering/equipment whole-process audits, bidding process monitoring audits, and specialized management audits in supply chain (including IT audits). Moreover, annual internal control evaluations both at company level and within the 13 business cycles were completed. With third-party supervision provided, we didn't identify other major issues.



Internal Control Mechanism of AIKO

Developed risk management and internal control system

Based on the Three Lines of Defense Model issued by the Institute of Internal Auditors (IIA), we formulated the "Three Lines of Defense Structure" fitting our operational characteristics.



AIKO's "Three Lines of Defense Structure"

In 2023, AIKO released internal regulations such as the *Risk Management Provisions and Guidelines for Risk Identification and Assessment Management*. These internal guidelines prioritize risk identification and assessment in high-risk domains in procurement from various dimensions.



Information security

AIKO developed a four-tier management structure and delivered comprehensive management of information security up to standards in a systematic manner.



We make regular risk assessments in information security and privacy protection through annual self-assessments. To protect customer privacy in a fine-grained manner, we ensure information security through intelligent encryption includes

- integrated terminal security management
- unified identity authentication
- CRM and SAP systems
- ...



In 2023, AIKO provided compliance support for its overseas businesses and initiated the General Data Protection Regulation (GDPR) data compliance project. This involved analyzing and rectifying existing problems to ensure compliance in data transmission. By the end of the reporting period, we had optimized data management policies in areas of human resources, procurement, IT, and internal data transmission, achieving standardized management to meet global development.

Privacy protection

AIKO has established a detailed privacy policy (such as the *Employee Privacy Policy*, *Candidate Privacy Statement*, and *AIKO Website Privacy Policy*), which specifies the principles and norms for the handling of information by all parties. We also established a personal information protection team specifically for overseas markets, to ensure the security of customers' and employees' personal information. No incidents of information security or privacy breaches occurred during the reporting period.

Special training sessions were provided regularly to personnel in sensitive positions.

Information security was embedded in the onboard training for new employees, with an annual coverage rate at

100%

1.3

Adhering to Business Ethics

AIKO strictly abides by applicable laws and regulations, both domestic and overseas, formulating and releasing the *AIKO Business Ethics Management Policy* as our operational integrity guidelines. Meanwhile, we pledge to resolutely refrain from participating in any money laundering activities intended to conceal or cover up the proceeds and their source and nature for crimes such as drug trafficking, terrorist activities, smuggling, corruption, bribery, or activities that disrupt financial regulatory order.

The Board of Directors established the Audit Committee, responsible for overseeing and managing business ethics across the Company. The Audit Department promotes business ethics and anti-corruption work in three areas: prevention, supervision and optimization, with a closed-loop process for addressing issues facilitated by regular self-assessments and self-corrections.



Risk Prevention

- Regularly conduct corruption risk assessment to identify high-risk business areas and positions
- The *Code of Conduct* and *Supplier Code of Conduct* clearly define the business ethics requirements for employees and suppliers
- Establish training program on anti-corruption and business ethics for all employees, contractors, and suppliers

100%

employee coverage rate of anti-corruption training

12

anti-corruption training sessions were conducted for all suppliers



Oversight

- Conduct a comprehensive audit encompassing our entire scope of business once every three years
- Implement a closed-loop system for managing complaints and reports, ensuring timely handling and feedback
- Issue the *Complaint and Reporting Management Regulations* to standardize the handling of complaints and reports

83%

of AIKO's businesses were audited in terms of business ethics

5

business ethics complaints has been received and fully resolved

Zero legal issues related to anti-corruption breaches



Optimization

- Constantly review issues like ethics violations or inadequate ethics understanding to improve internal control procedures
- Conduct annually a Clean Practice Survey among all employees to assess their understanding
- Continuous update advocacy materials

5,323

valid questionnaires has been analyzed

enhanced internal control requirements and improved ethics training

Whistle-blowers protection

In the event of a report, the Audit Department designates personnel to handle the reported information, maintaining strict confidentiality of whistleblowers' personal information as well as the content and information provided in the report. Necessary measures such as anonymity have been taken to protect whistleblowers, and consultation and legal support are provided in case of emergencies. AIKO strongly prohibits any form of retaliation or reprisal against whistleblowers, witnesses, and investigators. In case of such retaliation, appropriate measures will be taken, including termination of employment or business partnership and legal prosecution.

Official Website



Learn more about
"Integrity" page



Wechat: AXSJJC



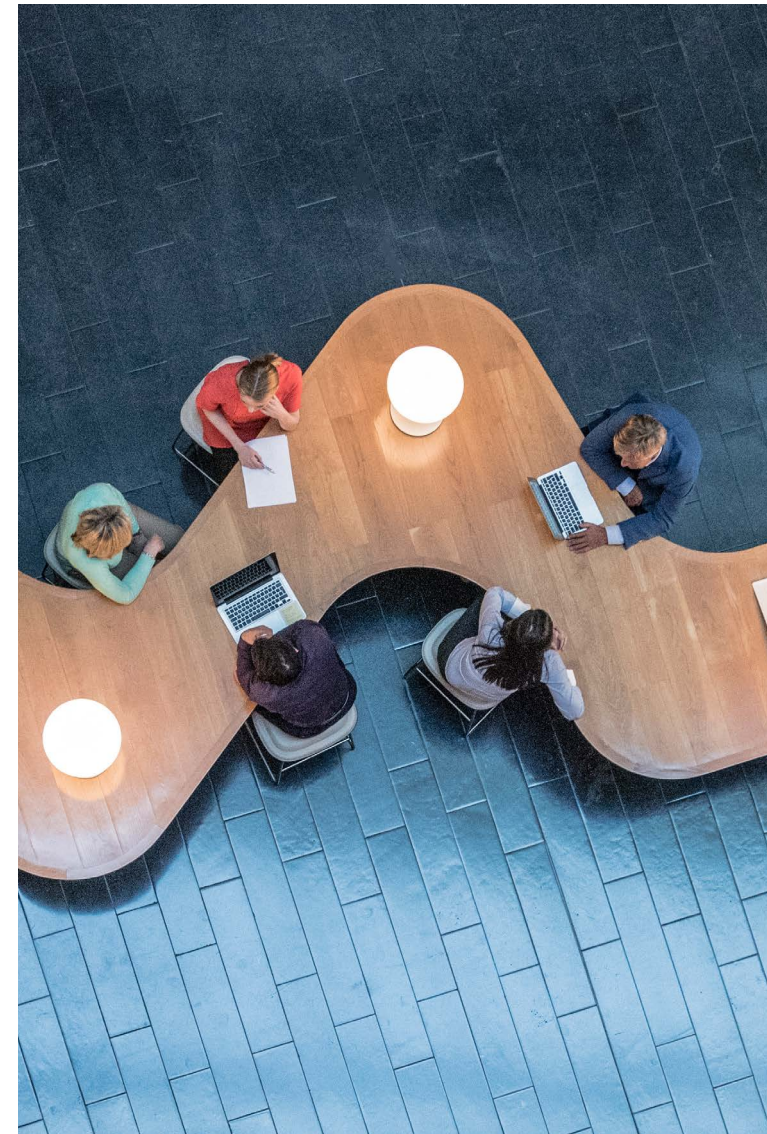
AIKO's integrity complaints and reporting channels



