



南山铝业  
NANSHAN ALUMINUM

# 2023

## Environmental, Social and Governance Report

SHANDONG NANSHAN ALUMINIUM CO., LTD.



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# About This Report

## Report description



This Report is the full version of the 14th Environmental, Social and Governance Report (hereinafter referred to as "Full Version of ESG Report" or "this Report") issued by Shandong Nanshan Aluminium Co., Ltd.,<sup>1</sup> which is an annual report focusing on the management, practice and performance of the Company in respect of environment, society and governance (ESG). In February 2024, we published the summary version of 2023 Environmental, Social and Governance Report of Shandong Nanshan Aluminium Co., Ltd. (hereinafter referred to as "Summary Version of ESG Report"). Compared to the Summary Version of ESG Report, the Full Version of ESG Report provides detailed insights into management, practice, performance, and annual quantitative data statistics.

## Organisational scope of the Report



The Report is about Shandong Nanshan Aluminium Co., Ltd. and its subsidiaries, including Longkou Donghai Alumina Co., Ltd. (hereafter referred to as "Alumina Company"), Nanshan Aluminium Branch of Shandong Nanshan Aluminium Co., Ltd. (hereafter referred to as "Electrolytic Aluminium Company"), Longkou Nanshan Aluminium Rolling New Material Co., Ltd. (hereafter referred to as "Aluminium Rolling Company"), Plate Branch of Shandong Nanshan Aluminium Co., Ltd. (hereafter referred to as "Plate Company"), Yantai Donghai Aluminium Foil Co., Ltd. (hereafter referred to as "Aluminium Foil Company"), Aluminium Profile Plant of Nanshan Aluminium (hereafter referred to as "Aluminium Profile Plant"), Yantai Nanshan Aluminium New Material Co., Ltd. (hereafter referred to as "Aluminium New Material Company"), Longkou Nanshan Recycled Aluminium Co., Ltd. (hereafter referred to as "Recycled Aluminium Company"), Donghai Thermal Power Plant, American Plant, and Indonesian Plant. For details on the statistic scope of environmental data, please refer to the footnotes in each chapter. In this Report, "we", "the Company" and "Nanshan Aluminium" all refer to "Shandong Nanshan Aluminium Co., Ltd.". Unless otherwise specified, all currencies mentioned in this Report refer to RMB.

## Report time frame



The report covers the period from January 1st, 2023 to December 31st, 2023 (hereinafter referred to as the "report period"), some dating back to previous years and covering the first quarter of 2024.

## Basis of preparation



Prepared with reference to the *Guidelines No. 14 of Shanghai Stock Exchange for Self-regulation of Listed Companies - Sustainability Report (Trial)* and other relevant documents, this Report also considers the United Nations Sustainable Development Goals (UN SDGs), Morgan Stanley Capital International Environmental, Social, and Governance rating (MSCI ESG rating), and other rating indicators.

<sup>1</sup> Nanshan Aluminium has upgraded the ESG disclosure form and scope and released the environment, society and governance (ESG) report since 2021. Since the data here include the report released before 2021 (social responsibility reports or sustainable development reports), the report released in 2023 is the 14th environment, society and governance (ESG) report released after the listing of Nanshan Aluminium.

## Data source and reliability assurance



The information and data disclosed in this Report are from statistical reports and official documents of the Company and have been audited by relevant departments. The Company guarantees that this Report does not involve any false records and misleading statements and will be liable for the authenticity, accuracy and integrity of the contents. This Report is available in both Simplified Chinese and English versions for readers to consult. In instances where there may be confusion or differences in interpretation between the two texts, the Simplified Chinese version shall prevail. Should there be any disparities between the full and summary versions of the ESG report, the former shall prevail.

## Report preparation process



The preparation process of this Report covers establishment of work team, data collection, interviews with and questionnaire inquiry on stakeholders, framework determination, report preparation, report design, audit by department and senior management, etc.

## Confirmation and approval



This Report was audited and approved by the Board of Directors and senior leadership of the Company on April 29th, 2024.

## Report acquisition



This Report is available for consulting and downloading on the Company's website: [www.600219.com.cn](http://www.600219.com.cn).

For further inquiries, comments or suggestions on this Report, please contact the Company by:

Email: [600219@nanshan.com.cn](mailto:600219@nanshan.com.cn)

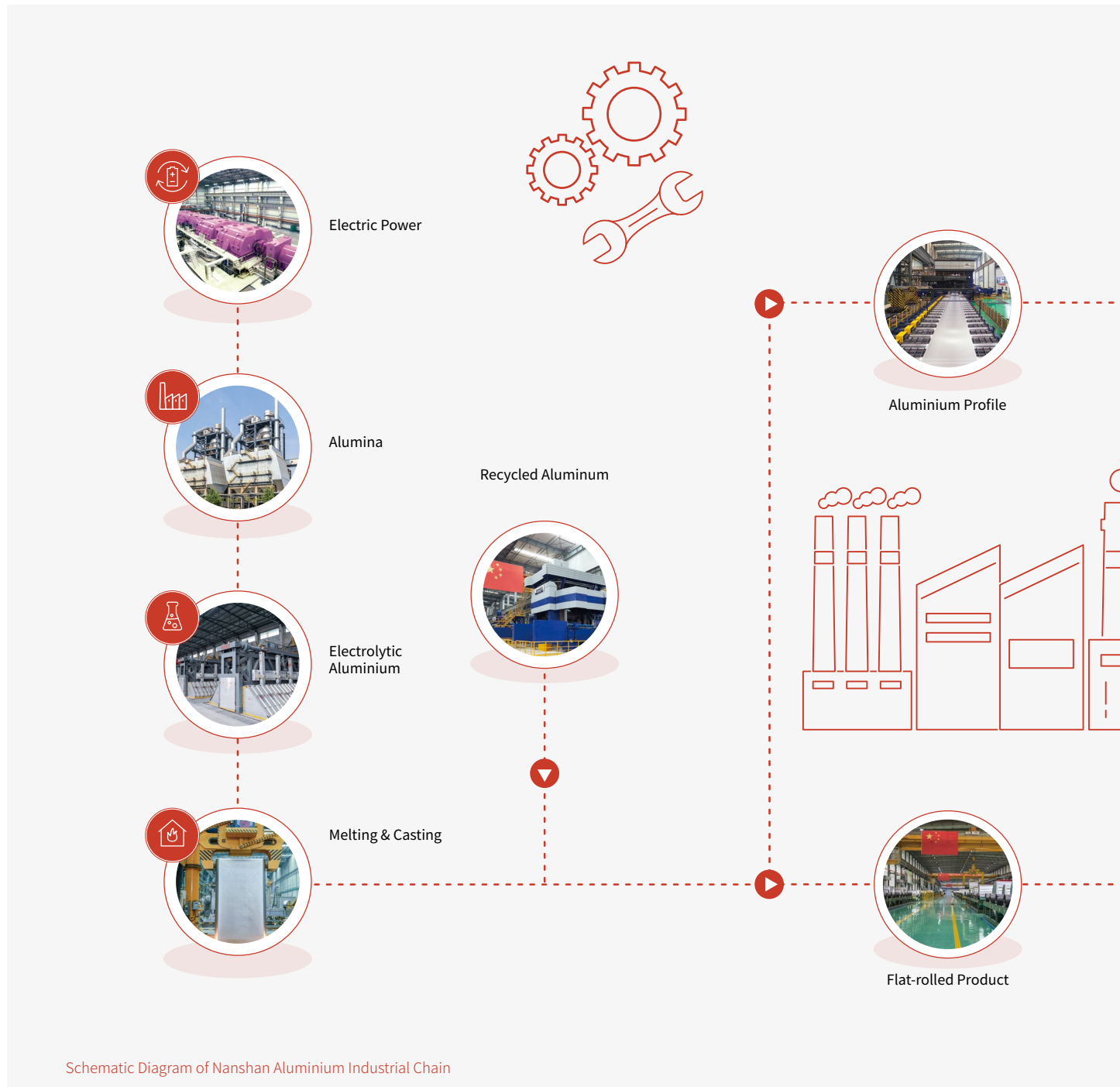
Tel.: 0535-8666352

Address: Nanshan Village, Dongjiang Town, Longkou, Yantai City,  
Shandong Province



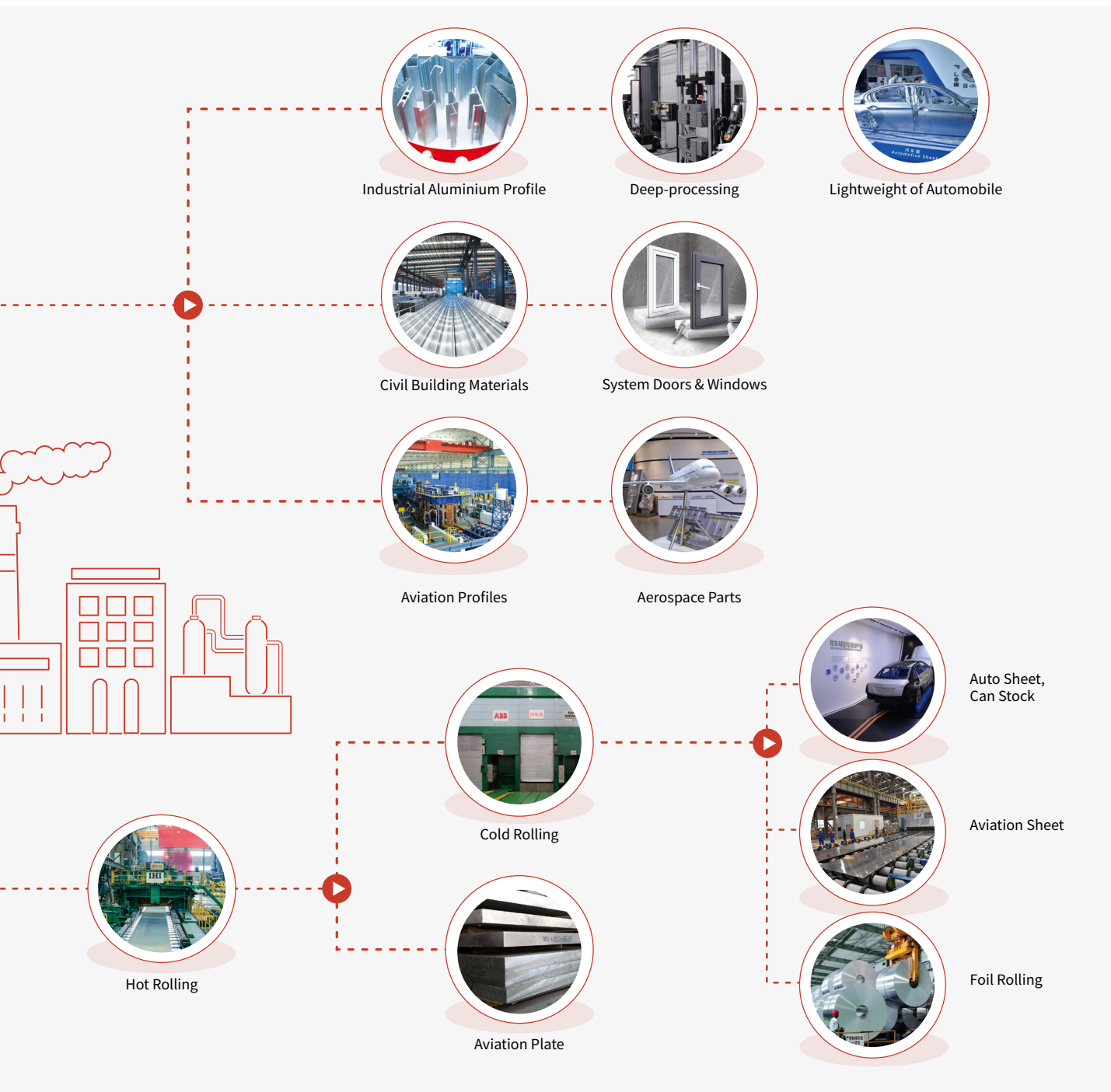
# About Nanshan Aluminium

Since its listing in 1999, Nanshan Aluminium has deeply implemented the development strategy of "innovation-driven, high-end manufacturing, and intensive processing". Rooted in the aluminium processing industry, it continuously provides high-quality aluminium alloy products for aviation, shipbuilding, rail transit, automobiles and tanks (cans), and other fields with strong innovation, complete aluminium processing industrial chains, and high-quality products and services and contributes to the sustainable development of the national aluminium industry.



## Industry development

Nanshan Aluminium adheres to the development concept of "highlighting the main business and chain operation", focusing on building a complete industrial chain centred on aluminium processing. It covers businesses such as thermal power, alumina, electrolytic aluminium, melting & casting, aluminium profiles/hot rolling-cold rolling-foil rolling, and scrap aluminium recovery (recycling). This lays a solid foundation for the Company's high-quality and efficient development.



With a complete industrial chain of aluminium processing as its foundation, Nanshan Aluminium follows the path of "technological innovation + industrial development". It proactively analyses market changes, achieves breakthrough development with high value-added products represented by auto sheets and aviation plates, and then constructs a high-quality, multi-level and high-end product series matrix.

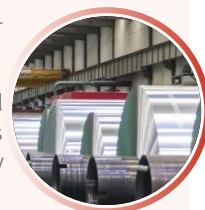
### High-end Products of Nanshan Aluminium

#### Aluminium flat-rolled products

**Auto sheets:** As a leader in aluminium ABS manufacturing in China, Nanshan Aluminium seizes the trend of lightweight of automobile and the advantage of high industry access thresholds. It actively promotes certification with automotive manufacturers, becoming a high-end aluminium product supplier for joint-venture, foreign-funded, independent-brand, and emerging automotive manufacturers.

**Aviation plates:** Nanshan Aluminium aims for complete localisation of aluminium plates & sheets for civil aircrafts as its construction goal. While breaking through multiple technical barriers in the industry, it has smoothly passed aeronautical material certification programs and become a major manufacturing entity for the localisation demonstration platform of raw materials for China's homemade large aircrafts.

**Can body and end stock:** As a leading enterprise in the can stock market, Nanshan Aluminium stands out in the market with stable quality, delivery times, and high-quality services. During the report period, the Company's domestic market share of products has also increased.



#### Aluminium foil

**Power battery foil:** Nanshan Aluminium deeply explores the high-end product market of power battery foil, actively promotes the research and development of high-performance power battery foil, and consolidates its industry position in the field of power battery foil with high-profit margin products.

**Packaging foil:** Nanshan Aluminium continues to lay out in the aseptic packaging market, establishing long-term strategic co-operation relationships with several internationally renowned soft packaging companies.



#### Aluminium profile

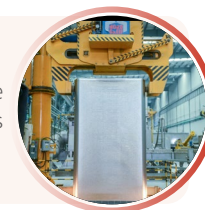
**Architectural profile:** Nanshan Aluminium is steadily venturing into the civil material market, leveraging its well-equipped facilities, top-notch research and development teams, and cost advantages across the entire industrial chain. It's actively exploring retail opportunities in home decoration and the system doors & windows market, earning recognition and favor from high-quality downstream customers.

**Industrial profile:** Nanshan Aluminium focuses on the aerospace and other major transportation fields as its main expansion direction, continuously researching and developing mid-to-high-end aluminium profile products applied in aerospace, high-speed rail, automobiles, and other high-end manufacturing industries.



#### Recycled aluminium

Nanshan Aluminium, combining the "carbon peaking and carbon neutrality goals", actively promotes the development of high-quality, grade-keeping and comprehensive utilisation project of recycled aluminium, so as to achieve energy conservation, emission reduction, and clean production in the aluminium industrial chain.




At present, the main production sites of Nanshan Aluminium include Alumina Company, Electrolytic Aluminium Company, Aluminium Rolling Company, Plate Company, and Donghai Thermal Power Plant. We have established branches or offices in Beijing, Tianjin, Shanghai, Shenzhen, Hainan and Hong Kong, as well as branches or subsidiaries in the United States, Australia, Italy, Singapore, Germany and Indonesia.

Moving forwards, plans for Nanshan Aluminium are to continue its strategy of domestic high-end manufacturing and international expansion, working together both at home and abroad to strengthen our market presence and improve business performance.




## Enterprise strategy


As a privately-owned enterprise with a rich 30-year history, Nanshan Aluminium thrives on innovation with an objective of "building the world-class high-end aluminium foundation". We are seizing the opportunities presented by the structural reforms on the supply side and new and old kinetic energy conversion in China. Leveraging our strong position in the high-end aluminium industry, along with our industrial cluster advantages and resource utilisation strengths, we are dedicated to maintaining stability in our traditional industries while expanding into high-end product sectors to solidify our position as an industry leader. In parallel, the Company is committed to the development strategy of "high-end manufacturing + integrated industrial chain". This involves continuous expansion of our production capacity for high-value-added products such as auto sheets and aviation plates, as well as the enhancement of our aluminium deep-processing capabilities. We are steadily promoting the transformation of "high-end manufacturing" and progressing towards our goal of becoming a trusted brand in the aluminium industry, contributing to the revitalisation of the national aluminium sector and supporting local economic growth with our high-quality contributions.

Aspect of auto sheets 

- Continuously promote the qualification progress of automobile OEMs for ABS outers and establish the batch supply.
- Explore potential customers with high-quality products, becoming a supplier of more high-end aluminium products in the automotive industry.
- Accelerate the market layout, focus on the expansion of domestic market share, and promote the layout in overseas markets.

Aspect of aviation materials 

- Ensure that all services are provided for certified products and strengthen co-operation between both parties.
- Keep leveraging the advantages of the industrial chain to advance the research and development and large-scale production of aluminium products for aviation, and continuously improve production processes to support the localisation of materials for civil aircrafts.
- Actively expand the scope and specifications of product certification based on years of technical expertise.

Other flat-rolled products 

- Stabilise and strengthen the co-operation relationship with old customers while increasing efforts to develop new markets and customers.
- Meet customers' sustainable development needs while stabilising the deployment of flat-rolled products.

### Strategic Development Aspects of Nanshan Aluminium



## Awards and recognition

In 2023, Nanshan Aluminium garnered broad recognition and encouragement from society, thanks to its remarkable achievements in the areas of environment, society and governance. Furthermore, the Company continued to explore its innovative capabilities, introducing several patents and facilitating the implementation of innovative outcomes. This effort aimed to provide fresh products, novel ideas and innovative methods, thereby fostering the rapid and steady growth of the aluminium processing industry.

China National Intellectual Property  
Administration

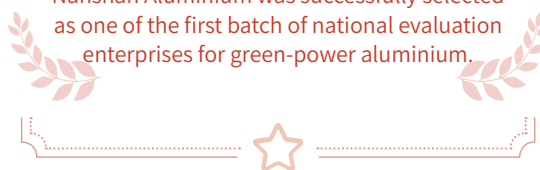
Nanshan Aluminium's patent,  
*An Aluminium Alloy Material and  
Preparation Method Suitable for Auto  
Body Sheet Manufacturing*, won the  
China Patent Silver Award.



China Nonferrous Metals Industry Association

Nanshan Aluminium's 11 products were  
honored with the "Gold Cup Award" for the  
physical quality of nonferrous metal products.

Nanshan Aluminium was successfully selected  
as one of the first batch of national evaluation  
enterprises for green-power aluminium.



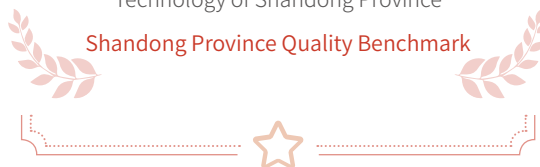
Shandong Administration for  
Market Regulation

Shandong Provincial High-end  
Brand Cultivation Enterprise



Department of Industry and Information  
Technology of Shandong Province

Shandong Province Quality Benchmark



The People's Government of Shandong  
Province

Shandong's First Batch of Green, Low-  
carbon, High-quality Development Pilots



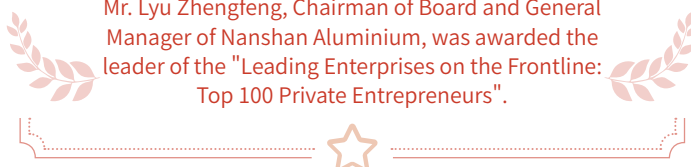
Yantai Municipal Bureau of Industry  
and Information Technology

Donghai Alumina was selected in  
the list of Yantai "Green Factory"



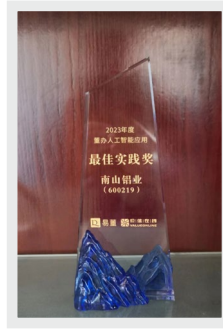
Leading Group for Promoting the Development of  
Non-public-owned Economy in Shandong Province

Mr. Lyu Zhengfeng, Chairman of Board and General  
Manager of Nanshan Aluminium, was awarded the  
leader of the "Leading Enterprises on the Frontline:  
Top 100 Private Entrepreneurs".