Hotline for complaint and reporting:
+86-0579-89987350



Email:
audit@aikosolar.com



02

RESPONSIBLE MANAGEMENT

AIKO grounds its approach in R&D innovation, relentlessly improve our product quality, and enhance our capacity to seek the most advanced and eco-friendly manufacturing processes, contributing to a greener and more sustainable future.

In response to



SDG3

- Released the *AIKO Environment, Health and Safety Management Policy*
- ISO 45001 occupational health and safety management system certification coverage of **100%**



SDG6

- Drove the implementation of more than **50** water conservation projects for key material suppliers, saving **1.74** million tonnes of water in total.
- Reduced overall machine water consumption by **12%** year-over-year (YoY)
- **470,000** tonnes of water saving



SDG7

- The "Stellar Series" we launched exemplifies our advancements in utility-scale solar technology with an impressive bifaciality rate of **70%**



SDG9

- **407** new applied patents and **260** was granted, totaling **1,111** granted patents



SDG12

- **100%** on-site audits for core materials
- **64** large-scale energy-saving projects throughout the year, saving a total of **107,908** MWh of electricity
- **100%** compliance in all environmental monitoring results
- **100%** compliance mineral usage ratio
- **100%** traceability coverage for tin-containing material raw materials



SDG13

- **16.88** million kWh of green electricity procurement
- **5,581.3** MWh generated from rooftop PV
- Strived to establish national green factories and low-carbon (near-zero carbon) demonstration enterprises



SDG17

- **260** supplier information exchange meetings

2.1

Promoting R&D and Innovation

As a PV pioneer, AIKO has established a comprehensive R&D innovation management system since its inception. Such system strengthened intellectual property patent protection and drove technological progress, thus boosting leapfrog development across the entire industrial chain.

Endeavored to innovation-driven development and self-developed R&D

We sustained a high level of R&D investment that continues to grow, enhancing product efficiency, ensuring cost control, and achieving long-term reliability.



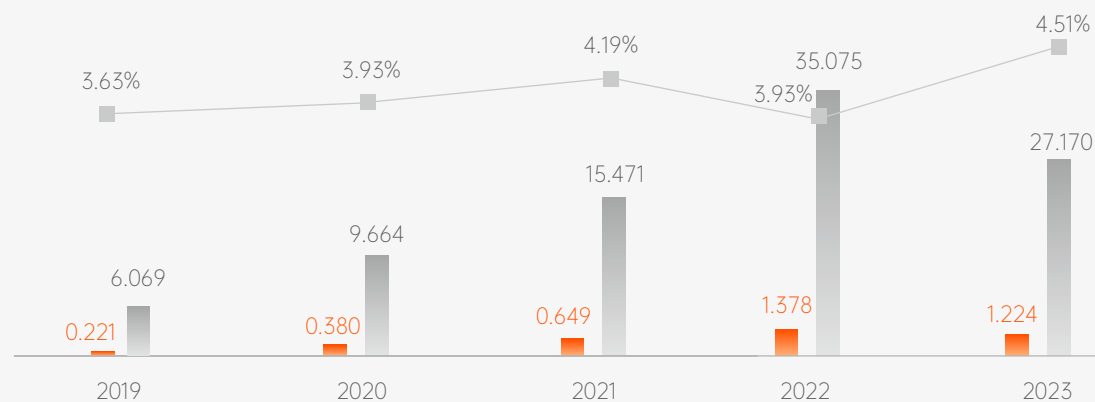
In 2023, R&D investment totaled

RMB **1.224** billion

Accounted for

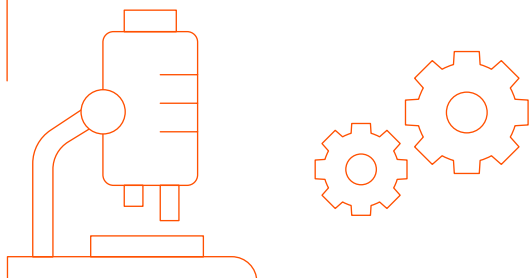
4.51% of its revenue

■ R&D investment (billion RMB) ■ Total revenue (billion RMB) —■— Proportion to total revenue



AIKO's R&D Investment and Its Proportion of Total Revenue (2019-2023)

AIKO actively builds R&D departments, such as the Kuafu Lab, the Jupiter Lab, the Product Technology Department, the Testing Center, and the Industrial Automation Lab; 9 provincial-level innovation platforms located in Zhejiang, Guangdong, and Tianjin. We also co-established cooperation platforms such as EU-China Energy Cooperation Platform (ECECP) and the Global Joint PV Innovation Center with overseas research institutions. In addition, we strived to forge a team of high-level innovative technology talents, establish a post-doctoral workstation, and establish the Technology Advisory Committee in 2023 to further promote the company's technology strategy.

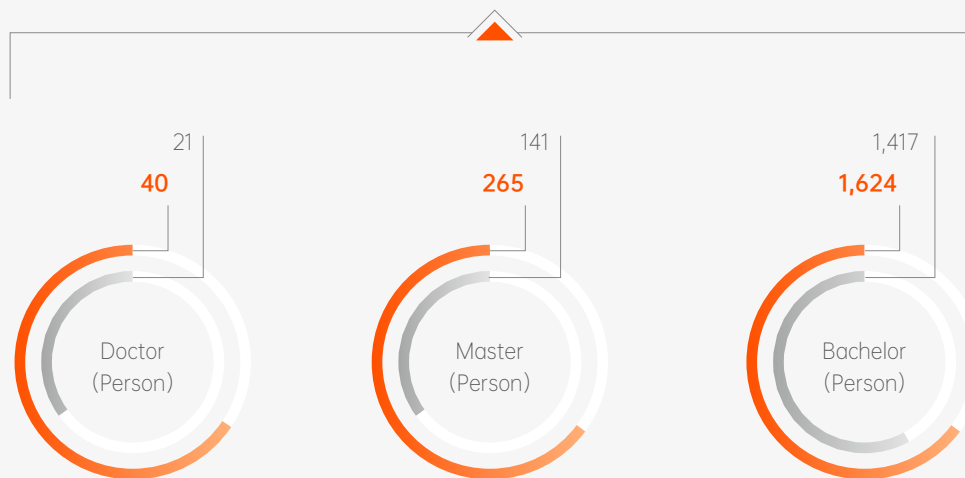
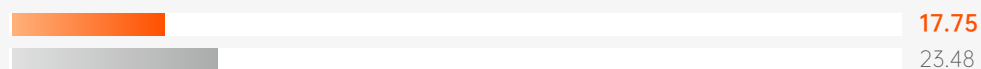


■ 2023 ■ 2022

Total R&D personnel (Person)



Proportion of R&D personnel (%)



AIKO's R&D Personnel (2022-2023)

Intellectual property rights protection

Adhering to the concept of deeply embedding IPR into R&D, AIKO has always provided comprehensive, timely, and effective protection for R&D achievements, and focused on boosting the patent portfolio of cutting-edge technologies, as well as continuously improving patent quality and the proportion of overseas patents. We have established a comprehensive patent risk prevention and control compliance system. Before proposing a new product, we should conduct patent technology investigation and analysis. During the R&D process, a closed-loop management model of early detection, response, and risk elimination should be adopted, to prevent infringement of other companies' IPR.

By the end of the reporting period Company has completed patent applications

1,970

Obtained granted patents

1,111

Among them overseas patents were applied through the *Patent Cooperation Treaty* or the Paris Convention for the Protection of Industrial Property

266

Till now, BC products have accumulated

325

IPR Honors and Awards

In 2023, AIKO

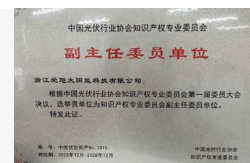
ranked in the top three of the Global Ranking of Solar Cell Patents, 2013-2023, by IPRdaily¹

was awarded the title of "National Intellectual Property Advantage Enterprise" by the China National Intellectual Property Administration



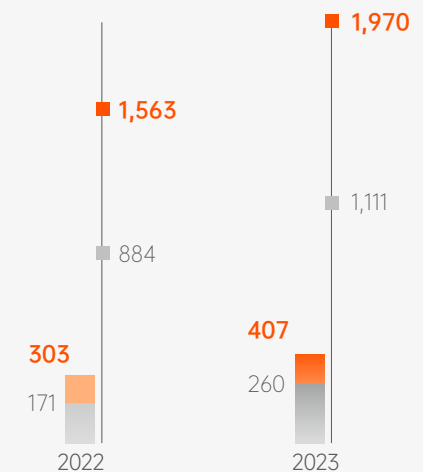
was included in Forbes' Top 10 New Energy S&T Innovation Companies

was appointed as the Deputy Director Unit by the Intellectual Property Professional Committee Working Group of the China Photovoltaic Industry Association



■ Annual patent applications (Item)
■ Annual granted patents (Item)

Total patent applications
Total granted patents²



AIKO's Patents (2022-2023)

¹ IPRdaily is a leading provider of comprehensive global IPR information services.

² Total granted patents is the number of patents after the Company has assessed the validity of the granted patents and eliminated some of the patents that have lost their value.

2.2

Pursuing Lean Production

AIKO is dedicated to the customer-oriented principle with the ambition of being the front-runner in terms of high-quality products. We have established a quality management system and have implemented a series of measures to improve product quality.

Our quality strategy

We focus on customer values and lead the PV industry with high quality products to become the go-to choice for customers seeking exceptional value.

Stage I

Enhancing methods for management and control under laws and maintaining the quality advantage of PERC cells together with the quality advantage of ABC modules.

Stage II

Promoting digitalization and organizational development to help our customers be aware of the quality advantages of ABC modules/TOPCon products.

Stage III

Achieving the comprehensive systematization to reveal the quality advantages of all product lines for our customers.



AIKO's Measures to improve Quality Management Capability

Phase	Measures	Results
 Design, R&D, and quality control	■ Joined our hands with TÜV and Yangtze Institute for Solar Technology to explore the standardized testing measure of the high-efficiency ABC solar modules. ■ Prepared for the ABC testing technology and standard cooperation with the UNSW Sydney, Australia. ■ Established a planned layout of laboratories with Zhuhai as the center of technology. ■ The testing laboratory of Zhejiang Aiko has been accredited as a TMP laboratory by TÜV Rheinland. ■ Hired more than 100 technicians for high-quality projects.	✓ Invented measures for accelerated experiments such as DH, TC, HF, and PCT¹, the application of which lowers the cost of energy consumption for experiment by 40% and shortens the experiment duration by 52%. ✓ Successfully conducted tests and accurate analysis of the performance and reliability of products and materials like PERC/ TOPCon/ABC and module, etc. ✓ Established 7 exploratory solar generation project.
 Introduction and management of suppliers	■ Cooperated with Bosch to launch targeted projects for the improvement of supplier capability, whose priority is the application of Bosch 14Q² and fundamental tools like FMEA, MSA, and SPC³ for strengthening the suppliers' management of raw material quality.	✓ Completed surveys of supplier capability whose results serve as guidelines for the formulation of plans and measures to facilitate the targeted improvement of MSA/Cmk⁴ as well as the on-site management capability of suppliers.
 Production quality management	■ Used quality management tools.	✓ Raised the management efficiency of factors being essential for the product standard.
 Final product test	■ Enhanced the capacity of the smart quality surveillance center by combining the automatic surveillance system with the mechanism of on-site response to abnormality.	✓ Raised the timely on-site issue resolution rate by around 15%.

¹ DH: Damp-heat; TC: Temperature Cycling; HF: Humidity-Freeze-Cycle Test; PCT: Pressure Cooker Test

² 14Q: 14 Quality Principles for the Value Stream by Bosch

³ FMEA: Potential Failure Mode and Effects Analysis; MSA: Measurement, System, Analysis; SPC: Statistical Process Control

⁴ Cmk: Machine CapabilityIndex

2.3

Building a Responsible Supply Chain

AIKO stays committed to conveying the concept of sustainable development to our upstream and downstream suppliers, joining our hands with all partners to build a safe, and win-win responsible supply chain under national laws.