Performance Evaluation (Level 4A) for Board Secretary of Listed Companies



Best Practice Award for AI Application by the Board Office in 2023



China Preferred Employer of the Year 2023 by Zhaopin



The 5th NewFortune Best Listed Company

股票简称	总市值 (亿元)	所在地区
国博电子	383.17	江苏省
南山铝业	382.87	山东省
永兴材料	382.02	浙江省
宇城演艺	381.75	浙江省
格林美	381.07	广东省

"China's Top 500 Listed Companies in Market Value in 2022"

序号	企业名称	信用得分
144	绿城物业服务集团有限公司	92.853
145	山东能源集团有限公司	92.848
146	上海医药集团股份有限公司	92.812
147	南京新港高科股份有限公司	92.811

序号	企业名称	信用得分
255	南山铝业	91.085
256	德泰证券股份有限公司	92.023
257	山东能源集团有限公司	92.049
258	上海医药集团股份有限公司	92.012
259	南京新港高科股份有限公司	92.011

序号	企业名称	信用得分
79	北京北方车辆制造股份有限公司	92.140
80	山东能源集团有限公司	92.023
81	山东能源集团有限公司	92.023
82	上海医药集团股份有限公司	92.012
83	泰山钢铁集团有限公司	91.824

"2022 China Enterprise Credit Top 500" and other multiple lists



The third prize of 2023 Shandong New and Old Kinetic Energy Conversion High Value Patent Cultivation Competition



Yantai High-quality High-Value Patent Project

## Address from Chairman of Board

“ The year of 2023 marked a pivotal year for the implementation of the "14th Five-Year Plan". Faced with new challenges and opportunities for the high-quality and sustainable development of the aluminium industry, Nanshan Aluminium has remained steadfast in its strategic development idea of "innovation-driven, high-end manufacturing, and intensive processing". We've ramped up investment in critical technology areas, fortified our foundation in superior products, and stayed committed to elevating industrial supply standards while embracing green practices. With unwavering determination and a forward-looking mindset, we've delivered exceptional results, contributing significantly to our industry. ”

In recent years, the global spotlight on climate change has intensified. Aluminium products, with their attributes of lightweight, durable, conductive, and recyclable, have made them increasingly indispensable in advancing global efforts toward low-carbon and sustainable development. Drawing on our accumulated advantages in the aluminium industry, including our strategic positioning, industrial clusters, and resource utilisation, Nanshan Aluminium is actively promoting low-carbon manufacturing and circular industry practices. Collaborating closely with our customers, we've pioneered innovative co-operation models. Our establishment of Recycled Aluminium Company, with an annual capacity of 100,000 tons and focusing on the recycling of graded wastes from downstream customers, underscores our commitment to building a closed-loop system from alumina processing to electrolytic aluminium, high-end manufacturing, and aluminium recycling, providing high-quality, eco-friendly, and recyclable solutions to the new energy sector and beyond. Additionally, we're transferring 336,000 tons of electrolytic aluminium capacity indicators, significantly reducing energy consumption and emissions in the upstream industrial chain, thus accelerating our journey towards green and sustainable development.



**Nanshan Aluminium continues to enhance its ESG management system**, committing to fully integrating ESG core principles and standards into the Company's development strategies and daily operations. In 2023, we introduced the *Sustainability (ESG) Committee Working System*, establishing a clear ESG governance structure to enhance the Company's ESG accountability capabilities. We systematically advance business ethics audits, refine internal supervision and risk control mechanisms, foster an environment of integrity and transparency, and elevate corporate governance standards.

**Nanshan Aluminium remains committed to driving industry transformation through technological innovation** and setting industry benchmarks through craftsmanship and quality. Guided by market trends, while consolidating our position in the traditional aluminium product market, we focus on high-end manufacturing, particularly developing high-value-added products such as auto sheets, aviation plates, and high-performance power battery foils, continuously strengthening our leading position in advantageous industries. We also focus on the forefront of industry development, increasing investment in research and development innovation, actively pursuing key core technologies and "three-characteristics" technologies that are disruptive, forward-looking, and breakthrough, contributing to the construction of a new industrial development pattern that meets the requirements of the new era.

**We consistently adhere to the concept of "creating a better future for enterprise through green manufacturing"**, and steadily promote the green transformation of the Company. We integrate climate change factors into Nanshan Aluminium's strategic planning and daily operations, setting an example for the promotion of high-quality green development in China's non-ferrous metal industry. For two consecutive years, we have participated in the climate change questionnaire disclosure of Carbon Disclosure Project (CDP) and received a continuous Level "B" management evaluation from CDP in 2023. The Company continuously enhances pollution prevention and control and environmental risk prevention capabilities, conducts ongoing water resource risk assessments, and leverages advanced facilities and equipment to make green and low-carbon practices the vibrant backdrop for Nanshan Aluminium's high-quality development.

**Over the years, Nanshan Aluminium has been proactive in responding to and championing the Belt and Road Initiative.** We've expanded our footprint in overseas industrial chains. During the report period, our 2-million-ton alumina project in Indonesia's Bintan Island has successfully commenced operations, with plans underway to extend downstream industrial chains, laying a solid foundation for establishing a world-class high-end aluminium foundation. Guided by the sustainable development concept, we're empowering overseas industrial chain construction through ESG practices. Our Indonesian Plant maintains a vigilant watch over the ecological environment impact of full life cycle activities, fostering deep-rooted green partnerships and steering a collective course toward sustainable development. Through practical actions, we're fostering economic and cultural prosperity both at home and abroad. By 2023, our Indonesian Plant had created over 2,000 local job opportunities and contributed significantly to addressing critical local needs such as medical supplies. Transitioning from hard connectivity to soft connectivity and people-to-people connectivity, we're fostering harmonious development, mutual benefit, and ultimately, prosperity for all.

**At Nanshan Aluminium, our core belief revolves around "people first, talents foremost"**. We're committed to fostering an employer brand that our employees trust, ensuring their rights and interests are upheld, and cultivating a working environment rooted in mutual respect. Continuously refining our safety production responsibility system for all employees and reward and punishment mechanisms for middle and senior leadership, we improve our health and safety cores, safeguard the physical and mental health of our employees in multiple dimensions. By offering competitive remuneration, structured training programs, and clear paths for advancement, we provide our employees with ample opportunities for personal growth, company development and industry advancement.

**Nanshan Aluminium firmly believes in progress through collaboration and sharing our successes with society.** That's why we're dedicated to building a responsible supply chain, integrating the sustainable development concept into the whole process of our procurement and supplier management processes. As we deepen our partnerships with suppliers, we encourage them to embrace sustainable practices. Additionally, we're committed to protecting rights and interests of indigenous residents, preserving cultural heritage, and actively participating in community welfare initiatives, demonstrating our commitment to corporate citizenship with practical actions.

**Be harmonious and broad and aim for the highest.** With a spirit of ambition, every member of Nanshan Aluminium is dedicated to advancing the ecological aluminium industrial chain and driving high-quality development in the aluminium sector. As we embark on a new year, we're eager to join hands with partners from all sectors, explore innovative domestic and international strategies, and work tirelessly towards our vision of "building the world-class high-end aluminium foundation". Together, we're leading the charge to elevate the national aluminium industry from strength to greatness.

Chairman of Board of Nanshan Aluminium

Lyu Zhengfeng

# Topic

## Embracing a Green Aluminium Revolution through Circular Low-carbon Practices

Aluminium is a nonferrous metal with production and utilization quantities closely following steel globally. However, it also holds the unfortunate title of being the first emission source of greenhouse gases within the nonferrous industry. As the issue of global climate change gains increasing urgency, aluminium products, with their attributes of lightweight, durable, conductive, and recyclable, position as a crucial material for low-carbon sustainable economic development. Hence, exploring pathways of carbon emission reduction in the aluminium industry becomes imperative for achieving China's goals of carbon peaking and carbon neutrality.

Nanshan Aluminium steadfastly upholds the business philosophy of "green, energy conservation, emission reduction and efficiency improvement". Drawing on our accumulated advantages in the aluminium industry, including our strategic positioning, industrial clusters, and advantages of resource utilisation, Nanshan Aluminium is committed to discovering a greener and more sustainable trajectory for aluminium industry development pathway. Pioneering the way forward, we actively promote the sustainable development of the industrial chain of aluminium via low-carbon manufacturing and the adoption of circular industry layouts, with energy conservation, carbon reduction, and clean reuse forming the twin pillars of our strategy. Collaborating closely with our customers, we aim to introduce high-quality, green, and recyclable "aluminium" solutions to a diverse array of industrial sectors.

# Low-carbon manufacturing practices

Achieving carbon peaking and carbon neutrality hinges on the energy conservation and carbon-reduction transformation and upgrade within the nonferrous metal industry. To propel the industry towards greener practices, the government has introduced a slew of policies, including *Several Opinions on Strict Energy Efficiency Constraints to Promote Energy Conservation and Carbon Reduction in Key Areas*, the *Development Plan for the Raw Materials Industry in the 14th Five-Year Plan Period*, and the *Implementation Plan for Carbon Peaking in the Nonferrous Metal Industry*. These policies outline clear targets for improving energy efficiency and reducing carbon emissions in the electrolytic aluminium sector. Additionally, they incentivise companies to adopt clean energy sources, promote energy conservation technology, and encourage high-energy-consuming enterprises to engage in demand-side response for electric power.

As a world-leading complete aluminium processing industrial chain enterprise, Nanshan Aluminium actively responds to the *Paris Agreement*, *National Climate Change Adaptation Strategy of Chinese government* and targets and pathways of greenhouse gas emission reduction set by China Nonferrous Metals Industry Association and International Aluminium Institute, aiming to facilitate the green transformation. We have published the *Greenhouse Gas Emission Targets and Implementation Plan*, including the short and medium-term emission target plan of greenhouse gas of unit product and emission reduction measures. Furthermore, we have completed ISO 14067 product carbon footprint certifications for nine product categories. Utilising the SimaPro software, a global leading lifecycle assessment and modelling, we've conducted full life cycle evaluations and modelling of profile products. In 2023, we successfully registered with EPD International in Sweden for both architectural and industrial profiles. These efforts serve as a model for advancing the nonferrous metal industry towards high-quality and green development.

## Clean energy utilisation

Electric power serves as the lifeblood of the electrolytic aluminium sector. Nanshan Aluminium has adopted a strategic approach that integrates self-owned and self-supplied power plants in Donghai Thermal Power Plant, alongside participation in coal-electricity-aluminium integrated models through joint ventures. This approach not only enhances economic efficiency but also strengthens our competitive position in the market. In response to the push for carbon peaking and carbon neutrality goals, the electrolytic aluminium sector urgently needs to transform its power consumption structure.

Nanshan Aluminium is actively addressing the energy utilisation structure goals outlined in the *Implementation Plan for Carbon Peaking in the Nonferrous Metal Industry*, and gradually increasing the use of green electricity in the electrolytic aluminium production to unlock its emission reduction potential fully and overcome the challenges posed

by both the natural ecological constraints and the capacity expansion in the decarbonisation transformation of the electrolytic aluminium sector. Nanshan Aluminium is focusing on two main strategies: clean-up of grid and clean-up of self-generated electricity. It plans to achieve self-supply by procuring green electricity and investing in distributed resources like photovoltaics, thereby replacing the use of self-generated thermal power plants and achieving the clean-up of grid and self-generated electricity.

Looking ahead, Nanshan Aluminium intends to replace its current energy supply with green and low-carbon energy such as nuclear power in Shandong Province. Leveraging the advantages of wind power and nuclear power in the region, along with of rooftop photovoltaics, the Company aims to reach its green, low-carbon goals more swiftly.

Green electricity and green certificate procurement

- In line with the customers' carbon reduction targets and requirements, we've calculated the electric power demand during the production and replaced thermal power with purchased green electricity.
- During the report period, we purchased

20,000,000 kWh

of international green certificates.

Roof photovoltaic application

We've also initiated distributed photovoltaic power generation projects on the roofs of the company buildings:

- Plate Company can generate approximately

24,550 MWh

of photovoltaic power annually.

- Aluminium Rolling Company can generate approximately

5,850 MWh

of photovoltaic power annually.

- Aluminium Foil Company will establish a photovoltaic power project, expected to generate approximately

2,900 MWh

of photovoltaic power annually.

## Energy conservation technology application

Nanshan Aluminium actively explores new technologies, equipment, materials, and processes for energy management, initiating a series of technical optimisations and equipment upgrades for energy conservation and emission reduction in various business segments.

### Case | Energy conservation transformation of electrolytic cells of Electrolytic Aluminium Company



At the end of 2022, Electrolytic Aluminium Company jointly carried out the energy conservation cell transformation project with Northeastern University Engineering & Research Institute. By adopting the graphite cathode phosphorus pig iron casting technology and upgrading the lined structure and material, the lined structure of electrolytic cells was optimised to improve stability, reduce comprehensive energy consumption of electrolytic cells, and consequently lower greenhouse gas emissions. By 2023, Electrolytic Aluminium Company had completed the transformation of 58 electrolytic cells.

It is projected that by 2027, all electrolytic cells will be upgraded and transformed, reducing the comprehensive AC power consumption of aluminium liquid by over 300kWh/t.Al. After completion, the annual electricity consumption is expected to decrease by approximately 141,000,000 kWh, resulting in an annual reduction of carbon emissions by 125,000 tons.



In 2023

Electrolytic Aluminium Company had completed the transformation of

**58**  
electrolytic cells

It is projected that by 2027, all electrolytic cells will be upgraded and transformed

Reducing the comprehensive AC power consumption of aluminium liquid by

over **300** kWh/t.Al

The annual electricity consumption is expected to decrease by approximately

**141,000,000** kWh

An annual reduction of carbon emissions by

**125,000** tons





Case | Energy conservation transformation project of Alumina Company



Alumina Company implemented the optimisation project of temperature reduction with evaporative circulating water by adding 2 cooling towers to lower the temperature of the evaporative circulating water, compensating for the

insufficient cooling capacity of the evaporative circulating water and reducing steam consumption, leading to an annual reduction in steam consumption by 5,300m<sup>3</sup>.



Plate Company

- The transformation of the smoke exhaust fan during the EDT rolling mill downtime in the cold rolling workshop can save 340,161kWh of electricity annually.

Aluminium Rolling Company

- The transformation of the heat exchange system can save 212,500kWh of electricity annually;
- The transformation of the start-stop button for the newly added fan on the 2# tension levelling production line WINCC screen can save 108,000kWh of electricity annually.

## Shutdown of outdated production facilities

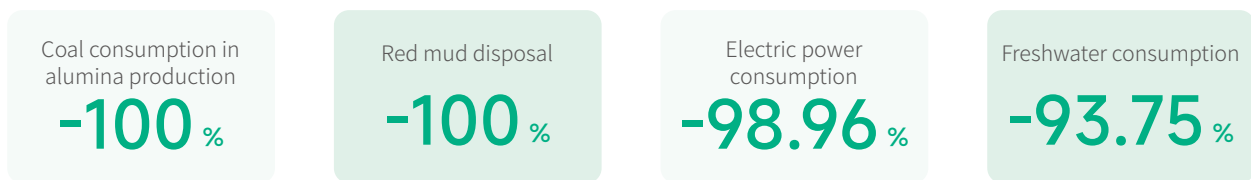
Against the backdrop of supply-side reforms and the "carbon peaking and carbon neutrality" strategy, regions like Southwest China and Inner Mongolia with lower electric power costs, especially Southwest China with power structures conducive to low carbon production, are becoming focal points for China's electrolytic aluminium industry. Nanshan Aluminium is proactively responding to the National Development and Reform Commission's directives outlined in the *Guidance on Industrial Structural Adjustment*. We decisively shut down outdated production processes, technologies, and equipment, such as self-baking electrolytic cells and prebaked cells below 160kA, by transferring electrolytic aluminium capacity indicators to the Southwest China. This initiative aims to continually adjust and optimise industrial layout and asset structures.

During the report period, Nanshan Aluminium completed the transfer of its entire 336,000 tons electrolytic aluminium capacity indicators. This involved transferring 78 units of 160kA prebaked electrolytic cells (with a rated capacity of 36,000 tons/year) and 412 units of 300kA prebaked cells (with a rated capacity of 300,000 tons/year), along with some supporting carbon production lines. Following these transfers, Nanshan Aluminium plans to continue reducing high carbon emissions by procuring aluminum ingots produced with green electricity and clean energy sources like hydropower, and expanding its recycled aluminium capacity. This strategy also aligns with meeting ongoing customer demand for low-carbon products.

## Circular industry layout



Recycled aluminium is a vital source of aluminium metal, obtained through the re-melting and refining of scrap aluminium, aluminium alloy materials, or aluminium-containing wastes. Nanshan Aluminium, in alignment with the national "carbon peaking and carbon neutrality goals", is actively empowering the recycled aluminium sector. We're driving forward the construction of high-quality, grade-keeping and comprehensive utilisation project of recycled aluminium. This aims to achieve energy conservation, emission reduction, and clean production of the aluminium industrial chain, meet downstream customers' demands for low-carbon and energy-efficient products, and significantly enhance the Company's competitiveness in customer acquisition.

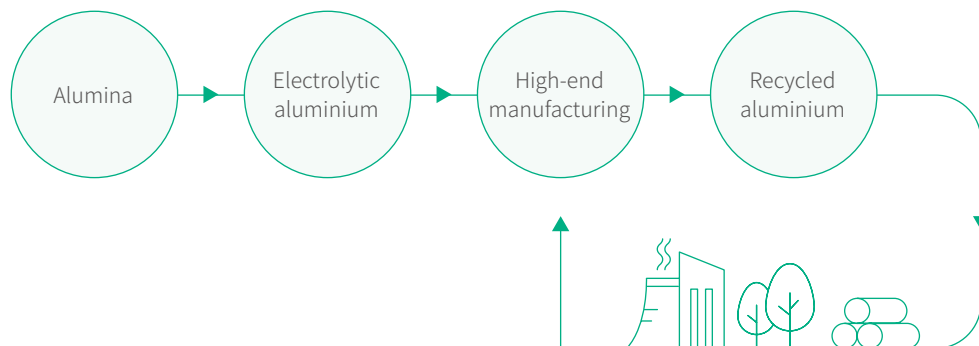


Advantages of Recycled Aluminium Compared to Primary Aluminium

## Grade-keeping and comprehensive utilisation of recycled aluminium

Nanshan Aluminium established Recycled Aluminium Company, focusing on processing and treating metal scraps and debris. It primarily handles scraps from can body, can end, and auto sheet production plants, along with additional milling scraps of aviation plate etc. During the report period, the side side-well furnace and holding furnace production lines were completed and put into operation. Using the side well furnace, main raw materials like aluminium scrap are melted and purified with high-purity gas to produce high-quality aluminium ingots for aviation materials. This achieves grade-keeping recycling of hard alloy aluminium scraps. Upon completion, the project will enable effective keep grading recovery of scrap materials from various processing stages

within the Company and downstream auto sheet and can stock processing stages. It aims to produce 100,000 tons of recycled aluminium annually, filling the gap of keep grading recovery of high-quality recycled aluminium in Yantai and easing the supply-demand imbalance of electrolytic aluminium. Moreover, Nanshan Aluminium will promote energy conservation, emission reduction, and clean production throughout the industrial chain, forming a complete closed loop of "alumina-electrolytic aluminium-high-end manufacturing-recycled aluminium". This streamlined process, from new material delivery to waste recovery, significantly shortens the cycle of closed-loop reuse, ensuring customers receive products that meet their objectives promptly.



Case | Vice president of global packaging procurement at AB InBev visits Nanshan Aluminium to explore the recycled aluminium project workshop



On November 24<sup>th</sup>, 2023, Erik Novaes, vice president of global packaging procurement at AB InBev, led a procurement team to tour the Flat-Rolled Product Division. During the visit, the delegation explored Nanshan Aluminium's high-quality recycled aluminium project workshop and expressed admiration for the Company's achievements in sustainable development. Both parties signed an agreement for strategic co-operation in the coming years, further strengthening the longstanding strategic relationship developed over more than a decade of collaboration.



## Practical implementation of recycled aluminium

Nanshan Aluminium is continuously improving its procurement system and strengthening business partnerships with downstream canning companies and automotive manufacturers to extend the channel procurement network and ensure a consistent supply of recycled aluminium.

### Old scrap aluminium

This includes aluminium collected from society, such as old aluminium doors and windows, aluminium parts from scraped vehicles, appliances, machinery, as well as used aluminium cans and various aluminium containers.

### New scrap aluminium

These are wastes and defective products generated during the aluminium processing and production of aluminium products.

During the report period, Flat-Rolled Product Division collected a total of 55,749.75t of graded wastes from downstream customers. By using recycled aluminium, Flat-Rolled Product Division achieved an 18% proportion of recycled aluminium in its can packaging materials, leading to a remarkable reduction of over 90% in carbon dioxide emissions compared to electrolytic aluminium. Some brands even surpassed the 20% target for recycled aluminium usage.

In terms of recycled aluminium product research and development, Nanshan Aluminium conducted a full production cycle verification of food safety risks under conditions of 100% recycled aluminium content. This successful verification led to the introduction of the group standard, *Recycled Aluminium Alloy Sheets and Containers in Contact with Food* (T/CNLIC 0091-2023). Moreover, the Company has developed customised production technology for products with high-recycled aluminium proportions. This technology has been applied in the production of AB InBev Asia Pacific's lightweight aluminium cans. These cans weigh only 9.57g for the 330ml size, making them 4% lighter than the industry average. Additionally, the average carbon footprint is only 185g per can, representing a reduction of nearly 100g compared to the 2017 baseline.



The Lightest Aluminium Beer Can

Collected graded wastes from downstream customers

**55,749.75 t**

Achieved portion of recycled aluminium

**18 %**

330ml size cans only weigh

**9.57g**

Lighter than the industry average

**4 %**

Average carbon footprint per can

**185 g**

Reduction compared to the 2017 baseline

**100 g**

## Empowering the automotive industrial chain

Against the background of "carbon neutrality", the degree of electrification and penetration of vehicle models are steadily increasing. The primary constraint on the development of new energy vehicles is their endurance mileage, making the demand for lightweight materials in electric vehicles more urgent. Therefore, the use of lightweight aluminium materials in new energy vehicles will become a decisive breakthrough. Additionally, aluminium alloys have strong corrosion resistance, are recyclable, and possess excellent recycling capabilities. Recycled aluminium has thus emerged as a key material for the current green and low-carbon development of the lightweight of automobile.