AIKO's 2023 Supplier Overview¹



Total number of suppliers

- Total number of suppliers in Chinese Mainland 325

Percentage 97.89%

- Total number of suppliers in Hong Kong, Macao, and Taiwan regions of China 1

Percentage 0.30%

- Total number of overseas suppliers 6

Percentage 1.81%

Supply chain risk management: In accordance with international initiatives and standards such as the International Labour Organization (ILO) Conventions and the Ten Principles of the UN Global Compact, AIKO pays close attention to suppliers' ESG management. We require suppliers to adhere to the Supplier Code of Conduct, specifying clear expectations and behavioral norms related to supplier employee management, business ethics, and environmental conservation.

Learn more about the
[Supplier Code of Conduct](#)



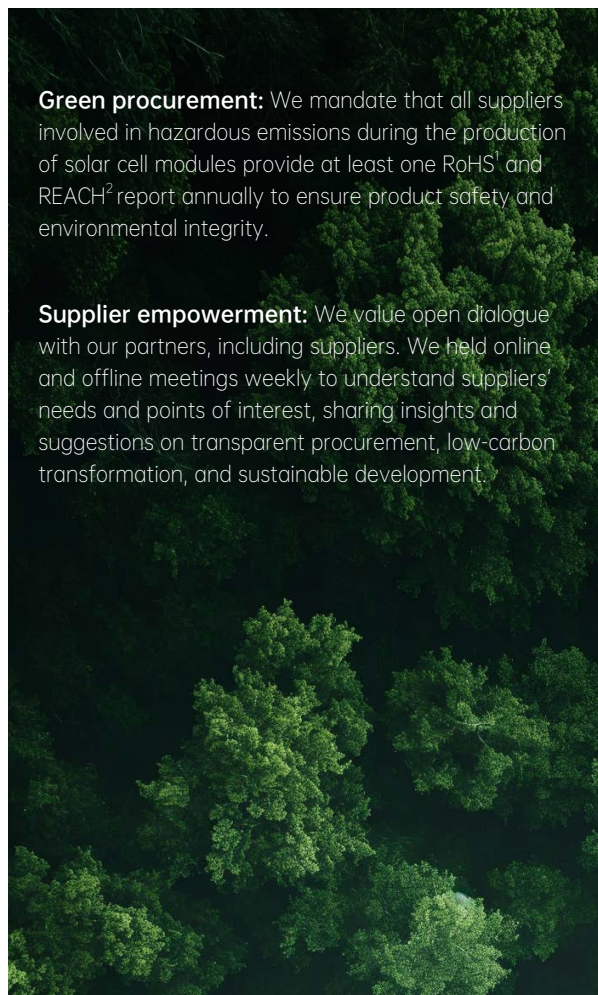
Responsible procurement: The production processes at AIKO occasionally involve the use of tin ore. In light of this, we have drafted and published the Statement on *Responsible Sourcing of Minerals* committing to identify procurement processes related to conflict minerals. We stringently require the subsidiaries and all suppliers to comply with the procurement statement, unequivocally rejecting the use of conflict minerals, and by sourcing raw materials from reliable origins, we ensure the rights, health, and environmental integrity of production regions are safeguarded.

By the end of the reporting period, we had conducted traceability efforts for tin-containing suppliers, with two upstream mining companies involved, neither of which used conflict minerals. In 2024, we plan to initially launch a comprehensive traceability reporting system, which will extend traceability to all silicon rods and silicon materials.

Learn more about the
[Responsible Sourcing of Minerals](#)



¹ The data scope covers AIKO's core suppliers in silicon wafer, non-silicon auxiliary materials, equipment, and infrastructure.



Green procurement: We mandate that all suppliers involved in hazardous emissions during the production of solar cell modules provide at least one RoHS¹ and REACH² report annually to ensure product safety and environmental integrity.

Supplier empowerment: We value open dialogue with our partners, including suppliers. We held online and offline meetings weekly to understand suppliers' needs and points of interest, sharing insights and suggestions on transparent procurement, low-carbon transformation, and sustainable development.

AIKO 2023 Supply Chain Management Highlights

132 (100%)

No. of productive material suppliers screened by environmental risk assessment

15 (11%)

No. of productive material suppliers screened by social risk assessment

100%

Compliance mineral usage ratio

100%

Tin-containing material raw material traceability coverage rate

100%

Coverage of silicon wafer suppliers providing testing reports (i.e. RoHS and REACH)