Through years of technological accumulation and innovative research and development, Nanshan Aluminium has successfully broken through the technological barriers in auto sheets. It has developed all-aluminium body products that meet the requirements of lightweight of automobile, becoming the first company to break the monopoly of foreign competitors in supplying automotive exterior panels. This not only represents the highest technology of all-aluminium bodies in China but also promotes the practice of green circular economy. The use of all-aluminium bodies can reduce vehicle weight by nearly 30%, making the structure and chassis of vehicles more robust. With reduced vehicle weight, the centre of gravity of complete built-up vehicles is lowered, improving side-slip resistance, reducing inertia, shortening braking distances, extending endurance mileage, saving fuel and electricity, reducing fuel consumption, and aiding in energy transition. Furthermore, through the high-quality recycled aluminium project of Nanshan Aluminium, waste aluminium profile can be recycled multiple times, giving vehicles energy conservation and environmental protection characteristics throughout their full life cycle.

The use of all-aluminium bodies can reduce vehicle weight by nearly

**30 %**



All-aluminium Body Products

Looking forward to the future, Nanshan Aluminium will remember its original intention and adhere to the sustainable development concept of "creating a better future for enterprise through green manufacturing". We will focus on improving environmental benefits and resource utilisation efficiency from multiple perspectives, including raw material extraction, production processes, and end consumer consumption. Nanshan Aluminium will fully realise the goals of resource lightweighting, waste resource utilisation, recycling, and recovery, thereby empowering the green development of the entire industrial chain.

# 01

## Guiding Principles for Corporate Governance, Paving the Way for a Sustainable Future Together

Nanshan Aluminium remains committed to its founding principles, and promotes the organic integration of the business philosophy "green, energy conservation, emission reduction and efficiency improvement" and the Company's strategy. The Company deepens the enterprise ESG governance constantly, and keeps communication and exchange with all stakeholders, thus contributing to industry transformation, upgrading and high-quality development.



# ESG governance framework

Nanshan Aluminium systematically advances its ESG governance efforts by establishing and continuously refining a governance structure led by the Board of Directors. This framework lays the organisational groundwork for the Company's compliant handling of ESG-related matters. In 2023, Nanshan Aluminium published the *Working System of the Sustainability (ESG) Committee of Shandong Nanshan Aluminium Co., Ltd.* on its official website, aimed to fulfil its commitment to ESG by enhancing its comprehensive management approach and core competitiveness. This publication served to deepen the Company's ESG initiatives and ensure the smooth implementation of its various mid-to-long-term ESG plans.

The Nanshan Aluminium Sustainability (ESG) Committee comprises a director, a sustainable development officer, vice directors, and members. The director of the ESG Committee is held by the Company's Chairman of Board, with the vice directors being held by directors, supervisors, deputy general managers, and heads of the Control Centre. Committee members are drawn from relevant department heads and branch and subsidiary leaders within the Company. Additionally, the ESG Committee has established nine working groups where each group is led by relevant department heads or branch and subsidiary leaders.

<b>Board of Directors</b>	As the highest responsible organisation of ESG issues, the Board of Directors is responsible for formulating, supervising and approving the ESG policies, strategies and objectives
<b>Sustainability (ESG) Committee</b>	<p>Review ESG-related policies, regulations, standards, trends, and stakeholders' demands</p> <p>Assess the importance of ESG matters for the Company and provide decision-making advisory recommendations to the Board of Directors for review</p> <p>Supervise the implementation of ESG initiatives and the execution of ESG strategies, review progress towards achieving ESG goals and suggest improvements for the next phase of ESG work</p>
<b>ESG Working Group</b>	<p>Divide into 9 working groups, i.e., Quality Assurance, Technological Innovation, Labour Rights Protection, Safety and Environmental Protection, Energy Conservation and Emission Reduction, Information Security, Supply Guarantee, Business Ethics, and Capital Markets</p> <p>Execute committee resolutions, conduct regular reviews, and update the management system's mid-to-long-term sustainable development goals, and effectively implement various implementation strategies</p>

ESG Governance Framework of Nanshan Aluminium



Management Structure Chart of Sustainability (ESG) Committee

## Special ESG training for members of the Board of Directors




During the report period, members of the Board of Directors of Nanshan Aluminium participated in the ESG training organised by the Shanghai Stock Exchange. Through presentations on ESG development and exemplary cases from other listed companies, they gained a comprehensive understanding of the requirements for sustainable ESG development and deepened their awareness of ESG principles.

Moving forwards, Nanshan Aluminium will actively respond to regulatory directives, implement disclosure guidelines integrating the sustainable development concepts of the Shanghai Stock Exchange and the International Sustainability Standards Board (ISSB), refine the Company's ESG reporting guidance, provide support for future ESG report preparation, and elevate the Company's overall ESG management standards.

## Communication with stakeholders

Nanshan Aluminium consistently engages in dialogue with all stakeholders. The Company establishes diversified communication channels according to the internal system of *Control Procedures for Information Exchange, Negotiation and Communication* and evaluates their effectiveness periodically, so as to keep well-informed about our operational and developmental progress. Our key stakeholders encompass government and regulatory bodies, investors, shareholders, suppliers, customers, research institutions, society and public, employees, environment, etc.

Stakeholders Groups, Issues of Concerns and Communication Channels

Stakeholders Groups	Issues of Concerns for Stakeholders	Main Communication Channels
 <b>Government/Regulators</b>	Compliance management Combat corruption and uphold integrity	Tax payment according to law Periodic information reporting Safety production Pollutant emission compliance
 <b>Investors/Shareholders</b>	Business and operation situation Research and development technology and innovation Business layout and strategy plan Information disclosure Corporate governance and risk control	Hold Shareholders' Meetings Company investigation, roadshow/reverse roadshow Release regular reports and hold achievement meetings Investor hotline and email Interactive platform of Shanghai Stock Exchange
 <b>Suppliers</b>	Fair competition Formulation of industrial standards Supply chain management	Enhance research and development capabilities Strengthen supply chain management and co-operation Participate in industry activities
 <b>Customers</b>	Business ethics Product quality	Collect customer opinions Handle customer complaints Conduct customer satisfaction survey
 <b>Research institutes</b>	Scientific and technological innovation	Industry-university-institute co-operation
 <b>Society/Public</b>	Social public welfare Community development	Maintain communication with government departments and social organisations
 <b>Employees</b>	Employee health and safety Employee remuneration and benefits Employee development and training Employee working environment	Hold conferences of employee representatives Implement employee training Collect and respond to opinions and suggestions of employees
 <b>Environment</b>	Renewable energy resources Energy conservation and emission reduction HSE management improvement Discharge and management of waste gas, wastewater and solid waste	Communicate with and learn from environmental protection departments and social organisations Exchange advanced experience at home and abroad Improve production process

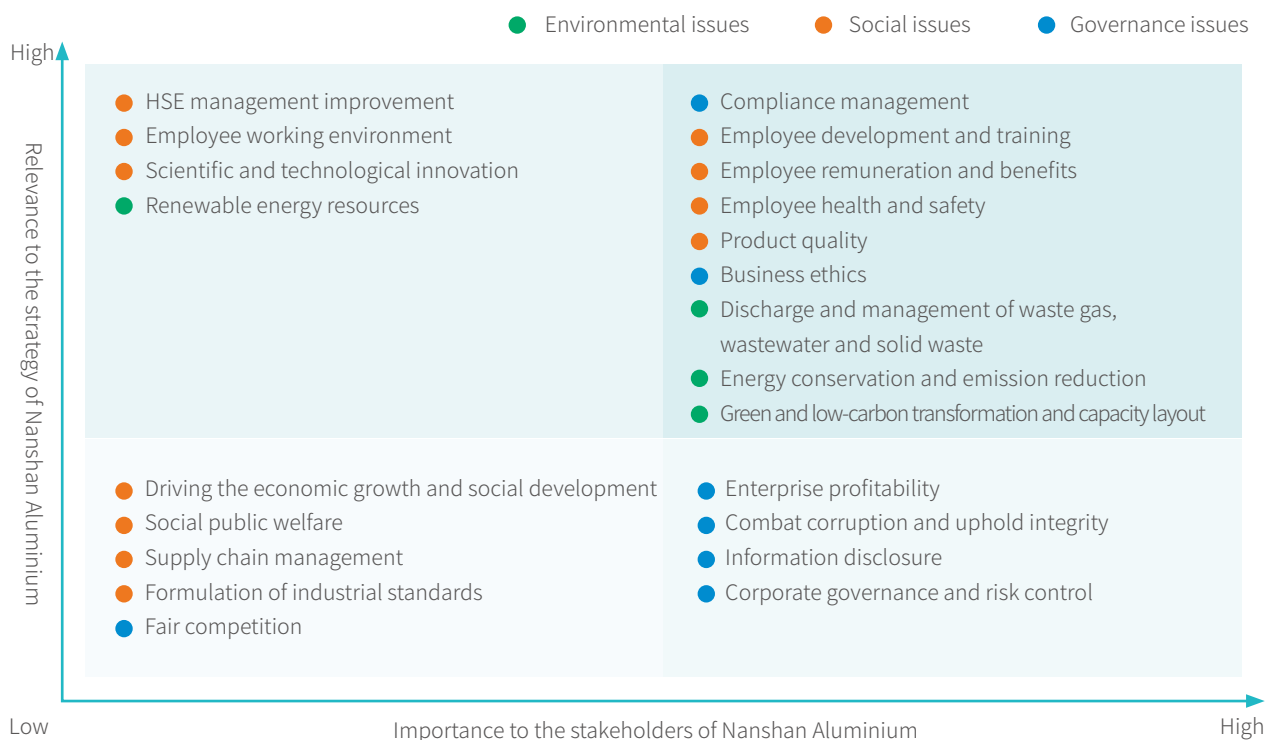


# ESG materiality issues

In 2023, we conducted in-depth discussions with our stakeholders to understand their core expectations and demands regarding Nanshan Aluminium's ESG development, considering the Company's operational status and ESG trends in the nonferrous metal industry. Through this process, we identified 22 ESG issues with significant impacts on Nanshan Aluminium. After careful consideration, we formulated a materiality issue matrix for the current year, providing a clear roadmap for implementing ESG strategies at Nanshan Aluminium.

Materiality Issues in 2023

Issue type	Issue name	Issue type	Issue name
Environmental	Renewable energy resources	Social	Employee development and training
	Discharge and management of waste gas, wastewater and solid waste		Employee remuneration and benefits
	Energy conservation and emission reduction		Employee health and safety
	Green and low-carbon transformation and capacity layout		Product quality
Social	HSE management improvement	Governance	Compliance management
	Employee working environment		Fair competition
	Scientific and technological innovation		Business ethics
	Driving the economic growth and social development		Enterprise profitability
	Social public welfare		Combat corruption and uphold integrity
	Supply chain management		Information disclosure
	Formulation of industrial standards		Corporate governance and risk control



Materiality Issue Matrix of Nanshan Aluminium in 2023

# Performance of UN SDGs

Nanshan Aluminium is dedicated to aligning the United Nations Sustainable Development Goals (UN SDGs) with materiality issues pertinent to our business growth, thereby supporting SDGs from various perspectives.



Conduct employee health check-ups and enhance the working environment

Provide comprehensive humanistic care and welfare benefits to all employees to enhance their happiness and satisfaction



Continuously invest in the research and development of green materials, and establish a research support system based on "government-industry-university-institute" with universities and research institutes

Utilise the educational resources of Nanshan Training Academy to develop tailored training plans based on the growth needs of employees at various levels and positions



Refuse gender discrimination and insist on equality of men and women for employment

Establish facilities such as medical rooms, maternity rest areas, and lactation rooms to demonstrate care and support for female employees



Conduct water resource risk assessments to ensure stable supply for production operations in terms of water consumption

Follow the principle of "multi-purpose, grading and cascade utilisation" to minimise wastewater generation and reduce its impact on health and the environment



Promote the carbon reduction in electric power through green electricity procurement and renewable energy resource utilisation

Pass the ISO 50001 energy management system certification successfully for many factories



Prohibit child labour and forced labour, and take remedial measures for any violations

Continuously promote local employment, and provide numerous job opportunities for residents in the operation areas, thereby contributing to local economic development



Strengthen research and development management system policies to accelerate innovation in research and development from various aspects such as internal research projects, industry-university-institute co-operation projects, and upstream and downstream co-operation in the industry

Broaden diversified co-operation channels to drive industry development and innovation



Foster a diverse workforce and maintain a zero-tolerance attitude towards discrimination and harassment based on employee race, gender, colour, religion, etc.

Address the needs of employees facing difficulties and organise regular visits and assistance programs for them



Foster deep communication and collaboration with indigenous residents and local organisations to ensure the responsible development and utilisation of minerals, water resources, and other natural assets, with full respect for and consent from indigenous residents



Strengthen the quality management system and actively pursue product quality certifications to promote a culture of quality awareness among all employees

Improve customer communication and feedback channels, optimise service guarantees, and safeguard customer privacy, while establishing efficient marketing management practice



Conduct assessments of climate risks and opportunities, and actively integrate relevant findings into corporate strategic planning efforts

Conduct internal carbon inventory, use the assessment results to formulate and publicly share the *Greenhouse Gas Emission Targets and Implementation Plans*, and outline specific short- to medium-term emission reduction goals for unit products, along with corresponding emission reduction strategies and measures



# 02

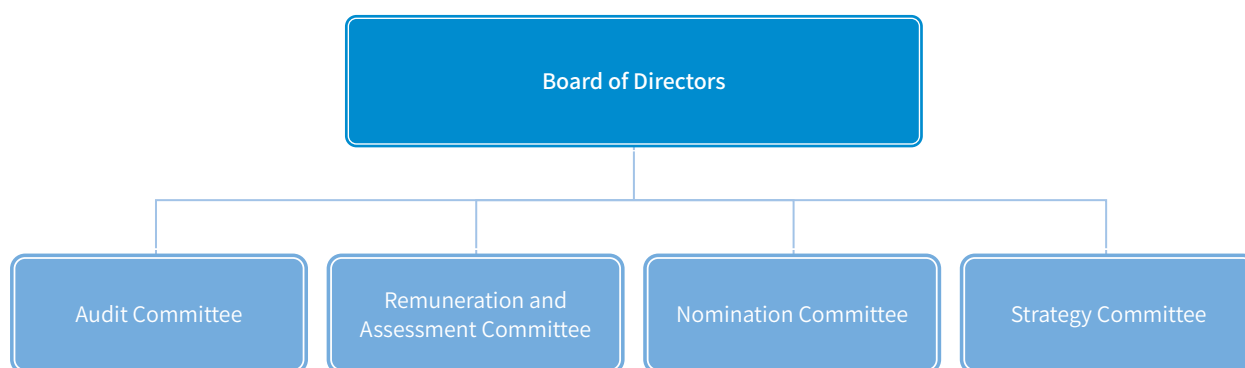
## Steady Progress Building a Sustainable Enterprise

Nanshan Aluminium understands that operating in compliance is essential for driving the Company's high-quality development. We remain committed to compliance, continually refining our corporate governance framework. We effectively implement anti-corruption measures, complaint reporting systems, and consistently advance risk management and information security protection, turning governance principles into a driving force for the Company's enduring operation.



# Corporate governance

Aligned with the *Company Law*, the *Code of Corporate Governance for Listed Companies* and *Listing Rules of Shanghai Stock Exchange*, Nanshan Aluminium has established the Shareholders' Meeting, the Board of Directors, the Supervisory Board, and professional committees to ensure that corporate governance responsibilities are fulfilled comprehensively. The Board of Directors has established four professional committees to ensure the Company's stable development. In 2023, the Company held five Shareholders' Meetings, approving 37 proposals cumulatively. Additionally, 14 board meetings were convened, with a 100% attendance rate of directors, resulting in the approval of 76 proposals in total.



Board of Directors and Committee of Nanshan Aluminium

In order to further enhance corporate governance standards, Nanshan Aluminium focuses on cultivating a diverse, compliant, and professional Board of Directors to improve the diversity of the Board of Directors and the independence in decision-making. By the end of the report period, the Company's Board of Directors includes one female director, and three independent directors. Independent directors represent 33% of the total directors.

By the end of the report period



Female director

**1** Person(s)

Independent directors

**3** Person(s)

Represent

**33%**

## Diversification of the Board of Directors

The Company is diversifying the structure of its Board of Directors by selecting members from various backgrounds, including gender, age, education, industry experience, and skills. This ensures a diverse perspective in the decision-making.

## Decision-making independence of Board of Directors

The Company strictly complies with the *Regulations on the Administration of Independent Directors of Listed Companies*. Clear rules and strict scrutiny are applied to the conditions, responsibilities, and methods of performance for independent directors.

Continuous efforts are made to empower members of the Board of Directors with independent judgment, minimising external influences and conflicts of interest in board decisions to uphold the independence of decision-making.

Following the principle of accountability to shareholders and investors, Nanshan Aluminium systematically enhances training for Board of Directors, supervisors, and senior management. This improves compliance awareness and decision-making capabilities, contributing to better corporate disclosure and laying a solid foundation for the Company's stable growth.



Training session on the *Determination of Securities Illegal Liability and Administrative Penalties for the Board of Directors of Nanshan Aluminium*

## Information disclosure and investor communication

Nanshan Aluminium strictly adheres to requirements outlined in laws such as the *Company Law*, the *Securities Law* and *Listing Rules of Shanghai Stock Exchange*. It has established internal systems like the *Management Procedures for Information Disclosure* to ensure compliance with principles of truthfulness, accuracy, completeness, timeliness, and fairness in fulfilling its information disclosure obligations. Regular and ad-hoc announcements are made to provide investors with a comprehensive understanding of the Company's operational status and future directions.

In response to industry market conditions and internal strategic planning, the Company has established and continually strengthens communication mechanisms for significant investor events. This is a practical action to safeguard the legal rights and interests of investors, particularly small and medium-sized investors. Through various communication channels such as the official website, Shanghai Stock Exchange website and the SSE E-interactive, social media platforms, phone, fax, and email, we maintain close and friendly communication with investors. We conduct a variety of activities including online and offline research exchanges, analyst conferences, roadshows, achievement meeting, and Shareholders' Meeting. These efforts enable investors to gain a three-dimensional, comprehensive, and timely understanding of the Company's production and operational status, and promote a positive brand image. In 2023, Nanshan Aluminium organised and participated in more than 130 online/offline activities for investors, communicated with over 500 buyer institutions and 20 main seller institutions.

In 2023

Nanshan Aluminium organised and participated in online/offline activities for investors

more than **130**

Communicated with buyer institutions

over **500**

Main seller institutions

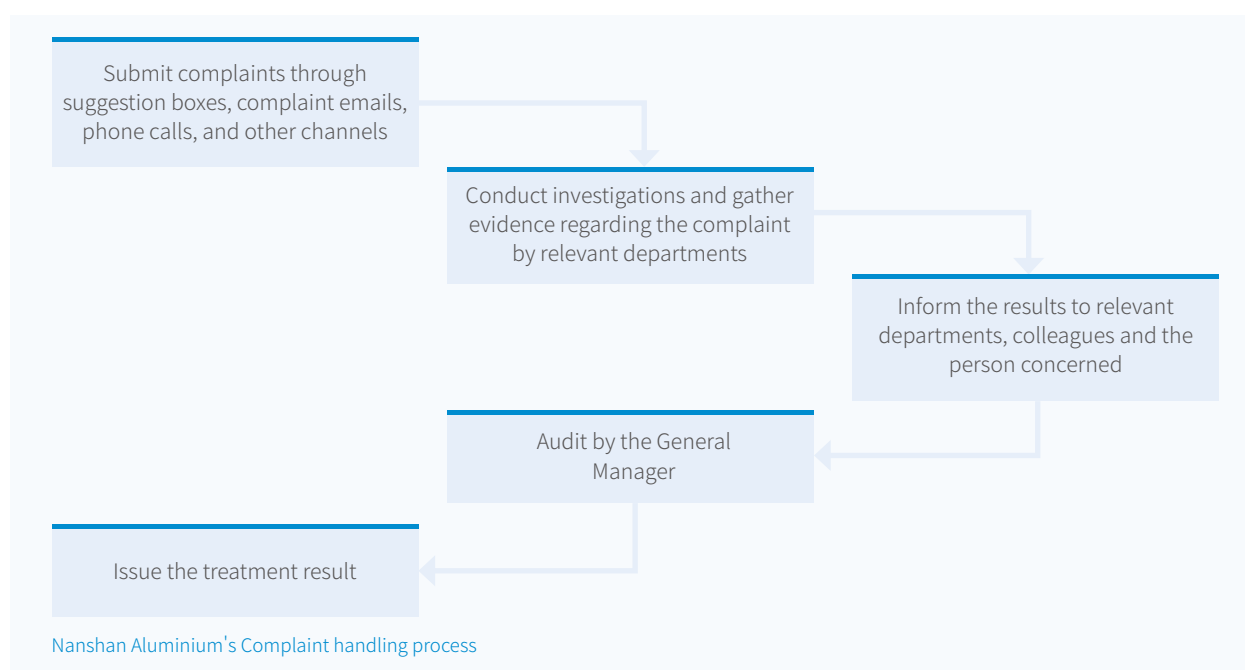
over **20**

## Integrity management

At Nanshan Aluminium, integrity is our cornerstone, guiding every aspect of our operations with a focus on compliance. We've established and continually refined our anti-corruption management and reporting and complaint mechanism to promote business ethics and compliance management. Together with our employees, suppliers, and stakeholders, we're committed to fostering a clean, transparent, and compliant business environment.

In accordance with laws and regulations such as the *Anti-unfair Competition Law*, the *Anti-monopoly Law*, *Transparency International's Anti-corruption Business Principles*, as well as authoritative certification guidelines like ASI and RBA 7.0, Nanshan Aluminium has formulated and publicly disclosed internal policies such as the *Anti-corruption Policy*, adopting a zero-tolerance attitude towards corruption, bribery, money laundering, and other unethical behaviours.

Nanshan Aluminium has established and continually optimises internal complaint and reporting mechanisms, encouraging employees, customers, suppliers, and other stakeholders to report any improper or unlawful behaviour during company operations through hotlines and reporting e-mails, collectively safeguarding a clean and ethical business environment. The Company also attaches great importance to the motivation and protection of whistleblowers, requiring all departments and subsidiaries to strictly adhere to internal regulations outlined in the *Reporting Management Policy*, ensuring the permanent and strict confidentiality of whistleblowers' identities and information, and strictly prohibiting any retaliatory actions or information disclosure against whistleblowers. Upon verification of relevant reports, the Company will also reward whistleblowers in accordance with the provisions of the *Employee Code of Conduct* and take practical actions to protect their legitimate rights and interests.



Nanshan Aluminium adheres to the highest standards of integrity to govern its commercial transactions, regularly auditing the implementation of its business ethics policies and compliance. The Company has established a dedicated Discipline Inspection and Supervision Committee responsible for overseeing matters related to business ethics and investigating and handling major violations, reporting promptly to the Chairman of Board and the Board of Directors.

We also continue to advance routine anti-corruption inspections, regularly conduct internal and external audits of business ethics, periodically open the whistleblower mailbox, and randomly select employees for interviews. In 2023, to further strengthen the foundation of the Company's compliance management, the Company effectively implemented business ethics audits to identify and assess potential business ethics risks in its operational processes and has ensured the compliance of business management within Nanshan Aluminium and its subsidiaries.

Business ethics audits of Nanshan Aluminium in 2023

RBA<sup>2</sup>code of conduct audit

- Nanshan Aluminium conducted regular internal audits for its Medium-thick Plate Company regarding compliance with the Responsible Business Alliance (RBA) code of conduct, verifying adherence to business ethics practices.
- Nanshan Aluminium invited TÜV Rheinland to conduct RBA 7.0 Responsible Business Alliance Code of Conduct certification audits for its Medium-thick Plate Company. This audit covered aspects such as business integrity, no unfair competition, fair business, advertising and competition, intellectual property rights, identity protection and prohibition of retaliation, responsible mineral procurement, and privacy. This certification aimed to strengthen compliance management levels within subsidiaries. By the end of the report period<sup>3</sup>, this certification audit remains valid.

ASI<sup>4</sup>PS<sup>5</sup>Internal audit

- Nanshan Aluminium regularly conducted ASI Performance Standard (ASI PS) internal audits for its subsidiaries, including Alumina Company, Electrolytic Aluminium Company, Medium-thick Plate Company, Aluminium Rolling Company, and Aluminium Foil Company. These audits effectively monitored subsidiary business ethics practices and management capabilities, and any business ethics risks identified during the audit were addressed through corrective actions.

We also continue to enrich the core of anti-corruption and compliance culture by regularly conducting workshop training and promoting business ethics standards to all employees, including part-time employees. By the end of the report period, the training and assessment completeness of the employees of Nanshan Aluminium in business ethics and anti-corruption reached 100%.

While continuously improving internal compliance management, Nanshan Aluminium strictly implements integrity management practices with contractors and suppliers. Guided by the internal system of the *Standards of Suppliers' Business Conduct*, we set high standards to regulate the business ethics of contractors and suppliers. Taking reference from ASI PS certification and RBA guidelines, we have developed the *Supplier RBA Commitment Letter* and *Adherence to Business Ethics Agreement* for suppliers to sign, ensuring a supply chain with integrity. We also require all contractors and suppliers to voluntarily comply with relevant business ethics laws and regulations applicable to their operations and establish anti-corruption and bribery policies. The Company conducts regular audits of contractors and supplier anti-bribery and anti-corruption policies to verify compliance. By the end of the report period, Nanshan Aluminium has conducted field business ethics audits for 10 major raw material suppliers in China.

By the end of the report period

The training and assessment completeness of the employees of Nanshan Aluminium in business ethics and anti-corruption reached

100%

Nanshan Aluminium has conducted field business ethics audits for major raw material suppliers in China

10

<sup>2</sup> RBA: Responsible Business Alliance.

<sup>3</sup> In July 2022, TÜV Rheinland conducted an RBA7.0 Responsible Business Alliance Code of Conduct verification certification for the Plate Company. The customer-recognised validity period for the RBA 7.0 Responsible Business Alliance Code of Conduct verification is two years, so by the end of the report period, the certification is still valid.

<sup>4</sup> ASI: Aluminium Stewardship Initiative.

<sup>5</sup> PS: Performance standard.



# Risk management

Nanshan Aluminium considers risk management as one of the key focus areas in its business operations. The Company has established and continually improves internal risk control systems such as the *Control Procedures for Risks and Opportunities*. It has set up five major audit departments covering finance, supply, sales, physical assets and budgeting to lay the organisational foundation for advancing specialised audits and daily risk identification and assessment work.

Key Internal Operation Risks

- Production and operation

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- Employee health and safety

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- Ecological environment

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- Protection of human rights

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- Capital flow

External Macro Potential Risks

- Customs

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- Taxes

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- Import and export

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- Technical innovation

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- International settlement and foreign exchange

Internal/External Risk Consideration Dimension<sup>6</sup>

In 2023, Nanshan Aluminium continued to implement specialised audit plans related to supply, sales, and other business areas, and reported audit results and improvement suggestions to the Board of Directors. Additionally, the Company effectively addressed potential exchange rate fluctuation risks in its foreign trade activities by adopting multiple currency settlement methods and conducting spot foreign exchange transactions in small amounts multiple times. This provided assurance for the Company's compliance and facilitated the progress of its overseas business expansion efforts.



<sup>6</sup> Please refer to 2023 Annual Report of Nanshan Aluminium for details: [http://www.sse.com.cn/disclosure/listedinfo/announcement/c/new/2024-02-29/600219\\_20240229\\_MM2F.pdf](http://www.sse.com.cn/disclosure/listedinfo/announcement/c/new/2024-02-29/600219_20240229_MM2F.pdf).

# Information security and privacy protection

Nanshan Aluminium has always considered information security and privacy protection as one of its important corporate responsibilities. The Company adheres to laws and regulations such as the *Personal Information Protection Law* and the *Cyber Security Law*, continuously optimising requirements in network security systems such as the *Management System for Data Security*, the *Information Management System*, the *Implementation Rules for Trade Secret Management*, and the *Control Procedures for Production Process*. Furthermore, the Company has established network security teams composed of technical personnel from various entities and information departments. It embeds requirements for information security and privacy protection throughout the whole process, forming a management mechanism characterised by "clear regulations, strict adherence, strict enforcement, and accountability for violations".

We actively adopt the best and most practical information security protection technologies and conducted special governance on network security and special rectification of weak passwords during the report period. This multi-dimensional approach ensures the security of company information storage and transmission, enhancing overall network security defense capabilities. We are diligently advancing information security-related system certification work, fulfilling our network security management responsibilities through practical actions. We also prioritise customer privacy security. In collaboration, we have signed corresponding *Confidentiality Agreement* with some customers, further refining customer information classification management and optimising emergency response procedures for customer information disclosure, and fully protecting customer privacy and the Company's own rights and interests.

By the end of the report period, Nanshan Aluminium has not experienced any network information security-related violations. Additionally, the Company has obtained TISAX<sup>7</sup> certification with an AL2 label and completed the re-evaluation of the National Information Security Level Protection Level 2. Our subsidiary, Donghai Aluminium Foil Co., Ltd., has successfully passed the ISO 27001 certification.

## Nanshan Aluminium's Network information security measures



- Adopt GreenShield DLP<sup>8</sup> technology to ensure data security during transmission and storage processes.
- Equip comprehensive information security protection facilities and conduct regular maintenance and security checks.
- Conduct targeted network security protection around malicious domain violations on host machines, and block malicious domains and related threat hosts through technical means to effectively safeguard end-user security.



- In 2023, Nanshan Aluminium carried out special governance on network security focusing on dimensions such as computer terminal security, legitimate software use, internet behaviour norms, and wireless network security to enhance the Company's information security protection level.
- Computer terminal security: Prevent data leakage by installing firewalls, intrusion detection systems, and other technical means.
  - Legitimate software use: Require employees to use legitimate software to avoid safety hazard associated with pirated software.
  - Internet behaviour norms: Formulate and implement internet behaviour guidelines to prevent network safety risks caused by improper employee online activities.

<sup>7</sup> TISAX (Trusted Information Security Assessment Exchange): TISAX is a trusted information security assessment exchange standard mainly for the automotive industry. It aims to build a bridge of trust for automotive manufacturers, suppliers, and third-party information security assessment organisations to help enterprises deal with information safety risks.

<sup>8</sup> DLP: Data leakage prevention. DLP, is a strategy that prevents designated data or information assets of an enterprise from flowing out of the enterprise in a form that violates security policy through certain technical means. The concept of DLP originates from abroad and is the most mainstream information security and data protection method internationally.

Privacy protection measures

Nanshan employees are required to use company email and are prohibited from accessing other email accounts. Employee email accounts are deactivated immediately upon departure.

Encryption software is used to protect the computers of personnel involved in sensitive products such as Medium-heavy Plate Branch.

Employees are required to sign confidentiality agreements upon joining the Company.

Departments are prohibited from disclosing sensitive information of other customers during communication, exchange, or response with a particular customer. If data comparison is needed, customer information must undergo desensitisation.

Privacy protection training is conducted.

Based on a series of information security and privacy protection measures, Nanshan Aluminium convened network security meetings for employees at different levels, providing personalised network security training courses and practical network attack and defense exercises. This continuous effort aims to strengthen employees' awareness of information security and enhance the Company's network security defense capabilities. During the report period, Nanshan Aluminium has carried out 10 network information training sessions, with the total training period of 20 hours.

Case | "Guarding the network 2023" network security attack and defense exercise

In June 2023, Nanshan Aluminium organised the "Guarding the Network 2023" network security attack and defense exercise. Leveraging security perception platforms, WAF (YXLink Web Application Firewall), AF (Sangfor Application Firewall), AES terminal protection centres, and other network security platforms, the exercise tested the rapid response and collaborative combat capabilities of the security operations and maintenance team in real combat scenarios, effectively enhancing the Company's network security defense level.



Site of "Guarding the Network 2023" Network Security Attack and Defense Exercise

Case | Cyber Security Seminar in 2023 National Cyber Security Awareness Week

In September 2023, Nanshan Aluminium actively responded to the national call for cyber security knowledge dissemination and jointly organised the cyber security seminar in "2023 National Cyber Security Awareness Week" with the Longkou City Cybersecurity Brigade.

This seminar aimed to continuously strengthen the awareness of network security among information officers from various entities through real attack Case warnings, security technology demonstrations, emergency response drills, and policy interpretation sessions, using experiential teaching methods. These efforts contribute to the overall enhancement of the Company's network security defense capabilities.



2023 Cyber Security Awareness Seminar

# 03

## Adhering to Tradition while Innovating and Providing Quality and Wholehearted Services

Nanshan Aluminium, rooted in a high starting point, is committed to providing high-quality products and services to global customers. We drive product upgrades through technological innovation, insist on grasping quality, and continuously break through in business areas. We provide customers with a comprehensive communication feedback and complaint handling mechanism to better listen to their voices, improve product quality and service experience, and create more value for customers.



# Product quality

Nanshan Aluminium has always adhered to the quality culture concept of "quality first, customer supreme, excellence, and winning by quality", taking customer demand as the direction for quality improvement and implementing quality standards upgrades. We continuously deepen the construction of the quality management system, actively carry out various product physical quality certifications, and continuously build advanced and competitive product standards, setting an example for industry progress and development.

## Quality management

Nanshan Aluminium adheres to the road of quality and efficiency, continuously optimises its own quality management model and quality management team, establishes a three-level quality management model of Nanshan Aluminium Quality Management Department - Quality Assurance Department of branches - Quality Inspection Department of branch factories, and a quality risk pre-control mechanism. We comprehensively control the product realisation process throughout the full cycle to ensure that product quality continues to meet customer requirements continuously and stably.



As the first responsible enterprise of aluminium industrial chain to obtain dual certification in ASI Performance Standard (PS) and Flow of Chain of Custody (CoC) in China, Nanshan Aluminium and its subsidiaries have received multiple quality management system certifications, including ISO 9001 Quality Management System, IATF 16949 automotive quality management system, AS 9100 aerospace management system, and ISO/TS22163 railway system quality management system. This achievement sets a benchmark for high-standard quality development and sustainable growth in the aluminium processing industry.

Quality management system certification	Certification subject of Nanshan Aluminium
ISO 9001 Quality Management System	Shandong Nanshan Aluminium Co., Ltd.
IATF 16949 Automotive Quality Management System	Shandong Nanshan Aluminium Co., Ltd (Flat-Rolled Product Division), Yantai Donghai Aluminium Foil Co., Ltd., Aluminium Profile Plant of Nanshan Aluminium
AS 9100 Aerospace Management System	Shandong Nanshan Aluminium Co., Ltd (Flat-Rolled Product Division), Aluminium Profile Plant of Nanshan Aluminium
ISO/TS 22163 Railway System Quality Management System	Aluminium Profile Plant of Nanshan Aluminium
GB/T 29490 Enterprise Intellectual Property Management System	Shandong Nanshan Aluminium Co., Ltd.
NADCAP Aviation Products and Special Process Certification	Shandong Nanshan Aluminium Co., Ltd (Flat-Rolled Product Division), Aluminium Profile Plant of Nanshan Aluminium

#### Quality System Certification

In 2023, Nanshan Aluminium continued to enhance its quality indicator monitoring mechanism, guided by the goal of improving the yield rate. It implemented a digital and intelligent quality management system, carried out multiple quality improvement projects, and aimed to enhance the efficiency and accuracy of quality management.

#### Quality Indicator Development

- Guided by the goal of improving the yield rate, Nanshan Aluminium enhanced its quality responsibility tracing, establishing statistical indicators for product yield rates across 103 production areas, workshops, and machine units, along with 36 specific product yield rates and weekly dynamic yield rates.

#### Quality Improvement Projects

- Nanshan Aluminium conducted quality improvement projects to unearth potential cost reduction and efficiency enhancement opportunities, focusing on reducing defect rates, improving yield rates, and enhancing customer satisfaction.
- In 2023, a total of 84 quality improvement projects were implemented, continuously enhancing product quality through ongoing improvements.

#### Quality Information Supervision

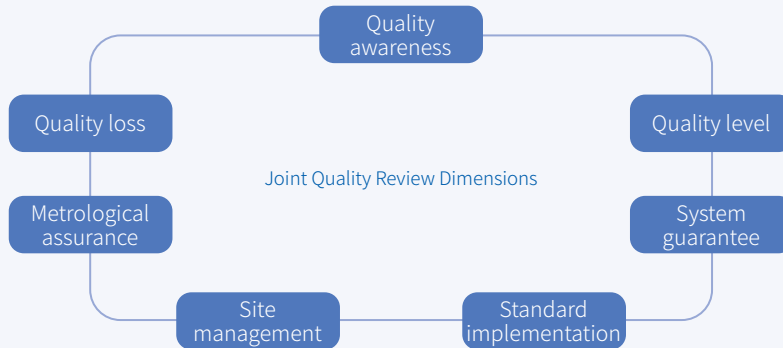
- Nanshan Aluminium established a three-tier quality information sharing platform and formed monitoring teams for daily quality reports, scrap reports, and customer complaint logs. These teams oversee information related to process control and quality inspection across subsidiaries of Nanshan Aluminium.

The Company organises internal and external reviews according to the annual audit plan. During the report period, Nanshan Aluminium conducted 54 on-site supervision inspections for process discipline and quality issues, identifying a total of 301 quality issues. Each branch continuously improved during the active rectification process.



Case | Joint quality review system

To strengthen the foundation of quality management and enhance on-site quality control, the Quality Management Department of Nanshan Aluminium collaborates monthly with the Operation Co-ordination Department, System Certification Department, Equipment Department, Measurement Centre, and other departments to conduct joint supervision inspections of the "men, machines, materials, methods, environment, and measurement" aspects affecting quality. We have established mechanisms for supervising product quality and process management quality, promptly proposing corrective measures and improvement suggestions for identified issues, promoting continuous improvement in quality management, and implementing both process and management zero-defect initiatives in key quality areas.



Quality culture

To enhance employees' quality awareness and skills, Nanshan Aluminium has established a normalised quality training system. Additionally, regular activities such as Quality Month and quality knowledge competitions are held to improve employees' professional skills and quality awareness. During the report period, Nanshan Aluminium continued to cultivate its quality brand, achieving "well-known brand" coverage for its main products, with 11 products winning the "Gold Cup Award" for the physical quality.



"Gold Cup Award" Certificate for the Physical Quality of Nonferrous Metal Products



Case | Quality culture activities organised by Nanshan Aluminium

In 2023, Nanshan Aluminium conducted extensive quality publicization and education, encouraging innovation and vitality. Activities such as "Quality Month", "Quality Lecture Hall", "Golden Ideas", "Quality Knowledge Competition", and "Quality Improvement Around Us" were organised. These included a series of mass quality management activities like themed speeches, QC team/group competitions, and trustworthy team competitions. These initiatives aimed to instil a "zero defects" and "continuous improvement" quality concept among employees at all levels, enhancing quality and safety assurance.

During the report period, Nanshan Aluminium and its branches organised approximately 583.5 hours of relevant quality training.

During the report period,

Nanshan Aluminium and its branches organised relevant quality training approximately

**583.5** hours



# Innovative research and development

Nanshan Aluminium considers research and development innovation as the core of its competitiveness and a key factor towards success. We have cultivated an environment conducive to innovative development, increased support for technological innovation, and strengthened the construction of its research and development capabilities and talent team. Additionally, we have integrated intellectual property efforts with product research and development, and technological innovation, transitioning from patents to productivity. This integration has enhanced our technological innovation, product competitiveness, and contributed to the high-quality development of the industry.

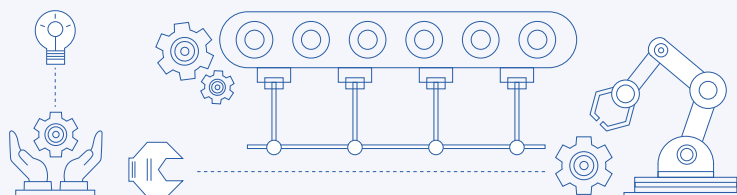
## Scientific research innovation

Nanshan Aluminium adheres to the development strategy of "innovation-driven, high-end manufacturing, and intensive processing". The Company has improved upstream production processes, intensified efforts in the research and development, and refining of downstream product technologies, and actively pursued key core technologies and "three-characteristics" technologies that are disruptive, forward-looking, and breakthrough. We continue to establish and strengthen research and development management system and policies to accelerate innovation in research and development from various aspects such as internal research projects, industry-university-institute co-operation projects, and upstream and downstream co-operation in the industry. During the report period, Nanshan Aluminium's total research and development expenditure reached RMB 1.273 billion.

### Case | Nanshan Aluminium's roller hearth furnace project passes provincial major scientific and technological innovation project acceptance

On December 8<sup>th</sup>, 2023, the Department of Science & Technology of Shandong Province organised a panel of experts to conduct a comprehensive performance evaluation of the 2019 Shandong provincial major scientific and technological innovation project titled "Research and Development of Roller Hearth Continuous Solution Quenching Technology and Equipment for Aluminium Alloy Medium-heavy Plates for Aviation Use" undertaken by Nanshan Aluminium.

This project is a collaboration between Nanshan Aluminium and Northeastern University focused on developing high-uniform heating devices and systems, high-strength quenching devices, high-uniform cooling systems, and high-precision heat treatment furnaces with a fully automatic intelligent control system. Additionally, the project involved the research and development of special high-temperature resistant metal brush rolls and installation techniques for aluminium alloy medium-heavy plate roller hearth furnaces. These efforts culminated in the establishment of a roller hearth continuous solution quenching production line for aviation aluminium profiles, marking a significant milestone in breaking foreign technological monopolies and achieving substantial economic and social benefits.





Case | Nanshan Aluminium's aviation aluminium profiles support the development of China's domestic large aircrafts



For many years, Nanshan Aluminium has been deeply involved in the research and development of aviation aluminium profiles. With its outstanding product quality and strong technological research and development capabilities, the Company has become the first Chinese enterprise of deep processing of aluminium to supply aviation plates to top global aircraft manufacturers such as Boeing and Airbus. Building on this achievement, the Commercial Aircraft Corporation of China Ltd (COMAC) Shanghai Aircraft Design & Research Institute and Nanshan Aluminium have established the "Civil Aircraft Aluminium Alloy Material Joint Research Centre". As a new type of scientific research innovation platform, this centre fully leverages COMAC's aircraft manufacturing experience and Nanshan Aluminium's technical advantages in aluminium alloy products for aircrafts to create a world-class research base for civil aviation aluminium alloy materials.