260

No. of supplier exchange meetings

208

Total hours of supplier training session

100%

Coverage rate of anti-corruption training sessions for suppliers

1.74 million tonnes

Water saved by key material suppliers

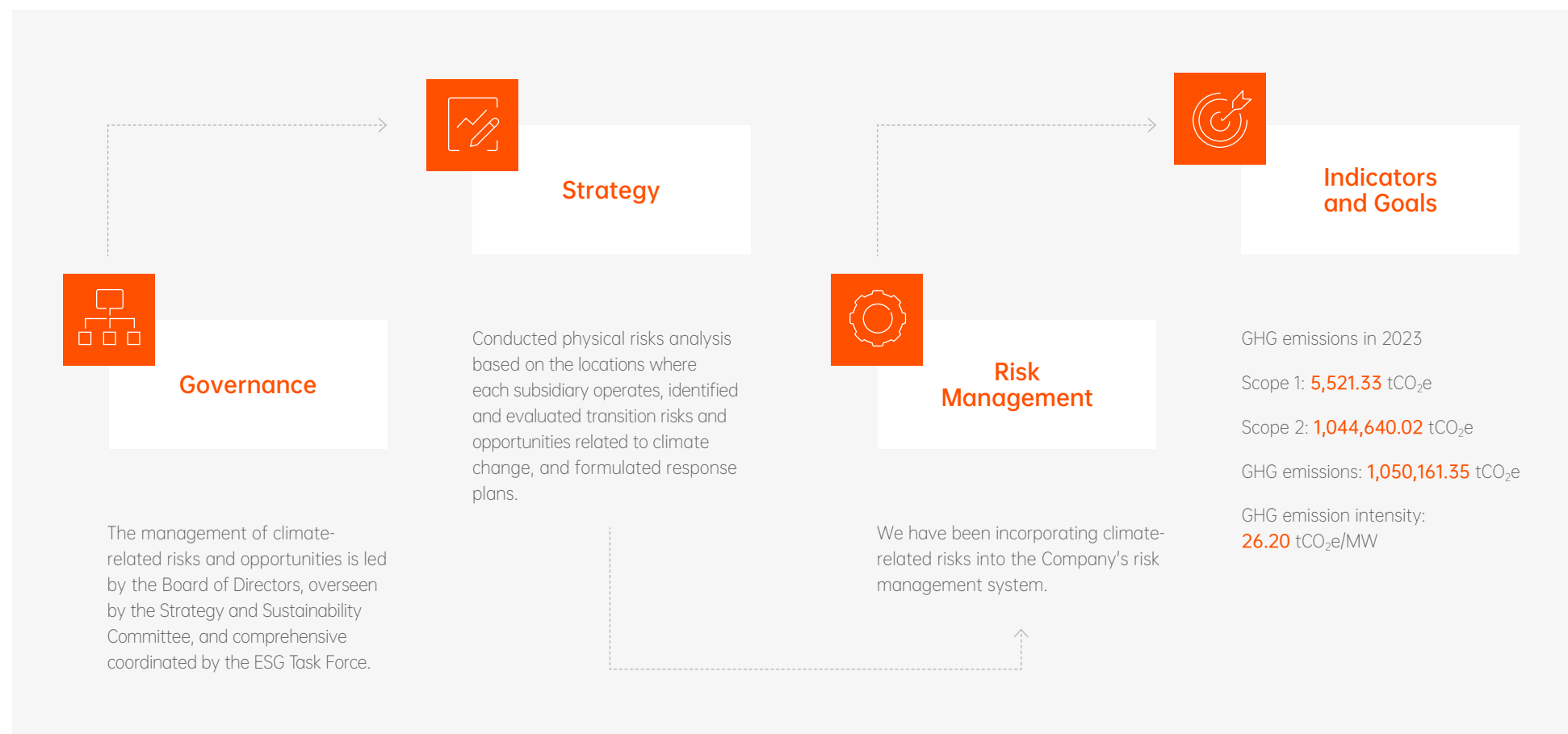
¹ RoHS (Restriction of Hazardous Substances) is a directive passed by the European Parliament and the Council of the European Union in January 2003, restricting the use of certain hazardous substances in electrical and electronic equipment.

² REACH (Registration, Evaluation, Authorisation, and Restriction of Chemicals) regulation ensures that chemicals entering the EU market are registered, evaluated, licensed, and restricted, guaranteeing their safe usage.

2.4

Response to Climate Change

AIKO follows the Task Force on Climate-related Financial Disclosures (TCFD) for identifying climate-related risks and opportunities, consulting international organization analysis reports, and joining forces across various departments to assess climate factors and devise responsive measures, ensuring long-term, stable corporate operations.



2.5

Implementing Green Production

As a global leader and beacon in the PV industry, AIKO has established and improved its environmental management system and vigorously promoted the prevention and disposal of industrial waste to enhance resource and energy management. We adhere to the coordinated development of production and operation and environmental protection and strive for the low-carbon transformation of the energy and power industry.

Energy and water saving targets

For PERC cell, we have cut the water usage and electricity consumption by **44%** and **38%** respectively since 2021. In the future, we will focus on ABC cell and modules and set base year in 2023.

Water

■ Reduction rate of water consumption per ABC cell (base year: 2023)

0%

-10%

-20%

■ Reclaimed water utilization rate

12%

20%

40%

■ Recycled water utilization rate

17%

30%

45%

Electricity

■ Reduction rate of electricity consumption per unit ABC cell and module (base year: 2023)

0%

-15%

-30%

Environment management

Emissions			
Assessment Item	Key Management Rules	Our Measures	Key Performance in 2023
Wastewater 	•Wastewater Operation Control Procedures •Wastewater Pollution Prevention and Control Policy (New)	•Adopting advanced treatment technology and highly automated monitoring technology to achieve the standard of direct discharge of wastewater into natural water bodies	•Implementing more stringent wastewater discharge standards than industry rules; Guangdong Aiko and Zhuhai Fushan Aiko COD dropped by 33%, ammonia nitrogen down by 46.7%, and total nitrogen emission down by 25% •Shandong Aiko plans to build a "near-zero emission" base, with over 93% water recycling rate and over 90% pollutant reduction
Waste gas 	•Waste Gas Operation Control Procedures •Waste Gas Pollution Prevention and Control Policy (New)	•Applying specified technologies, such as spray towers, scrubbing towers, and absorption towers, on different types of gaseous pollutants and setting clear process control indicators	•Zero incidents of excessive emissions of waste gases were reported
Solid waste 	•Solid Waste Management Procedures •Solid Waste Management Policy (New)	•Entrusting qualified agencies to treat sludge and promoting the recycling of resources •Cooperating with the local activated carbon recycling centers to proactively carry out the wasted activated carbon recycling project •Widely adopting environmentally friendly production materials	•100% treated in compliance
Noise 	•Noise Management Policy (New)	•Setting up noise monitoring points in each production base •Carrying out noise reduction at points with high noise levels	•Zero noise complaints were filed against AIKO



Water Resources

Key Management Rules

- *Handbook of Water Resources Management*
- *Performance Assessment System for Water Saving Targets*
- *Audit Measures for Water Conservation*
- *Reward and Punishment System for Water Conservation*
- ...

Our Measures

- Setting up a water treatment center to assist the Strategy and Sustainability Committee in water treatment
- Conducting Baseline Water Stress and Water Quality Risk assessment, and utilizing water resources according to local conditions of each base to reduce pollutant discharge and the risks of local water resources
- Carrying out renovation projects to reduce water consumption and promote the use of reclaimed water and municipal wastewater

Key Performance in 2023

- **Zero** disputes over water resources
- Annual water saving of **470,000** tonnes
- Proportion of alternative sources of water reached **29%**, increased by **78.5%** compared to 2021, of which Zhejiang Aiko has achieved a recycled water utilization rate of **70%**
- Total water consumption of **1,354.80** Ten thousand tonnes, total water consumption intensity of **337.96** tonnes/MW



Energy and Resources

Key Management Rules

- *Handbook of Energy Management*
- *Performance Assessment System for Energy Saving Targets*
- *Reward and Punishment System for Water Conservation*
- *Audit Measures for Water Conservation*
- *Energy Conservation Assessment Process for Conceptual Design of New Plants (new)*
- *Process for Continuous Improvement of Plant Activities (new)*

Our Measures

- Establishing the Power Committee and the Energy Committee and set up the Energy Conservation Implementation Team
- **7** plants under AIKO completed the construction of their energy data informatization system. Zhejiang Aiko, Zhuhai Fushan Aiko, and Tianjin Aiko have been certified to **ISO 50001** energy management systems

Key Performance in 2023

- **64** large-scale energy-saving projects, achieving an annual power saving of **107,908** MWh
- **5,581.3** MWh electricity generation of rooftop PVs, which will generate **37,480** MWh once fully operated
- **16,880** MWh of green power purchased

2.6

Ensuring Safe Production

AIKO adhered to relevant laws on work safety and occupational disease prevention, formulating the AIKO Environment, Health and Safety Management Policy, and EHS Management Handbook to enhance our safety management system. The Safety Committee is responsible for overseeing and managing production safety. We have established production safety targets and an accountability system with signed commitments from management and staff to ensure safety at all levels.