Nanshan Aluminium provides full support to the research, development and production of China's key aircrafts, including the C919, C929, and ARJ21. The Company has successfully overcome the core key technology challenges related to aluminium profiles for wing spars in domestic aviation wings, breaking foreign monopolies and playing a crucial role in promoting the localisation of aviation aluminium profiles. Since 2017, Nanshan Aluminium has been involved in the research and development of China's domestic large aircraft, the C919. The Company undertook the research and development of some aluminium alloy products for COMAC's C919, which have now passed certification of multiple models for 2- and 7-series alloy plates and sheets. Batch supply has commenced, making Nanshan Aluminium one of the main suppliers of aviation plates for C919.



### Industry-university-institute Project Highlights in 2023

Nanshan Aluminium collaborates on the Industrialisation Technology and Demonstration of Fine Control of Recycled Aviation Aluminium Profiles with University of Science and Technology Beijing and other institutions, aiming to establish production process regulations and a corresponding product evaluation system.

Nanshan Aluminium, in collaboration with Yantai Nanshan University, participated in the "High-quality Auto Sheet Application" project, earning the third prize in the Shandong New and Old Kinetic Energy Conversion High Value Patent Cultivation Competition.



Third prize in the Shandong New and Old Kinetic Energy Conversion High Value Patent Cultivation Competition

Nanshan Aluminium, in conjunction with Yantai Nanshan University and Hangxin Materials Technology Co., Ltd., jointly applied for the project of "Aluminium Alloy for Auto Body and Its Preparation Method", which won the Yantai High-quality High-Value Patent Project.



Certificate of Yantai High-quality High-Value Patent Project

### Case | Nanshan Aluminium achieves first "China Patent Silver Award"

Nanshan Aluminium, in collaboration with GRIMAT Engineering Institute Co., Ltd., was awarded the "China Patent Silver Award" for the invention patent of *An Aluminium Alloy Material and Preparation Method Suitable for Auto Body Sheet Manufacturing*. This achievement represents the highest honour and a historic breakthrough for Nanshan Aluminium in the field of Chinese patents.

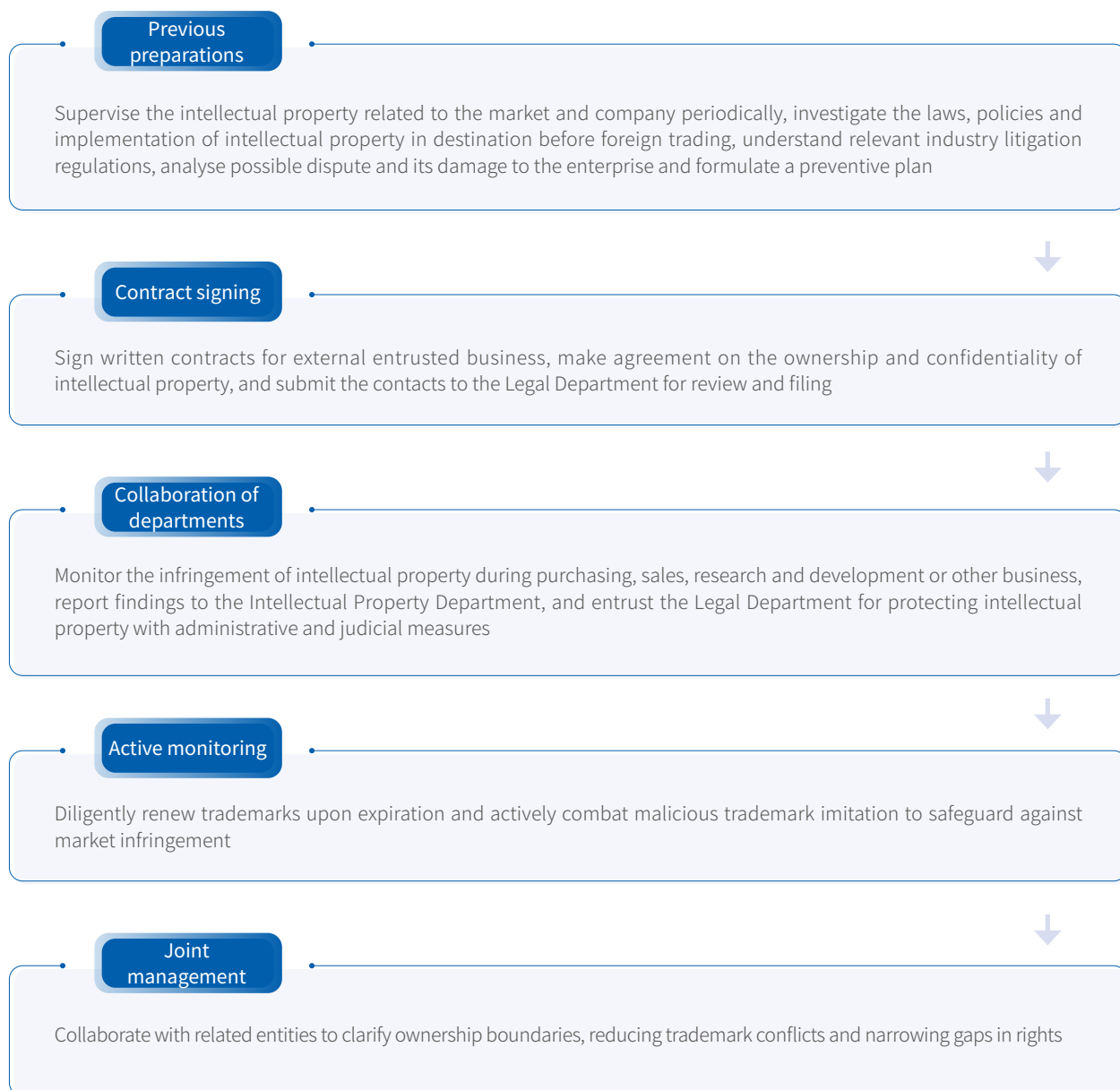
The revolutionary technology of this patent significantly enhances the strength and room temperature stability of aluminium alloy auto body sheets, reduces the hardening phenomenon during the stagnation process of aluminium alloy auto sheets, and effectively addresses the issue of natural aging hardening of aluminium alloy auto body sheets. This technology not only fills a gap in the production of aluminium alloy auto sheets in China but also plays a pivotal role in advancing technological progress and optimising and upgrading the industrial structure of its production, offering promising development prospects.



## Intellectual property

Intellectual property protection is a cornerstone of sustaining innovation. Nanshan Aluminium rigorously adheres to the *Patent Law*, the *Anti-unfair Competition Law*, the *Enterprise Intellectual Property Management*, the *Guidelines for Intellectual Property Management of Industrial Enterprises* and other related laws and regulations. The Company has developed the *Management System Manual* for the intellectual property protection, which includes a structured process for trademark and copyright

protection applications, conducting risk assessments and registrations according to business requirements. These efforts comprehensively advance the creation, protection, utilisation, and management of intellectual property. During the report period, Nanshan Aluminium acquired the certification of GB/T 29490 Enterprise Intellectual Property Management System and successfully completed the intellectual property management system revision and re-certification audit.



To further bolster Nanshan Aluminium's technological innovation capabilities, inspire innovation and creativity, and foster the passion for innovation among employees, we have implemented a series of incentive programs. These initiatives encourage all employees for patent application and paper publishing and accelerate the transformation of intellectual property through cash bonus. Besides, we organise employees for special training on intellectual property, enhancing their awareness of intellectual property and boosting their capacity for independent innovation. During the report period, Nanshan Aluminium carried out 5 internal training sessions on intellectual property.

During the report period

Nanshan Aluminium carried out internal training sessions on intellectual property.

**5** times



### Case | Nanshan Aluminium's participation in external intellectual property training



In November 2023, Nanshan Aluminium's intellectual property management personnel participated in the 2023 China National Intellectual Property Administration Enterprise Intellectual Property Work Training Class organised by the Yantai Administration for Market Regulation. The training focused on the *Special Action Plan for Patent Transformation and Utilisation (2023-2025)*, providing insights into key policies and tasks related to enterprise intellectual property.

### Annual patent achievements



In 2023

Nanshan Aluminium was granted new invention patents

**10**

Utility models

**37**

Filled trademark applications

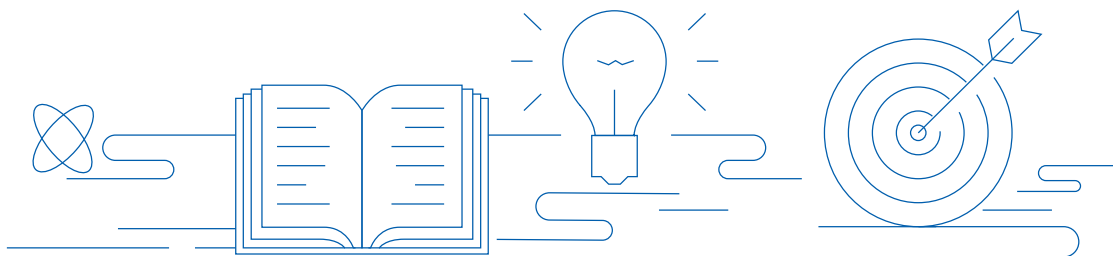
**31**

A total of inventions

**87**

Utility models were authorised

**127**

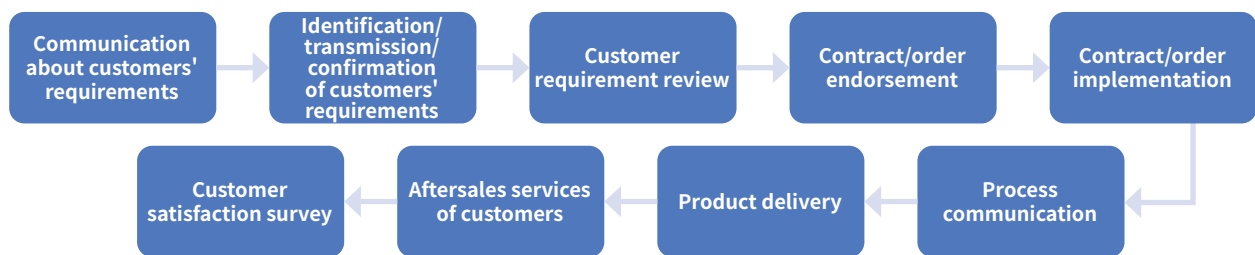


## Customer service

By adhering to the concept of service-oriented, Nanshan Aluminium dedicates itself to providing customers with timely, professional, and warm service experiences, with the aim of actively enhancing the customer satisfaction. We continue to improve customer communication and feedback channels, optimise service guarantees, and safeguard customer privacy, while establishing efficient marketing management practice.

## Quality service

Nanshan Aluminium abides by the laws and regulations such as the *Law of the Protection of Consumer Rights and Interests*, formulates internal policies such as the *Process Control Procedures Related to Customers*, the *Control Procedures for After-sales Service*, the *Control Procedures for Customer Satisfaction Measurement* and the *Management Regulations for Product Service*. These policies ensure the implementation of a comprehensive customer service management mechanism to optimise customer service experiences to the largest extent and improve the efficiency of addressing customer needs. Monthly on-site visits and weekly communication through various means, including telephone visits, correspondence, fax communication, video conferences, and emails, are conducted to promptly address customer orders, delivery progress, shipment plans, customer payments, after-sales service, and other related matters.



Customer Service Process

## Customer complaints

We standardise the customer complaint and product service procedures according to the *Management Regulations for Product Service*, and clearly define complaint classification standards and the responsibilities of each department in handling complaints. We ensure to respond to the after-sales service and requirements in the current day. When necessary, special meetings are organised, or visits to customers are conducted to deal with the quality objections of customers timely and properly during the purchasing and using, and to prevent similar customer complaints. During the report period, all customer complaints received by Nanshan Aluminium were promptly and properly handled, with a 100% timely processing rate.



Customer Complaint Service Process

## Satisfaction survey

We conduct the customer satisfaction survey every year according to the *Control Procedures for After-sales Service*, including but not limited to the investigation on product quality, delivery quality, service quality, price, packaging, and transportation. For the items with low satisfaction mark, we co-ordinate with relevant departments for rectifications, and track and verify whether the problems are improved.

In 2023, Customer satisfaction survey results

Flat-rolled products

**96** points

Aluminium Profile Product Division

**98.92** points

## Responsible marketing

Nanshan Aluminium focuses on responsible marketing and is committed to building a fair, justice and open marketing ecology. Annually, the Company formulates marketing policies and management systems based on market dynamics and product realities, which are strictly adhered to by sales personnel. We promptly refine and adjust our marketing policies and management systems if significant market changes occur. Additionally, we ensure the protection of customer rights and interests through comprehensive marketing training and audits.

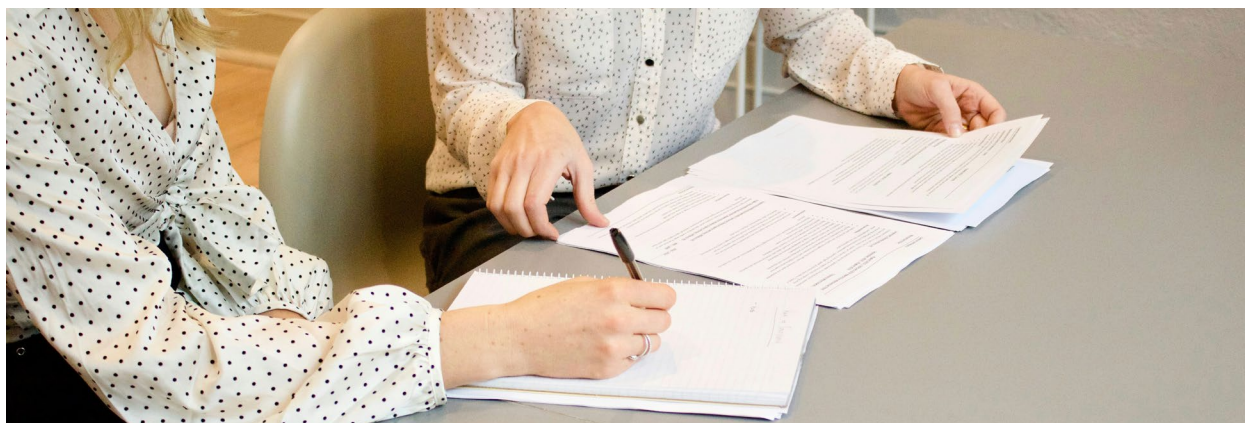
### Training of Responsible Marketing

Develop marketing training plans and conduct specialised marketing training sessions for all sales personnel every month, which cover product knowledge, project management, customer management, marketing systems, business etiquette, and other areas to enhance the overall quality and level of sales teams.

### Audit of Responsible Marketing

The Sales Management and Audit Departments track and inspect the implementation of marketing policies, management systems, sales contracts, and behavioural standards by sales personnel during business operations, and promptly rectify any deviations.

To further ensure the marketing compliance, we have formulated the *Management Procedures for Clean Governance and Marketing Management System* to stipulate the integrity of business personnel. All departments conduct self-inspection and self-correction, and are subject to the review of the Audit Department. Sales personnel are required to adhere to the *Integrity Agreement* signed with customers during the co-operation. In cases of violations or misconduct by sales personnel, the Company will take appropriate disciplinary action based on the severity of the offense.



# Making progress together

By actively following the concept of "making progress together", Nanshan Aluminium is committed to co-operating with the government, enterprises and universities to promote industry construction and development through co-construction and sharing and achieve win-win results in expanding co-operation with all sectors of society.

## Industry Collaboration

Nanshan Aluminium upholds the principles of co-operation and mutual benefit, actively seeking diverse collaboration opportunities. We actively participate in various industry associations, engaging in discussions and seminars with peer enterprises on industry development and technological innovation. We also work to implement tangible outcomes in industry associations, driving the industry development and innovation. During the report period, Nanshan Aluminium served as a director or member unit in multiple industry associations such as China Nonferrous Metals Industry Association, working in tandem with peer enterprises to promote the sustainable development of the nonferrous metal industry.

Name of industry association	Position
China Nonferrous Metals Industry Association	Vice President Business
China Nonferrous Metals Fabrication Industry Association	Vice Director-General Business
Shandong Advanced Materials Industry Association	Vice President Business
Shandong Aluminium Industry Association	Vice President Business

### Association participation of Nanshan Aluminium

Furthermore, leveraging its strengths in scientific research and development, Nanshan Aluminium actively promotes the formulation of industrial standards.



### Preparation of national and industrial standards

In 2023, Nanshan Aluminium participated in revision of 21 national standards and 13 industrial standards, including as the main drafter of 1 national standard and 5 industrial standards.

In 2023, Nanshan Aluminium participated in formulating, revising and releasing 12 national standards and 39 industrial standards, including as the main drafter of 1 industrial standard.

## Case | Hosting the National Nonferrous Light Metal Standards Work Conference



From August 3rd to 5th, 2023, the National Nonferrous Light Metal Standards Work Conference was convened at the Nanshan International Conference Centre. Organised by the National Nonferrous Metal Standardization Technical Committee and undertaken by Nanshan Aluminium, the conference convened over 50 experts and leaders from 28 entities, including the Nonferrous Light Metal Standards Committee, COMAC Shanghai Aircraft Design & Research Institute, GRIMAT Engineering Institute Co., Ltd., Northeast Light Alloy Co., Ltd., Southwest Aluminium (Group) Co., Ltd., Northwest Aluminium (Group) Co., Ltd., Seres, Li Auto and Great Wall Motor.

During the conference, discussions centred around 6 national and industrial standards drafted by Nanshan Aluminium, including *Aluminium Alloy Sheets for Auto Body Coverings*, *Aluminium Alloy Ingots for Aviation Products*, *General Technical Specification of Aluminium Alloy Plates and Sheets for Aviation Products*, *Wrought Aluminium Alloy Plates and Sheets for Aviation Products - Part 1: 7050T7451 Plate*, *Ultra Phased-array Inspection Method of Wrought Aluminium and Aluminium Alloy Products*, *Fluorescent Penetration Inspection Method of Wrought Aluminium and Aluminium Alloy Products*. Undertaking the drafting of these 6 main draft standards demonstrates the recognition of Nanshan Aluminium's competitiveness and influence in the aviation plate and auto sheet markets by the Nonferrous Light Metal Standards Committee and the industry. It also reflects Nanshan Aluminium's commitment to "serving all customers with high technology and quality, better service and latest products from a high starting point".



## Case | Nanshan Aluminium made a stage pose on ALUMINIUM CHINA Exhibition



On July 5th, 2023, the ALUMINIUM CHINA Exhibition opened at the Shanghai New International Expo Centre. Nanshan Aluminium showcased its high-end aluminium processing products, demonstrating the Company's excellent achievements in the field of high-end aluminium processing to the public.

Nanshan Aluminium's booth, located at the centre of Hall N3 of the Shanghai New International Expo Centre, covered an area of nearly 400m<sup>2</sup>. The booth displayed a variety of products in different categories, including flat-rolled foils, profiles, and deep processing products for the aviation, automotive, rail transit, packaging, and new energy industries. Among the many products showcased, the most attention-grabbing was a concept exhibit of a new energy vehicle constructed using Nanshan Aluminium's auto sheet products. This "star" product showcased Nanshan Aluminium's research and development achievements in the lightweight of automobile and new energy fields, attracting the attention of numerous Chinese and international exhibitors.





## Industry-university-institute co-operation

While constantly improving the independent innovation capability, we actively collaborate with government departments, peer enterprises, universities and other institutions to promote structural reforms on the supply side of the industry, and facilitate the healthy and sustainable development of the industry, which fully reflects the mission and responsibility of Nanshan Aluminium as an excellent representative of the industry. We continue to invest in the research and development of green materials, establish a research support system based on "government-industry-university-institute" with universities and research institutes, expand the upstream and downstream communication channels of the industry, accelerate technical co-operation and innovation of enterprises, and collaborate with industry partners on the path of green innovation and development.

Project name 	Co-operative entity 	Achievement 
<ul style="list-style-type: none"> <li>• Key Technology Research and Development and Industrial Demonstration of High-performance Aluminium Alloy Sheets for Transportation</li> </ul>	<ul style="list-style-type: none"> <li>• Shandong Hongqiao New Material Co., Ltd., New Material Research Institute of Shandong Academy of Sciences</li> </ul>	<ul style="list-style-type: none"> <li>• Completed all research and formed corresponding process system documents</li> </ul>
<ul style="list-style-type: none"> <li>• Industrialisation Technology and Demonstration of Fine Control of Recycled Aviation Aluminium Profiles</li> </ul>	<ul style="list-style-type: none"> <li>• University of Science and Technology Beijing, Central South University, GRIMAT Engineering Institute Co., Ltd.</li> </ul>	<ul style="list-style-type: none"> <li>• Established a 1,000 tons industrialised technology demonstration production line for recycled aviation aluminium</li> </ul>
<ul style="list-style-type: none"> <li>• An Aluminium Alloy Material and Preparation Method Suitable for Auto Body Sheet Manufacturing</li> </ul>	<ul style="list-style-type: none"> <li>• GRIMAT Engineering Institute Co., Ltd.</li> </ul>	<ul style="list-style-type: none"> <li>• China Patent Silver Award</li> </ul>



# 04

## Harmonious Coexistence Safeguarding the Natural Environment

Nanshan Aluminium upholds the environmental protection concept of "Harmonious Coexistence, Safeguarding the Green Mountains the Natural Environment", taking action to respond to the era's call for green development. We actively address climate change, conducting assessments of climate risks and opportunities, promoting green production and transformation, reducing energy consumption, and achieving greenhouse gas emission reductions. The Company rigorously implements environmental management, striving to achieve harmonious coexistence between production activities and the natural environment, safeguarding a clean, prosperous, and sustainable future for generations to come.