Our management

- assessed the safety maturity of each base along the 18 indicators from the requirements of ISO 45001 and safety production standardization
- implemented safety management activities using accident prevention, incident process management, and post-emergency systems
- established an emergency management system, formulated response plans, created an Emergency Management Leadership Team, and coordinated emergency response through the Emergency Response Team (ERT)
- implemented real-time management of hazardous positions, established health profiles, and conducted detailed occupational disease assessments to identify impacts and formulate countermeasures
- developed a comprehensive safety training and drill plan for all employees

Highlights

100%

coverage rate of ISO 45001 certification

0

serious injuries or more severe accidents

0

occupational diseases rate

0

major fires and explosions

safety maturity score increased from

84.17

to

91.07



1,140

safety trainings with

41,553

participants



307

emergency drills with

23,738

attendees



03

Value Creation

AIKO stands by the ethos of creating shared value and fostering employee growth, customer success, industry advancement, and community development through exemplary governance and responsible management, all while contributing to the sustainable development of our planet.

In response to



SDG1

- RMB **5.7** million of total philanthropic donations
- RMB **5** million annual donation was allocated to support nonprofit research institutions



SDG3

- **100%** coverage rate of free health checkups for employees
- RMB **4** million festival benefits for employees



SDG4

- A full-cycle employee development system covers all domestic and international workforce
- **620,254** training hours with a training expenditure of RMB **38.1** million and an average satisfaction rate of **98%**
- **136** employees attained higher education degrees



SDG5

- Released the *AIKO Labor Policy*
- **4** care activities for female employees
- **3** female employees' clubs and organized **36** activities



SDG8

- **847** employees participated in the stock incentive plan
- Collaborated with **8** universities on industry-academia-research programs

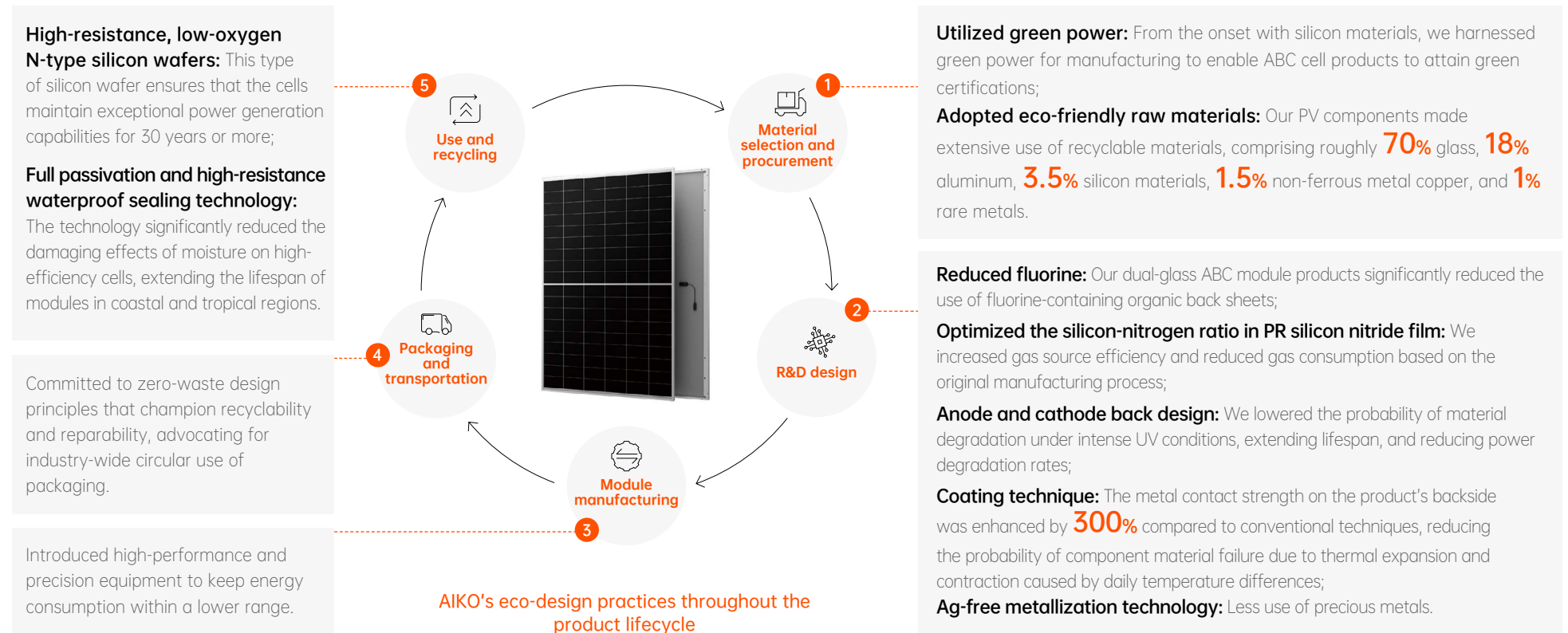


SDG10

- Upheld employment equality in accordance with the *AIKO Labor Policy*

3.1 Crafting Green Products

AIKO responds proactively to the EU "Eco-design Directive", integrating ecological benefits into every facet of our product design.



Highlight

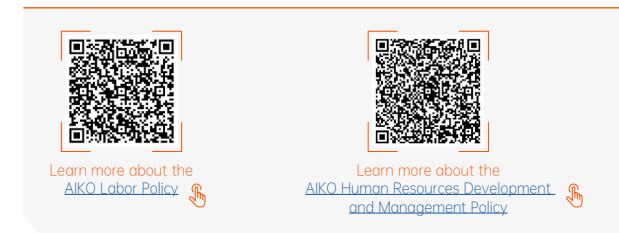
By the end of 2023, our module products have been **WEEE¹ certified** in Austria, Germany, Switzerland, Italy, Finland, the Netherlands, Poland, Spain, and other countries.

¹ Waste Electrical and Electronic Equipment (WEEE) is a directive of the European Union aimed at the proper treatment of a growing volume of electronic and electrical waste.

3.2

Empowering Employees

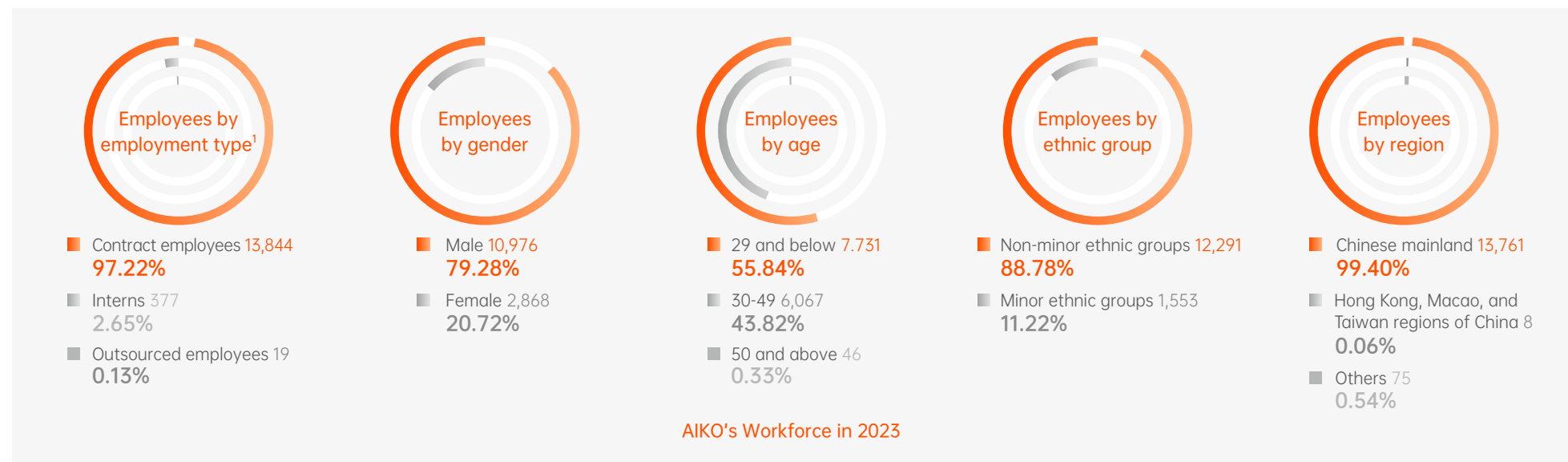
In accordance with *AIKO Labor Policy*, and *AIKO Human Resources Development and Management Policy*, AIKO upholds respect for human rights and strictly adhere to the principle of legal employment. Meanwhile, we are committed to providing every employee with vast development opportunities and deep care.



Employment

Promoting diversity: AIKO promotes diversity, hiring globally from all genders, ages, regions, and ethnicities. We empower female employees, supporting their growth with the Committee of Female Employees. With a 15.53% gender pay gap in 2023, AIKO aims to close this disparity and increase women's executive representation.

Human capital planning: AIKO aligns its talent strategy with corporate goals, outlining recruitment plans and partnering with consultancies to identify high-potential talent. In 2023, with **14,240** employees and **4,702** new hires, we ensured a steady talent inflow for key areas.



¹ Apart from employees categorized by employment type, all other employee data are based on contract employees

Employee development

Career development:

AIKO has implemented a qualification system promoting skill training, capacity improvement, and organized career paths for employees. By year-end, we established 48 career pathways and 46 qualification standards. Aligned with business goals and employees' ambitions, we've implemented a dual-track career system and an internal job rotation, optimizing talent structure and meeting diverse career needs. In 2023, we cultivated a pool of 34 directors and 129 managers, with 10 and 28 succession candidates, respectively.



Performance management and incentive system:

The Company regularly conducted tailored performance reviews for its diverse team, with all employees except new hires participating in goal-setting and evaluations. We have implemented the Time Unit Plan (TUP¹) for our long-term incentive enhancements, which allows our employees to hold company-restricted stocks and options. In 2023, 847 employees participated in the TUP stock option incentive program.



Designing a full career lifecycle training project:

AIKO implemented a comprehensive training plan, targeting all employees from new hires to leaders.

- Leadership training — **41.15** average training hours per managerial employee
- Leader succession candidate training — facilitated **249** candidates
- Professional and technical talent training — **305** engineer participants
- Fresh graduate training — over **700** graduates



2023 Key Performance

2,429

training sessions

620,254

total training hours

39.33

average training hours per employee

RMB 38.1 million

investment in training (vs. 2022 increase 65.65%)

98%

average training satisfaction rate

¹ Time Unit Plan (TUP) is a time-based unit plan that grants employees the right to future benefits (such as dividend rights and appreciation rights) and gradually actualizes these benefits over the coming years.

Employee care and wellbeing



Employee rights:

AIKO respects employees' rights to join the Labor Union, seek representation, and take part in employee representative meetings. We have signed the collective bargaining agreement with all staff regarding areas such as working conditions, remuneration, employee benefits, health and safety, labor protection. Also, we convened regular employee representative meetings to discuss matters important to the front-line of Labor Union, demonstrating our commitment to respecting employees' opinions and safeguarding their rights and interests.



Employee communication and satisfaction:

AIKO fosters employee communication through various online and offline channels, including an employee forum and multiple complaint/report avenues.



Employee benefits:

AIKO ensures all employees are covered by the "Five Social Insurances and Housing Fund". We support retirees and financially struggling employees with additional benefits and an employee assistance foundation. In 2023, we aided 5 employees with grants of up to RMB100,000. We promote work-life balance, offering high-quality apartments, various facilities, and allowances. We also provided free health checks and holiday benefits worth RMB 4 million. Additionally, we respect and encourage employee activity groups, funding 29 clubs with 1,267 members.