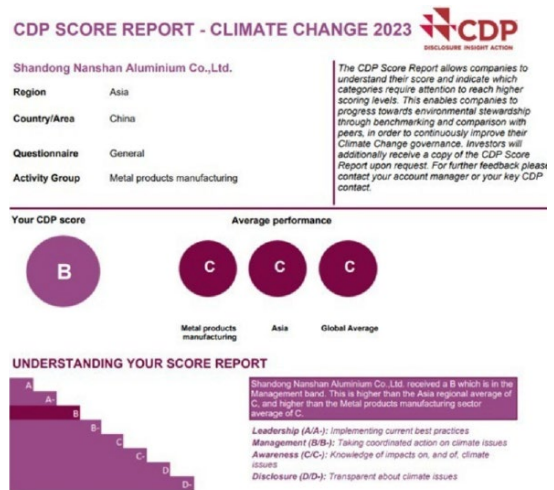
In 2023, Nanshan Aluminium was successfully selected as a pilot entity for the construction of the 2023 Shandong Province Green, Low-Carbon, and High-Quality Development Pioneer Zone.



# Addressing climate change

Low-carbon transformation has become an essential aspect of the manufacturing industry's journey towards sustainable development. As a member of the Aluminium Stewardship Initiative (ASI), Nanshan Aluminium actively responds to the *Paris Agreement* and the *National Climate Change Adaptation Strategy* of Chinese government, integrating climate change considerations into the Company's strategic planning and daily operations, setting an example for promoting high-quality, green development in China's nonferrous metal industry.

By the end of the report period, for two consecutive years, we have participated in the climate change questionnaire disclosure of Carbon Disclosure Project (CDP) and received a continuous Level "B" management evaluation on from CDP in 2023. This Level "B" management evaluation is higher than the global average of the metal processing industry, fully demonstrating that Nanshan Aluminium has gained broad recognition in green, low-carbon, and sustainable management and development. It also enhances our corporate image in addressing climate change, effectively strengthening our industry competitiveness.

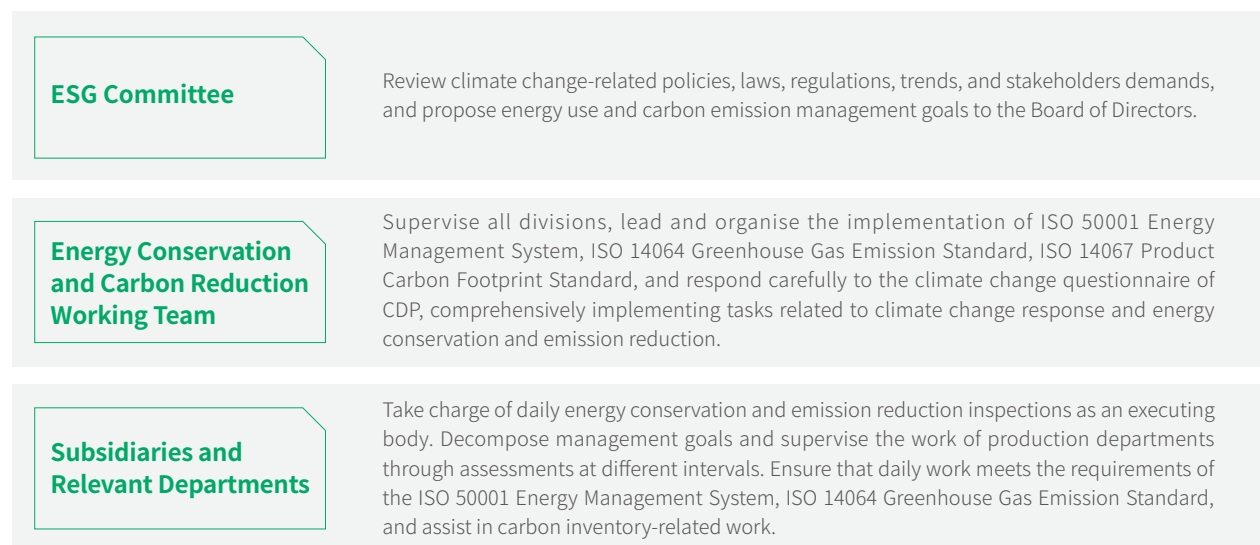


The CDP rating of Nanshan Aluminium is higher than the average level of global metal processing industry.

## Climate governance

To better address climate change and advance related initiatives, in 2023, we established an Energy Conservation and Carbon Reduction Working Team under the Nanshan Aluminium ESG Committee, led by the Control Centre. This team implements energy conservation and emission reduction policies, actively responds to the national "carbon peaking and carbon neutrality goals", and efficiently meets customer demands for green manufacturing.

### Nanshan Aluminium's Organisational Structure for Dealing with Climate Change



## Assessments of climate risks and opportunities

The impacts of climate change on a global scale and within the aluminium industry are poised to significantly influence the operational model of the Company. In order to bolster our resilience to these changes, Nanshan Aluminium has undertaken comprehensive assessments of climate risks and opportunities, and integrated these factors into our strategic planning. We have identified five major climate risks and six key opportunities, and have incorporated appropriate mitigation measures into our corporate strategy.

### Five major climate risks

- Changes in environmental protection laws and regulations
- Increasing market demand for low-carbon products
- Growing emphasis on disclosing carbon footprints
- Frequent occurrence of extreme weather
- Constraints on natural resources at production and operation sites

### Six key climate opportunities

- Development of low-carbon products
- Recycling of resources
- Energy conservation and emission reduction
- Research and development of new products
- Application of low-carbon energy
- Reduction of water resource consumption

Main Climate Risks and Opportunities for Nanshan Aluminium

## Nanshan Aluminium's Climate Change Risk Identification and Response Measures

### Risk category: Severe natural factors (typhoons, tsunamis, extreme heat, extreme cold, wildfires, etc.)

#### Risk description

Extreme weather conditions, such as hurricanes and tsunamis, and their related consequences and impacts, including energy shortages and public health issues, may lead to temporary interruptions in operations. Furthermore, if our factory locations experience extreme weather conditions, this could adversely impact our production, operations, and financial status. Additionally, extreme weather may affect the operations of our suppliers, manufacturers, and other suppliers, or cause economic instability, thereby adversely affecting our operational results and financial status.

Climate change may increase the frequency and severity of extreme weather conditions and natural disasters, which could impact our business operations in specific regions or globally, as well as the activities of our third-party and other suppliers, manufacturers, and customers.

#### Response measures

Nanshan Aluminium has always been committed to fulfilling its social responsibility to protect the environment, minimising the adverse impact of production operations on ecology and climate, and reducing the climate impact of production activities as much as possible.

Nanshan Aluminium has established an emergency management system for accidents, identifying the hazardous factors involved, formulating various emergency plans, and conducting drills according to the plan.

A plant-level emergency rescue command centre, consisting of eight emergency rescue teams, has been established to respond quickly in emergency situations. Additionally, the Company is equipped with flood prevention sandbags, anti-skid sand, and other equipment to address extreme weather conditions such as heavy rain and snow.

### Risk category: Long-term natural factors (climate pattern changes, etc.)

#### Risk description

Nanshan Aluminium is located at Yantai, Shandong Province, which experiences arid and water shortage conditions. The Company's production activities require a significant amount of freshwater supply. If the price of water resources continues to rise, it will result in a direct increase in operational costs.

#### Response measures

To address the impact of water shortage on production, Nanshan Aluminium regularly conducts water balance tests, prepares water balance diagrams, and publishes them on the official website. Through the analysis of water supply and demand, we provide reliable data measurement guarantee for optimising and strengthening water resource management.

Based on the water balance diagram, Nanshan Aluminium further identifies weak links in water consumption, explores the potential for water saving, and clarifies the main directions for water saving. We will continue to explore the best solutions for water intaking, consumption, discharge, and saving for enterprises to improve the efficiency of water resource utilisation.

To prevent production downtime caused by drought, we have introduced seawater desalination equipment to increase the source of freshwater supply for production. In 2023, we obtained more than 3,500,000 tons of freshwater through seawater desalination.

**Risk category: Current laws and regulations**

**Risk description**

With the continuous strengthening of environmental regulations by the government, the pressure of environmental protection on the aluminium industry is also increasing. Currently, China has implemented orders and regulations on banning new capacity, dual control of energy consumption, environmental governance, and production reduction and suspension. For example, during periods of heavy pollution, companies that do not meet specific environmental protection requirements will be required to reduce production and implement emission reduction measures.

**Response measures**

To address national and local regulatory requirements, the Company actively engages in related energy and environmental management system certifications to reduce the impact of current production and emission reduction policies on operations in accordance with strict national environmental protection standards and requirements.

We set high standards and strict requirements for ourselves. The Company has established and continues to refer to the ISO 14001 Environmental Management System and ISO 50001 Energy Management System, conducting rigorous internal system effectiveness audits.

**Risk category: Replacement of current products with low-carbon ones**

**Risk description**

Many downstream companies in the aluminium processing industry, represented by automobile companies, are actively promoting the construction of green products and green supply chains.

If Nanshan Aluminium fails to demonstrate a clear advantage in low-carbon emissions and green technology, it will face the risk of losing customers and declining market demands, thereby adversely affecting the Company's revenue.

**Response measures**

The Company is increasing the use of green energy in the production and gradually improving the intelligence level of production facilities.

The Company also strategically co-operates with advanced design institutes and high-tech enterprises in China, invests in research and development of new production processes and applies new energy conservation materials to provide high-quality electrolytic aluminium, gradually reducing greenhouse gas emissions.

With an investment of RMB 330 million, the Company has built a high-quality grade-keeping and comprehensive utilisation project of recycled aluminium, with a designed capacity of 100,000 tons of recycled aluminium per year.

Nanshan Aluminium and its customers are jointly pursuing sustainable development. We reduce carbon emissions by purchasing green ingots, green electricity, and recycled wastes to meet customer requirements.

**Risk category: New laws and regulations**

**Risk description**

China has announced the "carbon peaking and carbon neutrality goals", with carbon emission reduction and carbon neutrality being key areas for future corporate transformation. In some industries, downstream customers have begun to impose certain requirements on the greenhouse gas emission intensity of our products and those of our suppliers. In the future, carbon emission reduction will become one of the thresholds for brand supplier entries.

**Response measures**

Relying on the energy management system operation, the Company formulates energy-saving and technological transformation plans annually to achieve emission reduction through energy conservation and consumption reduction projects.

To meet some customer needs, we reduce carbon emissions by purchasing green ingots and electricity, and wastes, thereby meeting customer requirements.

**Risk category: Market's requirements on carbon footprint**

**Risk description**

The Company's main products are aluminium flat-rolled products, can body materials, can lid materials, aluminium foils, which are mainly used in automobiles, ships, packaging materials, etc. Customers in the auto sheet and packaging material industries, as well as some foreign customers, require the Company to provide product carbon footprint reports and conduct product life cycle assessments.

If there are no relevant product certifications of products, the Company may face the risk of losing orders and damaging its reputation.

**Response measures**

To meet customer requirements, the Company has conducted carbon footprint certification for 9 categories of main products, including electrolytic aluminium, can body materials, can lid materials, aluminium foil blanks, battery foils, packaging foils, auto sheets, and aluminium alloy architectural and industrial profiles.

We work with upstream suppliers to jointly formulate medium and long-term emission reduction targets and plans, and are working with downstream strategic co-operation customers to promote the sustainable development of the supply chain.

- The Company has obtained ASI performance standard and supply chain certification, ensuring that our products circulate from COC raw materials to finished products in China, adhering to the green sustainable development concept and providing customers with aluminium profiles that meet ASI requirements.
- During the product design and development, the Company focuses on the full life cycle emission reduction concept, formulating the *Design and Development Control Procedures*, identifying and controlling environmental factors, possible hazards, and occupational health and safety risks throughout the design and development process.
- Actions in energy conservation and carbon reduction will enhance the market competitiveness of the Company's products and services, attracting more customers and bringing revenue growth.

### Development of low-emission products

With the wave of low-carbon transformation, an increasing number of downstream customers will demand low-emission aluminium processing products. Early development of related products means having the opportunity to seize market share.



- The Company is advancing the comprehensive utilisation project of high-quality recycled aluminium, constructing a 100,000 tons recycled aluminium recovery project.
- The Company recycles 100% of internal waste and has established systems such as the *Waste Staging Hierarchy and Management*. Through process and production management, all wastes generated in the production process of aluminium plates and foils are recycled and remelted. Additionally, the Company actively communicates with downstream customers to recycle external wastes, implementing a closed-loop recycling of wastes.
- During the aluminium ingot production, we improve the waste input ratio through process improvement, and reduce aluminium water consumption, costs, and industrial chain's carbon dioxide emissions during aluminium flat-rolled product and aluminium foil productions. Through technological innovation and internal transformation, we reduce resource wastage and production costs, improve equipment utilisation rates and resource utilisation and production efficiency through energy conservation methods, and increase economic benefits.

### Recycling of resources

Emphasis on resource recycling will drive the application of advanced technology and equipment in the Company to increase the reuse rate. This will reduce the use of raw materials and increase profits.



### Energy conservation and emission reduction

- The Company regularly conducts greenhouse gas emission surveys, formulates short-, medium-, and long-term emission reduction plans and implementation plans, and publishes them on the official website.
- We actively explore new technologies, equipment, materials, and processes for energy management, initiating a series of technical optimisations and equipment upgrades for energy conservation and emission reduction, such as the optimisation project of temperature reduction with evaporative circulating water to reduce steam consumption; development of energy conservation internal lined structure electrolytic cells, which can reduce electricity consumption and carbon emissions annually; and projects such as the transformation of exhaust fan operation speed reduction, and the pre-tension leveling heat exchange system transformation, reducing electricity consumption and carbon emissions.

Retrofitting for energy conservation and emission reduction will increase the Company's energy use efficiency and reduce energy costs.



### Application of low-carbon energy

In recent years, the investment in renewable energy resource in China has exceeded that in fossil fuels, and the costs of distributed energy and energy storage are still decreasing.

The transformation to low-carbon energy can help us reduce potential carbon emission compliance risks in the future and reduce current energy costs.



- The Company is actively deploying non-fossil energy power generation, gradually increasing the use of photovoltaic power, reducing the use of thermal power, and fully considering the purchase of low-carbon energy such as hydropower and wind power. Since 2022, the Company has been using green electricity purchased externally for production of some products, and gradually increasing the use of green electricity, thereby reducing long-term energy costs and carbon emissions.
- The Company has laid out photovoltaic power projects in plant areas, significantly improving the energy structure with clean energy. By 2023, Nanshan Aluminium's cumulative installed capacity of photovoltaics is 100MW, with an expected annual power generation of 100 million kWh.

### Reduction of water resource consumption



The reduction of water resource consumption will improve the efficiency of the Company's production process in water consumption, and reduce water costs and the risk of production being hindered due to water resource shortages.

- Nanshan Aluminium has summarised the comprehensive management idea of water resources of "multi-purpose, grading and cascade utilisation" in practice, and started from refined management and recycling to promote the rational use of water resources. On the one hand, we continued to inspect and optimise the production lines with high water consumption in factories, and reduced unnecessary water resource loss by improving the water conservation process. On the other hand, we constantly optimised the internal water circulation system, and improved the reuse rate of rainwater, sewage and water resource through recycling of rainwater and sewage.

Development of new products will expand the Company's business scope and revenue.



### Research and development of new products

- Our research and development departments are actively innovating and developing new products. If the Company can provide additional products and services to customers, it will bring higher revenue to the Company. For example, in the auto sheet and aviation plate sectors, we have passed certification for internal and external body sheets of some automotive OEMs, as well as certification from several major airlines at home and abroad, and will continue to develop new products for green and low-carbon development. At the same time, we have a high market share in packaging materials such as can lid materials, can body materials, aluminium foils and battery foils, and will continue to work with multiple parties to expand the development of new products under climate change.

## Greenhouse gas and energy management

To mitigate the environmental impact of greenhouse gas emissions from its production, Nanshan Aluminium conducts annual internal carbon inventory, scientifically evaluates the results, and rigorously implements the energy management. In 2023, Nanshan Aluminium formulated and publicly disclosed the *Greenhouse Gas Emission Targets and Implementation Plan*<sup>9</sup> based on the assessment results. This plan delineates the short- and medium-term greenhouse gas emission targets for Chinese entities, along with specific emission reduction paths and measures<sup>10</sup>.

Emission targets				
Carbon peaking by 2030		Carbon neutrality by 2050		
Product emission intensity targets (China)				
Unit	Emission target in 2022 (tCO <sub>2</sub> e/t product)	Emission target in 2023 (tCO <sub>2</sub> e/t product)	Emission target in 2024 (tCO <sub>2</sub> e/t product)	Emission target in 2025 (tCO <sub>2</sub> e/t product)
Alumina Company	1.8	1.79	1.78	1.77
Aluminium Rolling Company	0.99	0.985	0.98	0.975
Medium-thick Plate Company	2.68	2.67	2.66	2.65
Aluminium Foil Company	1.3	1.29	1.28	1.27
Electrolytic aluminium product carbon footprint (China)				
Unit	Emission target in 2022 (tCO <sub>2</sub> e/t product)	Emission target in 2023 (tCO <sub>2</sub> e/t product)	Emission target in 2024 (tCO <sub>2</sub> e/t product)	Emission target in 2025 (tCO <sub>2</sub> e/t product)
Product carbon footprint from bauxite to electrolytic aluminium	17.61	17.41	17.21	17.01

Nanshan Aluminium strictly adheres to the greenhouse gas emission requirements outlined in Chapter 5 of the ASI Performance Standard. The Company publicly discloses key greenhouse gas emissions and the use of various energy sources annually. The Company conducts internal carbon emission inventories every year in accordance with the *Management System for Greenhouse Gas Inventory*, which involves statistical evaluations and ensures the effective implementation of overall greenhouse gas planning, emission reduction, and carbon reduction mechanisms through mechanisms such as data investigation and tracking verification. In 2023, the Company continually conducted ISO 14064 carbon inventory for organisation, the coverage scope boundaries of which are as follows:



Nanshan Aluminium ISO 14064 Carbon Inventory for Organisation

<sup>9</sup> Refer to *Greenhouse Gas Emission Targets and Implementation Plan* on the official website.

<sup>10</sup> Disclosure boundary of greenhouse gas emission data: 600,000 tons/year alumina production line, 480,000 tons/year electrolytic aluminium production line, 450,000 tons/year aluminium alloy slab ingot production line, 200,000 tons/year aluminium alloy flat-rolled product production line, 750,000 tons/year hot rolling production line, 600,000 tons/year aluminium alloy flat-rolled product production line and 40,000 tons/year high-precision aluminium and aluminium foil production line of Shandong Nanshan Aluminium Co., Ltd.



Emission indicators <sup>11</sup>	Unit	2022 Data	2023 Data
Greenhouse gas emission indicators (aluminium products)			
Total greenhouse gas emission (scope 1 + scope 2)	t CO <sub>2</sub> eq	9,630,182	9,087,064
Greenhouse gas emission (scope 1)	t CO <sub>2</sub> eq	1,504,469	1,534,661
Greenhouse gas emission (scope 2)	t CO <sub>2</sub> eq	8,125,713	7,552,403
Carbon emission intensity			
Alumina Company	t CO <sub>2</sub> eq/t product	2.22	1.90
Aluminium Rolling Company	t CO <sub>2</sub> eq/t product	0.57	0.79
Medium-thick Plate Company	t CO <sub>2</sub> eq/t product	1.09	1.89
Electrolytic Aluminium Company	t CO <sub>2</sub> eq/t product	17.19	16.64
Aluminium Foil Company	t CO <sub>2</sub> eq/t product	1.25	1.09
Greenhouse gas emission indicator (electric power)			
Total greenhouse gas emission of electric power	t CO <sub>2</sub> eq	10,099,361	9,656,270
Greenhouse gas emission indicators (overseas factories)			
Total greenhouse gas emission			
American factory	t CO <sub>2</sub> eq	41,088	34,559
Indonesian factory	t CO <sub>2</sub> eq	769,070	1,909,740 <sup>12</sup>
Carbon emission intensity			
American factory	t CO <sub>2</sub> eq/t product	0.45	0.45
Indonesian factory	t CO <sub>2</sub> eq/t product	0.66	1.01 <sup>12</sup>

In 2023, various branches of Nanshan Aluminium are orderly promoting the emission reduction targets for greenhouse gas emissions per unit product, specifically as follows:

Subsidiary	Expected carbon emission target in 2023 ≤ (tCO <sub>2</sub> e/t product)	Actual performance in 2023 (tCO <sub>2</sub> e/t product)	Completion progress
Alumina Company	1.79	1.90	Incomplete
Aluminium Rolling Company	0.985	0.79	Completed
Medium-thick Plate Company	2.67	1.89	Completed
Aluminium Foil Company	1.29	1.09	Completed

<sup>11</sup> Data scope covers the Company's operations in the Electrolytic Aluminium Company, Alumina Company, Aluminium Rolling Company, Aluminium Foil Company and Medium-thick Plate Branch. Carbon emissions related to the electric power industry and overseas factory carbon emissions are listed separately in the table below.

<sup>12</sup> In 2023, the Indonesian factory conducted a comprehensive review and expansion of greenhouse gas total and emission intensity statistical scope based on actual production and operation, for the first time comprehensively including emission sources such as coal gasification in greenhouse gas and energy statistics and management. Based on this scope, greenhouse gas and energy management work will continue.

Case | Product carbon footprint



Nanshan Aluminium actively responds to the global consensus on carbon emission reduction and the explicit requirements from downstream customers for greenhouse gas emission reduction. The Company has engaged third-party organisations to conduct product carbon footprint certifications for several products within its portfolio. In 2023, Nanshan Aluminium achieved a significant milestone in carbon footprint management. Building upon the certification of can body materials, can lid materials, packaging

foils, aluminium foils and battery foils, the Company successfully obtained ISO 14067 carbon footprint certification for five additional product categories, i.e., electrolytic aluminium water, aluminium auto sheets, aluminium foil blanks, aluminium alloy architectural and industrial profiles. With a total of 9 products now certified for their carbon footprint, Nanshan Aluminium is providing robust support for the development of a low-carbon aluminium supply chain.

Certificated subject

- Electrolytic Aluminium Company
- Aluminium Rolling Company
- Aluminium Foil Company
- Medium-thick Plate Company
- Aluminium Profile Plant

Certified product

- Electrolytic aluminium water
- Can body materials, can lid materials, aluminium foil blanks
- Packaging foils, battery foils
- Aluminium auto sheets
- Aluminium alloy architectural and industrial profiles



Carbon Footprint Certificate for Electrolytic Aluminium Water



Carbon Footprint Certificate for Aluminium Auto Sheets



Carbon Footprint Certificate for Aluminium Foil Blanks



Carbon Footprint Certificate for Aluminium Alloy Architectural Profiles



Carbon Footprint Certificate for Aluminium Alloy Industrial Profiles

New Product Carbon Footprint Certificates Acquired by Nanshan Aluminium in 2023

Case | International EPD (Environmental Product Declaration)



To meet the demand for International EPD (Environmental Product Declaration) reports for industrial and architectural profiles in 2023 from foreign customers such as The Metal Centre in the UK, Seiko in Singapore, and YKK, Nanshan Aluminium actively utilised the world-leading SimaPro software to conduct comprehensive evaluations

and modeling of the full life cycle of profile products. After extensive preparation, the Company successfully completed the registration of architectural and industrial aluminium profiles with EPD International in Sweden in 2023.

Case | LCA (Life Cycle Analysis) of profile products



To gain a better understanding of the environmental impact of product production processes, Nanshan Aluminium engaged a third-party organisation to use Simapro software to conduct a full

life cycle assessment and modeling of profile products, identifying key areas for improvement. In 2023, Nanshan's profile plant achieved 100% recycling of waste aluminium.

## Low carbon production

Following the *Greenhouse Gas Emission Targets and Implementation Plan*, we have conducted targeted studies and enhanced our risk response capabilities. We focus on three areas, i.e., carbon reduction in electric power, reduction of direct emissions, and recycling, as focal points, and implement carbon reduction measures in the production and operation processes to fully achieve the short- to medium-term greenhouse gas emission targets.

Energy use, as the primary source of carbon emissions, is crucial for optimising carbon emission reduction. We strictly abide by the laws and regulations such as *Energy Conservation Law*, establish a three-tier energy management structure, and set the Production & Operation Co-ordination Department co-ordinate, manage and supervise energy conservation efforts in various subsidiaries.

Production & Operation Co-ordination Department of Nanshan Aluminium

Energy conservation group leader/deputy group leader of subordinate production and operation units

Heads of functional departments and workshops

### Energy Management Structure

Nanshan Aluminium has established and a management system in accordance with the ISO 50001 energy management system standard and implemented related work. Several branches have achieved ISO 50001 energy management system certification, including Donghai Thermal Power Plant, Alumina Company, Electrolytic Aluminium Company, Medium-thick Plate Company, Aluminium Rolling Company, Donghai Aluminium Foil Co., Ltd., Aluminium Profile Plant, covering core production and operation sites. Leveraging this energy management system with clear hierarchy and responsibilities, we actively explore new technologies, equipment, materials and process of energy management, implement energy management decisions, and regularly organise inspections of energy conservation measures in various entities.



ISO 50001 Energy Management System Certification

### By the end of the report period

except for the newly commissioned Recycled Aluminium Company, the ISO 50001 energy management system coverage rate of Nanshan Aluminium subsidiaries is

**100%**<sup>13</sup>



<sup>13</sup> The data scope currently only includes our subsidiaries whose operation places are in China. We will continue to strengthen the management of overseas operating subsidiaries, promote the implementation of energy management based on ISO 50001 energy management system, and timely incorporate their energy system coverage into the scope of internal data statistics of the Company.

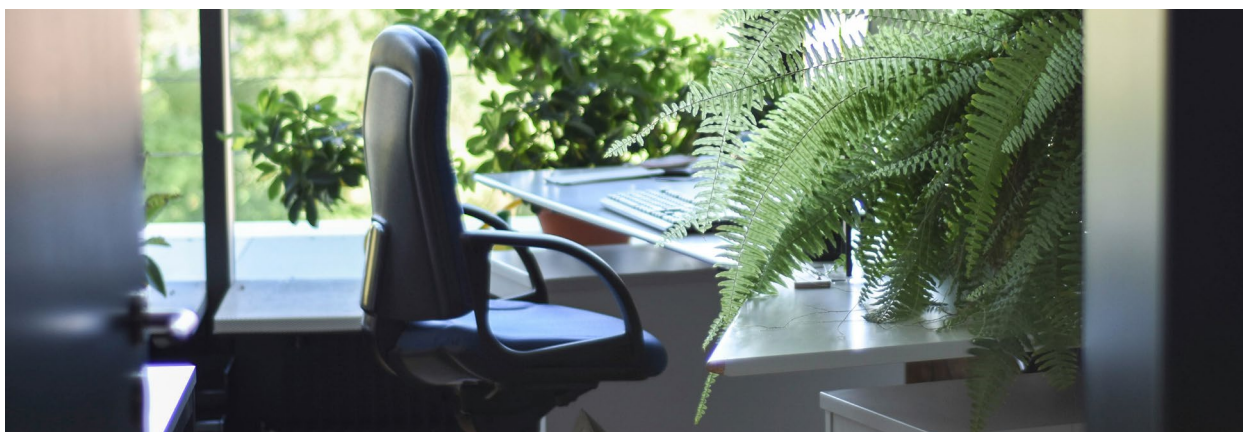
Energy consumption situation			
Energy consumption indicator <sup>14</sup>	Unit	2022 Data	2023 Data
Indirect energy consumption			
Purchased electric power	kWh	4,884,915,500	2,127,629,400
Purchased steam	MkJ	-	-
Direct energy consumption			
Diesel oil	ton	3,699	4,011
Raw coal	ton	5,195,290	5,050,233
Natural gas	10,000m <sup>3</sup>	31,162	27,163
Comprehensive energy consumption <sup>15</sup>	Ton of standard coal	4,183,717	3,789,111
Purchasing of green electricity energy	kWh	30,000,000	20,000,000
Self-generation and self-utilisation of solar electric power energy	kWh	18,804,047	69,542,205

### Case | Green office



In addition to efforts in the production process, we actively promote green office practices. Through company-wide promotion, we encourage departments to retrofit energy conservation lighting and adopt paperless office practices. We also encourage employees to take energy conservation and emission reduction actions, such as using public transportation or new energy vehicles for commuting.

Electric power is the core energy source in the manufacturing process of aluminium products. Nanshan Aluminium promotes the carbon reduction in electric power through green electricity procurement and renewable energy resource utilisation. Through these two initiatives, we aim to achieve a more environmentally friendly and sustainable electric power supply while ensuring production efficiency, contributing to the green development of the aluminium products industry.



<sup>14</sup> Data scope covers the Company's major production factories in China (Donghai Thermal Power Plant, Nanshan Electrolytic Aluminium Factory, Nanshan Aluminium Profile Plant, Alumina Company, Aluminium Rolling Company, Aluminium Foil Company, Aluminium New Material Company and Medium-thick Plate Branch). The Company's original coal consumption in 2022 should be 5,195,290 tons, which is hereby corrected in this Report.

<sup>15</sup> We calculate the Company's annual comprehensive energy consumption (unit: ton of standard coal) based on the ISO 50001 energy management system.

Case | Application of digital cell control machine



Nanshan Aluminium has purchased a digital cell control machine, replaced and upgraded the lined materials and cathode materials of the electrolytic cell, effectively reducing the cell voltage, improving energy utilisation efficiency, and reducing energy consumption from 13,371kWh/t to 12,993kWh/t.

Case | Green electricity procurement



Through participation in green electricity transactions and the purchase of green electricity certificates, we actively integrate renewable energy resource and gradually achieve green replacement for thermal power. During the report period, we purchased 20,000,000kWh of international green electricity certificates and actively co-operated with grid peak-shifting to contribute to the stability and greenness of the electric power system.

During the report period

we purchased international green electricity certificates

**20,000,000 kWh**

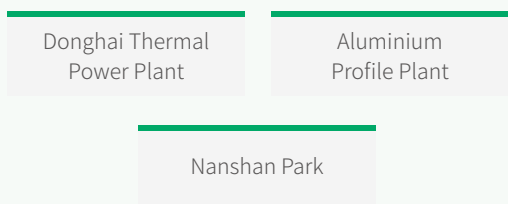


Green Electricity Certificate

Case | Renewable energy power generation



The Company has laid out photovoltaic power projects in plant areas, significantly improving the energy structure with clean energy. Nanshan Aluminium's total installed capacity of photovoltaics is 95MW, with an expected annual power generation of 100 million kWh. The construction situation of photovoltaic projects is shown as below:



Nanshan Aluminium's total installed capacity of photovoltaics is

**95 MW**

with an expected annual power generation of

**100 million kWh**

# Environmental management

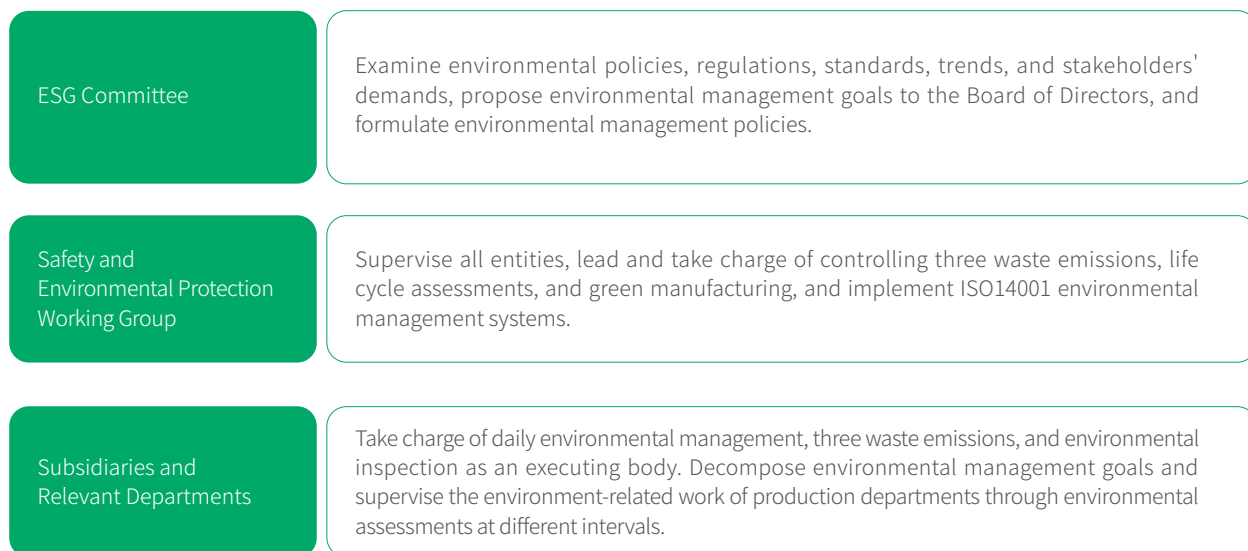
Nanshan Aluminium recognises the importance of environmental responsibility. We have established and continuously improved our environmental management structure and systems, and engage professional third-party organisations to enhance our environmental management standards. Our commitment is to minimise environmental impacts during production, rigorously manage and mitigate impacts on biodiversity, ensure compliant disposal of wastewater, waste gas, solid waste, and hazardous waste, and efficiently recycle water resources. Additionally, we actively participate in ecosystem protection to contribute to the construction of an environmentally friendly society.

## Environmental management system

Nanshan Aluminium strictly adheres to local ecological environmental protection laws, regulations, and guidelines. We have developed a series of internal management systems, including the *Management Methods for Environmental Protection* and the *Environmental Information Disclosure System of Nanshan Aluminium*, to regulate the environmental management. We fulfil our environmental management responsibilities at all operation places. During the report period, Nanshan Aluminium has always adhered to the bottom line of environmental protection, with no environmental accidents or violations, nor any environmental penalties.

To ensure compliance with legal requirements and the implementation of company regulations by relevant departments and operation places, we have established a clear and responsible environmental management structure. The ESG Committee, composed of the Chairman of Board and senior management personnel, serves as the highest decision-making body for environmental management matters. The Safety and Environmental Protection Working Group under the ESG Committee leads the promotion of the emission management three wastes, life cycle assessment of products, and green manufacturing, ensuring smooth implementation of ISO 14001 environmental management systems by all departments of the Company and its subsidiaries.

### Environmental Management Structure of Nanshan Aluminium



**By the end of the report period**

except for the newly commissioned Recycled Aluminium Company, the ISO14001 environmental management system coverage rate of Nanshan Aluminium subsidiaries is

**87.5 %<sup>16</sup>**



**Case | Nanshan Aluminium recognised as the Shandong Province Green, Low-Carbon, and High-Quality Development Pioneer Zone**

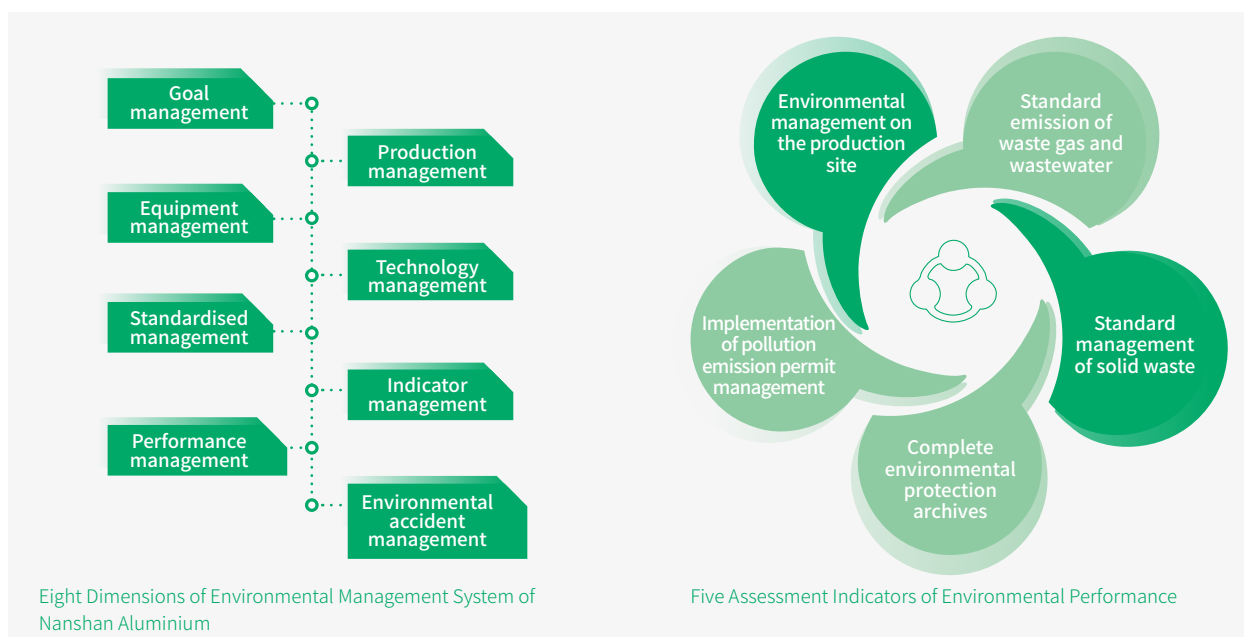


On November 9th, 2023, Nanshan Aluminium was successfully selected as a pilot entity for the construction of the 2023 Shandong Province Green, Low-Carbon, and High-Quality Development Pioneer Zone. This list was announced by the Shandong Development and Reform Commission, highlighting our significant contributions to green and low-carbon manufacturing.

As a benchmarking enterprise of aluminium processing industry, Nanshan Aluminium fully implements the sustainable development concept of "creating a better future for enterprise

through green manufacturing", actively responds to the national "carbon peaking and carbon neutrality" strategy and the requirements of the "14th Five-Year Plan". We are accelerating the progress of ongoing projects such as recycled aluminium, photovoltaics, and energy conservation transformation for electrolytic aluminium cells. We continue to fulfil our social responsibilities across environmental, social, and governance dimensions, striving to build a low-carbon, energy-efficient, and responsible aluminium industry, setting a benchmark for high-quality, green development in the Chinese aluminium industry.

Adhering to regulations like the *Management Methods for Environmental Protection*, we conduct regular and comprehensive on-site inspections and evaluations of all subordinate enterprises. Our focus is on eight core management areas and five assessment indicators. The assessment results directly impact the performance evaluations of senior management and responsible personnel in each subsidiary of Nanshan Aluminium.



<sup>16</sup> The data scope currently only includes our subsidiaries whose operation places are in China. We will continue to strengthen the management of overseas operating subsidiaries, promote the implementation of environmental management based on ISO 14001 environmental management system, and timely incorporate their environment system coverage into the scope of internal data statistics of the Company.

Furthermore, we have engaged independent third-party organisations as external environmental protection stewards to conduct on-site environmental impact audits. These audits are conducted in accordance with relevant laws, such as the *Regulation on the Administration of Permitting of Pollution Discharges*, *Prevention and Control of Atmospheric Pollution* and the *Prevention and Control of Solid Waste Pollution*. They are conducted at different frequencies - weekly, monthly, quarterly, and annually. The Company and contracted external environmental protection stewards conduct monthly reviews of each subsidiary's

environmental compliance management work to ensure that the Company's environmental management and pollution discharge comply with various standards. These reviews focus on the execution of pollution discharge permits, environmental record management, hazardous waste management, and the operation of pollution control facilities.

During the report period, the Company conducted a total of 415 on-site inspections, identifying 493 issues. Rectification notices were issued to subsidiaries with identified issues, ensuring they completed all relevant rectification work promptly.

## Environmental protection training

The Company places a high importance on the daily management and risk prevention of environmental-related work. We actively organise various specialised environmental training sessions and drills to strengthen the awareness of environmental management and environmental protection work among employees at all levels. This effort aims to enhance the response and handling capabilities of environmental personnel in emergency situations.

In 2023, Nanshan Aluminium and its subsidiaries organised a total of 12 environmental protection training sessions. These sessions focused on core content such as responding to heavy pollution weather, online monitoring operations, hazardous waste disposal, and compliance with environmental inspection requirements at all levels. These training sessions effectively enhanced the awareness and professional skills of hazardous waste of environmental protection management personnel in various enterprises. Additionally, Nanshan Aluminium and its subordinate enterprises strictly adhere to the *Emergency Plan for Emergency Environmental Incidents*, and have conducted a total of 4 emergency drills to ensure the rapid and effective reduction of environmental risks in emergency situations.



Specialised Environmental Protection Training Session

## Pollution prevention and control

By adhering to the concept of "promoting clean production and realising sustainable development", Nanshan Aluminium actively carries out pollution prevention and control in all production links. We implement compliance management over waste gas, wastewater and waste in strict accordance with the

pollutant emission management requirements of regulatory agencies in overseas operation places. While maintaining 100% compliant emissions, we have set stricter emission targets, focusing on reducing pollutant emissions at the source and promoting recycling to minimise our environmental impact.



Short-term environmental management goals	
Atmospheric pollutants such as particulate matter, nitrogen oxides, and sulfur dioxide	<ul style="list-style-type: none"> <li>• Achieve a 2% reduction in total emissions by 2026, based on 2021 levels</li> </ul>
Solid wastes	<ul style="list-style-type: none"> <li>• Achieve 100% compliant disposal of solid wastes and actively promote waste reduction through measures such as aluminium re-melting and recycling to effectively reduce solid wastes</li> </ul>
Wastewater treatment	<ul style="list-style-type: none"> <li>• Achieve 100% compliant wastewater discharge and reduce wastewater discharge through wastewater recycling measures</li> </ul>

**Case | Long-term environmental management goals**

While achieving the short-term goals, realise the ultra-low discharge of waste gas and "zero emission and full recycling" of wastewater at most subsidiaries of Nanshan Aluminium by fully upgrade and transform the environmental protection facilities for wastewater and gas.

### Waste gas management

Nanshan Aluminium has formulated and implemented the *Control Procedures for Emission of Atmospheric Pollution* in strict accordance with the *Prevention and Control of Atmospheric Pollution, Comprehensive Emission Standards for Atmospheric Pollutants* as well as the laws and regulations of overseas operation places, ensuring 100% compliance with waste gas emissions. Additionally, we have included the waste gas treatment facilities of each branch in the equipment management scope of the plants and workshops, providing them with the same inspection, maintenance, and repair services as the main equipment to ensure the efficient and normal operation of these facilities and effectively reduce waste gas emissions.