2023 Organizational Climate Satisfaction Survey score

90

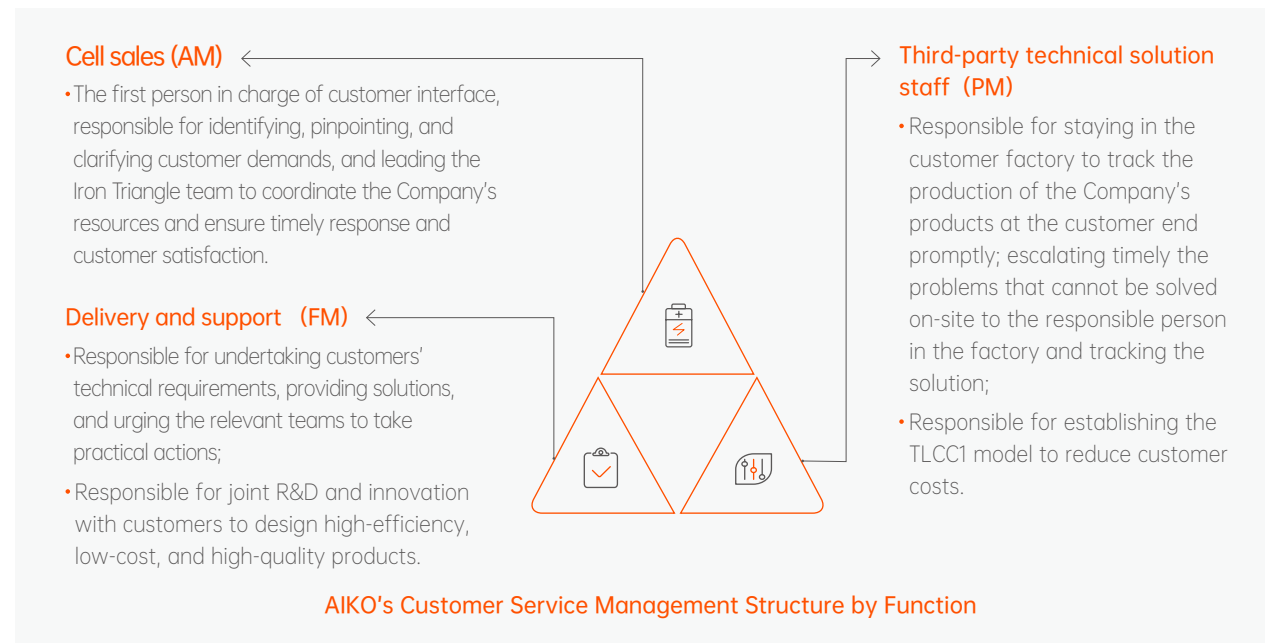


3.3

High-quality Customer Services

AIKO provides customers with more high-quality, personalized and differentiated service experiences.

Management structure: AIKO has established an "Iron Triangle" customer service management structure to meet customer needs promptly and provide customers with safer and more efficient products and tailored solutions with longer life cycles.



Management system: AIKO has formulated management measures, such as *Customer Demand Management Procedures*, *Sales Process Management Procedures*, and *Customer Complaint Handling Control Procedures*.

Management initiatives: AIKO standardizes the service objectives for pre-sales and after-sales service, adopts a customer relationship management system, and establishes an end-to-end management process.

Highlights

In 2023, AIKO received

100% recognition from **7** major customers

Among all customer comprehensive satisfaction,

42.8% ranked first

Among major customers' annual performance evaluation,

55.3% ranked first in quality performance

We achieved

100%



- customer demand response rate
- customer audit first-time pass rate
- pass rate in 18 inspections
- close rate before the customer demand delivery date

3.4 Collaborating for Industrial Progress

AIKO adheres to the concept of green development and bases itself on the status quo of the PV industry.



Industry-university-research collaboration

Established IUR cooperation with several universities and research institutions at home and abroad such as Zhejiang University, Sun Yat-sen University, and Fraunhofer Institute for Solar Energy Systems in Germany.



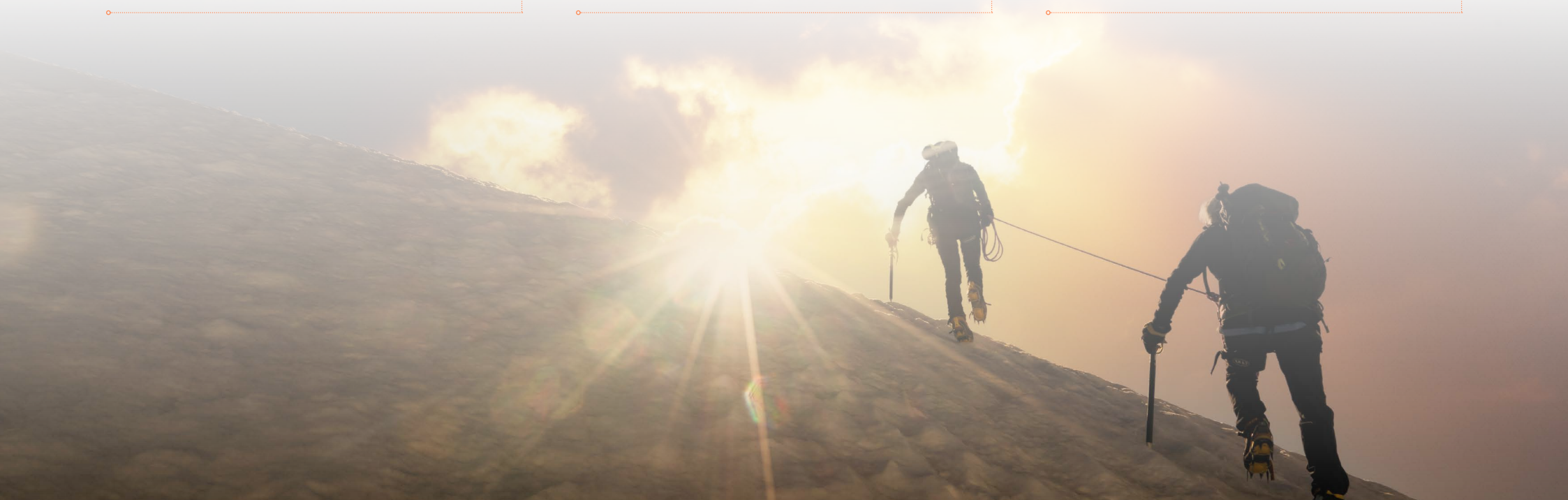
International cooperation

Participated with the EU-China Energy Cooperation Platform (ECECP).



Industry cooperation

Joined the zero carbon park editorial board of the China Association for Engineering Construction Standardization to establish a more realistic, forward-looking, and innovative zero-carbon park standard.





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