Each entity has installed online monitoring systems in accordance with environmental protection management requirements, and conducted uninterrupted emission monitoring assessments. By comparing monitoring data and conducting effective audits, we ensure the accuracy and reliability of the monitoring data and obtain qualified marks. Furthermore, we have developed annual self-monitoring plans tailored to the specific circumstances of each entity, specifying monitoring points, items, frequency, and time to promptly identify and resolve issues and ensure that waste gas emissions are always controlled within the standard limits.


We are actively promoting emission reduction upgrades for each subsidiary, using advanced environmental protection technologies to remove harmful substances from emissions and reduce the impact of production operations on the atmosphere. We require strict control of unorganised emissions in the production system, timely recovering overflow materials back into the system to avoid secondary pollution. In addition, we have implemented a series of protective measures during storage, transportation, and loading and unloading processes, such as closed operations, laying dust-proof nets, and cleaning transport vehicles, to minimise the generation of waste gas particulates.

Donghai Thermal Power Plant strictly complies with the *Emission Standard of Air Pollutants for Thermal Power Plants*, ensuring compliant emissions while minimising environmental pollution. To reduce waste gas pollutant emissions, Donghai Thermal Power Plant employs techniques such as low-nitrogen combustion, selective catalytic reduction (SCR) denitration, electrostatic precipitators, limestone-gypsum desulfurisation, and wet electrostatic precipitation. The self-monitoring results of Donghai Thermal Power Plant in 2023 all met the standards.

**During the report period**

the Company achieved compliant waste gas emissions

**100%**





The following table provides our waste gas emission indicators:

Waste gas emission indicators <sup>17</sup>			
Emission indicators	Unit	2022 Data	2023 Data
Nitrogen oxide	ton	3,484	3,698
Sulfur dioxide	ton	7,801	6,386
Non-methane hydrocarbon	ton	143	59
Particles in flue gas from the burning and roasting furnace	ton	72	151
Particles	ton	838	419

## Solid waste management

Nanshan Aluminium rigorously adheres to pertinent laws and regulations, such as the *Law of Prevention and Control of Solid Waste Pollution*, the *Technical Specifications for Collection, Storage, and Transportation of Hazardous Waste*, the *Management Method for Transfer of Hazardous Waste* and relevant environmental protection regulations of overseas operation places. Based on these laws and guidelines, the Company has formulated internal systems such as the *Standardised Management Measures for Solid Waste of Nanshan Aluminium* and the *Control Procedures for Solid Waste of Nanshan Aluminium*. We focus on the environmental strategy of "source reduction, intermediate control, terminal governance and recycling" and meticulously classify and efficiently dispose of solid waste according to the principles of "reduction, recycling and hazard-free treatment".

In addition to achieving 100% compliant disposal of solid waste, Nanshan Aluminium actively promotes the recovery and reuse of non-hazardous waste. Through measures such as remelting and recycling, we recover aluminium scraps, blocks, and ash, transforming waste into recycled aluminium ingots, thereby reducing the generation of solid waste at the source.

<p><b>General Industrial wastes</b></p>  <ul style="list-style-type: none"> <li>Aluminium scrap, desulfurisation gypsum and red mud</li> <li>Aluminium and foil scrap are recycled through smelting furnace</li> <li>Red mud is stored in piling yard in a dry mode</li> </ul>	<p><b>Hazardous wastes</b></p>  <ul style="list-style-type: none"> <li>Such as aluminium ash, waste lubricating oil, emulsified liquid and waste diatomaceous earth</li> <li>Hazardous waste that can be utilised or reduced comprehensively shall be pre-treated</li> <li>Residual hazardous waste shall be entrusted to qualified unit for proper treatment</li> </ul>	<p><b>Domestic wastes</b></p>  <ul style="list-style-type: none"> <li>Domestic wastes shall be cleared away and disposed by environmental sanitation department</li> </ul>
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<sup>17</sup> Data scope covers includes Donghai Thermal Power Plant, Nanshan Electrolytic Aluminium Factory, Nanshan Aluminium Profile Plant, Alumina Company, Aluminium Rolling Company, Aluminium Foil Company, Aluminium New Material Company, Medium-thick Plate Branch, as well as major operating factories in Indonesia and the United States.

To further increase the reuse rate of solid waste, in 2023, we conducted capacity expansion and transformation of the comprehensive utilisation project for aluminium ash. All ash roasters were shut down, and a rotary kiln and a cooling sieving machine were added. Through this project transformation, our annual processing capacity of aluminium ash increased from 52,000 tons to 80,000 tons, producing 40,000 tons of recycled aluminium ingots.



Comprehensive Utilisation Equipment of Aluminium Ash

**Through the project renovation**

Our annual aluminum ash and slag processing capacity has increased from the original 52,000 tons to

**80,000 tons**

Can produce recycled aluminium ingots

**40,000 tons**



In 2023, the Company's general solid waste recycling rate increased from 73.95% in 2022 to 99.79%, while the recycling rate of hazardous wastes remained high at 100.11%.<sup>18</sup>In 2023, our solid waste emission indicators were as follows:

Amount of produced and utilised solid wastes <sup>19</sup>				
Indicators	Unit	2022 Data	2023 Data	
Total solid wastes	ton	5,263,747	5,652,315	
Generation of general solid wastes	ton	5,117,328	3,800,439	
Total amount of general solid waste recycling	ton	3,828,615	3,792,642	
Generation of hazardous wastes	ton	86,419	86,221	
Total reutilised hazardous wastes	ton	85,928	86,315 <sup>20</sup>	

<sup>18</sup> Due to the surplus hazardous waste in 2022 being recycled this year, the recycling volume exceeds the generation volume, and the recycling rate exceeds 100%.

<sup>19</sup> Data scope covers includes Donghai Thermal Power Plant, Nanshan Electrolytic Aluminium Factory, Nanshan Aluminium Profile Plant, Alumina Company, Aluminium Rolling Company, Aluminium Foil Company, Aluminium New Material Company, Medium-thick Plate Branch, as well as Indonesian factory and American factory.

<sup>20</sup> Due to the surplus hazardous waste in 2022 being recycled this year, the recycling volume exceeds the generation volume.

## Wastewater discharge management

In strict accordance with the *Water Pollution Prevention and Control Law* and other laws and regulations of operation places, with "zero discharge and all recycling" as the target, Nanshan Aluminium formulated the *Control Procedures for Sewage Discharge*, to reduce wastewater discharge and enhance wastewater reuse rates. Each production department of Nanshan Aluminium has constructed internal sewage treatment facilities tailored to the product production process, ensuring compliant wastewater discharge. In addition to treating conventional pollutants like ammonia nitrogen, COD, and BOD, we also apply advanced sewage treatment technologies such as activated carbon filtration and multi-medium filtration to address industrial wastewater containing heavy metals and waste oil, thereby reducing the concentration of pollutants in the discharged effluent.

During the report period, Nanshan Aluminium initiated the construction of a new integrated wastewater treatment system capable of processing 30 tons chemical wastewater from desulfurisation and fuel systems, and gray water from other processes per hour. The treated chemical wastewater will be utilised in production processes that meet water quality requirements, based on safe system operation. In 2024, Nanshan Aluminium plans to construct a sewage treatment plant with a daily processing capacity of 6,500m<sup>3</sup>. This plant will receive and treat production and domestic sewage discharged from multiple production bases. The sewage treatment plant employs MBR (membrane bioreactor) technology and ozone catalytic oxidation technology, with an online monitoring system installed in the sand filter to ensure compliant discharge of all wastewater.



During the report period, Nanshan Aluminium realized 100% compliant wastewater discharge. The related indicators are as follows:

Wastewater discharge conditions <sup>21</sup>			
Emissions	Unit	2022 Data	2023 Data
Wastewater discharge	10,000 ton	97	87
Filter pressing water	10,000 ton	239	518
Recycled wastewater	10,000 ton	130	456
COD	kg	57,392	23,953
Ammonia nitrogen	kg	615	807

<sup>21</sup> Data scope covers includes Donghai Thermal Power Plant, Nanshan Electrolytic Aluminium Factory, Nanshan Aluminium Profile Plant, Alumina Company, Aluminium Rolling Company, Aluminium Foil Company, Aluminium New Material Company, Medium-thick Plate Branch, as well as Indonesian factory and American factory. In 2023, due to the full commissioning of the alumina project at the Indonesian factory, our pressure filter pressing water and ammonia nitrogen slightly increased.

## Ecological system protection

Nanshan Aluminium incorporated valuable suggestions from the *Biodiversity Conservation in China* and developed the *Management Procedures for Biodiversity Protection of Nanshan Aluminium*. The procedures focus on four core areas: new (modified and expanded) construction projects, daily environmental management activities, biodiversity risk management, and assessment of alien species. We establish specific and feasible management measures and operational procedures to minimise the adverse effect on biodiversity during production and project operation.

During the report period, we conducted biodiversity risk assessments for five production sites, including Alumina Company, Electrolytic Aluminium Company, Medium-thick Plate Company, Aluminium Rolling Company, Yantai Donghai Aluminium Foil Co., Ltd. in the Donghai Industrial Park and Nanshan Industrial Park. We assessed the affected species and potential sources of risk at each site and provided risk reduction measures, including "entry introduction and quarantine", "wastewater testing", and "introduced species approval". Based on the assessment results, we prepared the *Biodiversity Risk Assessment Report* and publicly disclosed it.

- ▶ All construction projects of Nanshan Aluminium should be entrusted to qualified units for environmental impact assessment and identifying real effects on biodiversity.



- ▶ We formulated a management procedure for wastewater, waste gas, noise, solid waste and oil & chemicals to reduce the adverse effect on biodiversity.



- ▶ We prepare, release, periodically update and share the biodiversity action plans with all stakeholders.



- ▶ For the alien species introduced through operation activities accidentally, the Security and Environment Department evaluates and controls the risks and prepares a biodiversity evaluation report.



Management Procedures for Biodiversity of Nanshan Aluminium

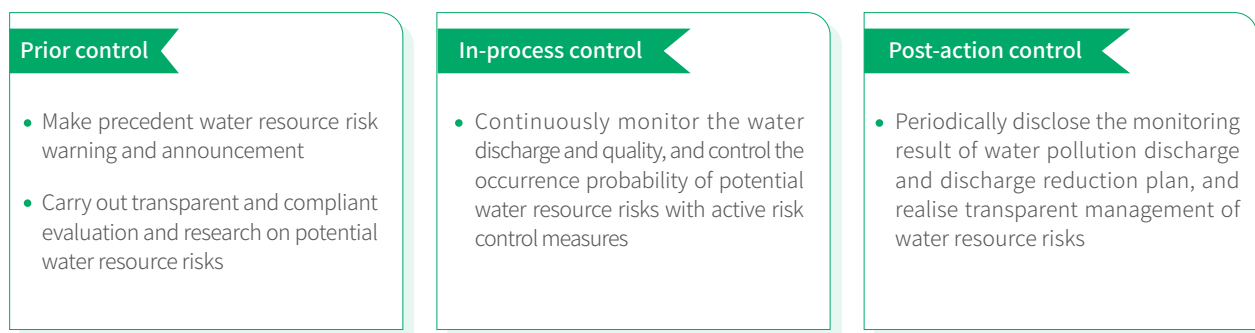


## Water resource management

Aluminium processing and production have a huge dependence on water resources. Therefore, reasonable planning and management of our water resource use are crucial for the production of Nanshan Aluminium and the lives of surrounding communities. Our production water mainly comes from municipal pipelines and seawater desalination. When in shortage of water, the local water supply company is responsible for communicating with Longkou Water Supply Company for introducing water from the Yellow River. During the production, we strictly implement the *Water Law*, continuously optimise the water resource management system, prevent water resource risks, and reduce the risks that water resources may pose to our production and operation.

### Water resource risk management

Nanshan Aluminium carries out water resource risk assessment on subordinate enterprises, and the assessment scope includes occurrence probability, hazard rating and risk level of water resource risks. Based on the water resource risk analysis results in 2023, we compiled the *Water Resource Risk Assessment Report*.<sup>22</sup> Through analysis of water supply and water consumption, we identified areas with excessive water consumption and formulated targeted water conservation measures, optimised the closed-loop water resource consumption, and ensured a stable supply of water for production and operation.



Key Points of Prior, In-process and Post-action Management of Water Resources

### Water resource consumption

During the operation, Nanshan Aluminium strictly abided by the *Regulations for the Administration of Water Collection Licenses and Water Resources Fees* and other laws and regulations, and attached importance to water resource management and conservation in the whole production and operation process.

In 2023, the Company implemented a monthly water intake and consumption plan and successfully met its water consumption target by implementing a series of water conservation measures, including the reuse of condensed water and overflow water. The actual water consumption was 215,111m<sup>3</sup> less than planned.

To meet the water demand of the Donghai Thermal Power Plant's generating units, prevent supply risks, and avoid production stoppages, we introduced seawater desalination equipment to convert seawater into freshwater to support production and reduce the pressure on the water supply network. In 2023, we used 9,202,821 tons of seawater, successfully producing 3,549,241 tons of freshwater, with a utilisation rate of 38.57%.

Nanshan Aluminium continues to implement a comprehensive strategy for water resource management, adhering to the principles of "multi-purpose, grading and cascade utilisation". We are committed to promoting the rational use of water resources through technological transformation and recycling. During the report period, the Company conducted systematic reviews and optimised designs for production lines with high water resource consumption, effectively reducing water waste through the introduction of water-saving technologies and processes. Additionally, Nanshan Aluminium continuously optimises its internal water circulation system, significantly improving the reuse rate and utilisation efficiency of industrial water through the recycling of rainwater and wastewater, providing strong support for the Company's long-term sustainable development.

<sup>22</sup> Link: *Water Resource Risk Assessment Report of Shandong Nanshan Aluminium Co., Ltd.*

Recycling of rainwater in red mud reservoir

- We have completed the diversion transformation of rainwater and sewage in the factory and living area of Longkou Donghai Alumina Co., Ltd., so the rainwater in factory area can be collected and recycled through a sedimentation tank

Flushing water reuse

- In Longkou Donghai Alumina Co., Ltd., the water for flushing the "running, emitting, dripping and leaking" products in alkaline workshop as well as for the floor and equipment is recycled by a special sewage pump station

Technology transformation of ultrafiltration back washing water

- We adjust the operation mode and increase the ultrafiltration time and chemical cleaning frequency according to the raw water quality, so as to reduce the ultrafiltration water and save water resources

Through our series of measures, the water reuse rate of the Company increased significantly in 2023, rising from 2.23% in 2022 to 15.27%. During the report period, the water resource consumption indicators of Nanshan Aluminium are described in the following table:

Water resource consumption indicator <sup>23</sup>			
Indicators	Unit	2022 Data	2023 Data
Total water withdrawals	10,000m <sup>3</sup>	482	737
Municipal water withdrawal	10,000m <sup>3</sup>	482	737
Total water consumptions	10,000m <sup>3</sup>	493	760
Total volume of circulating and reclaimed water	10,000m <sup>3</sup>	11	22.55

<sup>23</sup> Data scope covers includes Nanshan Electrolytic Aluminium Factory, Nanshan Aluminium Profile Plant, Alumina Company, Aluminium Rolling Company, Aluminium Foil Company, Aluminium New Material Company, Medium-thick Plate Branch, as well as Indonesian factory and American factory. In 2022 and 2023, the total water withdrawal of water resource consumption did not include surface water and groundwater, so the data result is 0.

# 05

## People First Standing by Each Other in Joint Hands

Nanshan Aluminium places great emphasis on the pivotal role of high-quality talent in its development. The Company is committed to creating an inclusive, safe, and democratic working environment, ensuring the legitimate rights and interests and well-being of employees. It provides a scientific and efficient training and promotion mechanism for every like-minded partner, working alongside employees to achieve mutual success.





## Urgent needs of talents

Nanshan Aluminium recognises that employees are the driving force behind its development. The Company adheres to fair and just recruitment and employment mechanisms, providing a platform for each employee to realise their self-worth. It aims to build a talented team that aligns closely with the Company's development needs, fostering mutual growth and creating a shared future.

## Equal employment

In accordance with International Labour Organization (ILO) conventions and relevant laws such as the *Labour Law*, Nanshan Aluminium has developed internal systems including the *Management Procedure for the Prohibition of Discrimination* and the *Management Procedures for Protection of Underage Workers* to ensure compliant employment management. In 2023, Nanshan Aluminium was honored with the "China Preferred Employer of the Year 2023" by Zhaopin, reflecting its outstanding employment management practices.

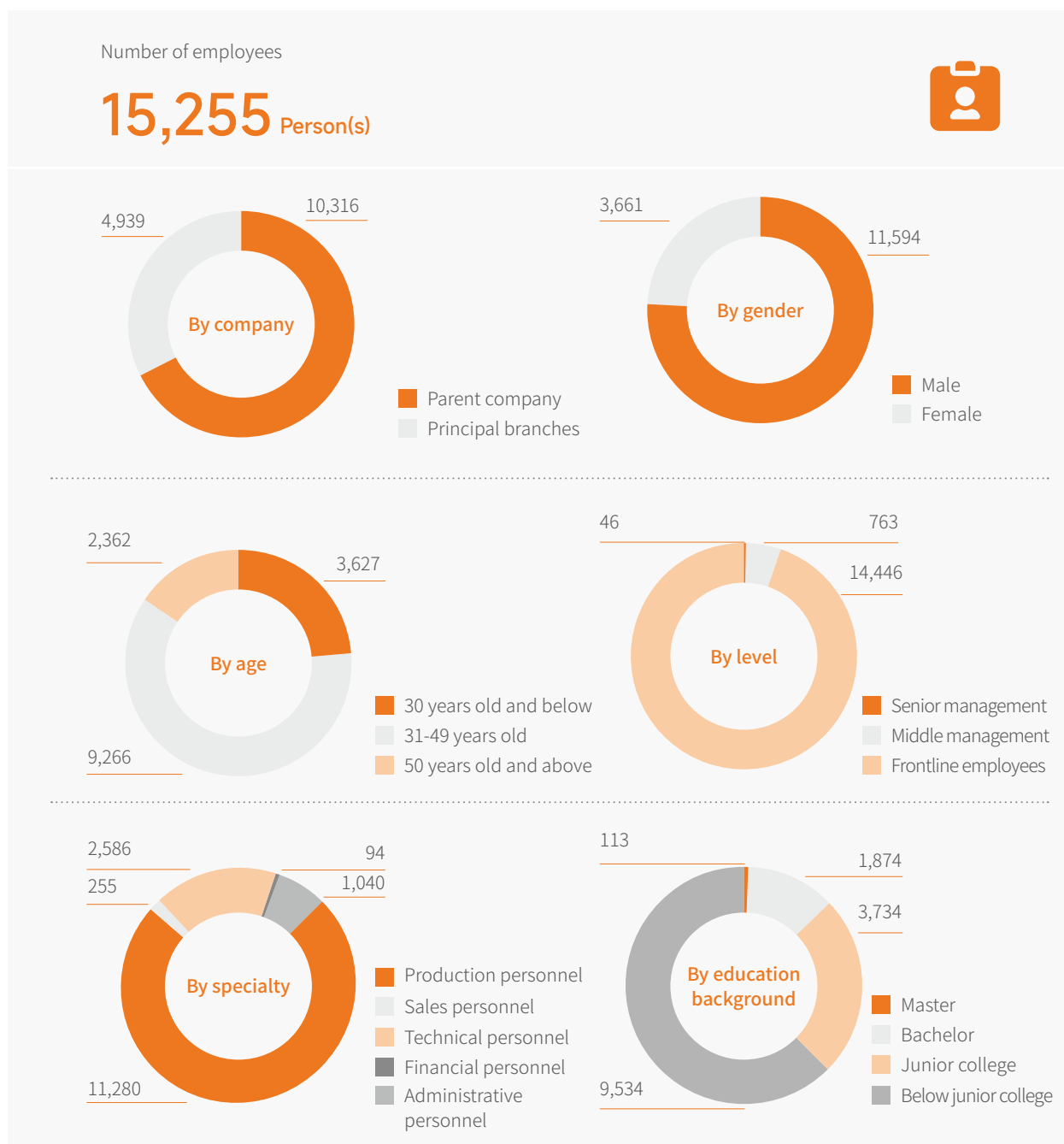
The Company is committed to creating an employer image that employees can trust. It focuses on dual selection based on job requirements and employee intentions, actively building a team with a diverse cultural background. Nanshan Aluminium maintains a zero-tolerance attitude towards any form of discrimination or harassment based on factors such as race, gender, skin colour, or religious belief.

The Company upholds the principle of mutual respect, continuously improving internal systems such as the *Management Procedure for the Prohibition of Discrimination*, *Management Procedures for Protection of Underage Workers*, *Management Procedures for Prohibition of Forced Labour* and *Management Procedures for Prohibition of Child Labour and Remedial Measures*. These systems ensure that all employees enjoy equal rights and interests in recruitment, employment, collective bargaining, and association freedom. Nanshan Aluminium strictly implements employee identity verification and verification processes to eliminate the use of child labour and forced labour, and takes remedial measures for any violations of employment regulations.



By the end of the report period, Nanshan Aluminium had a total of 15,255 employees, categorised as follows:

Employee Structure of Nanshan Aluminium in 2023<sup>24</sup>



The Company has also developed and continuously optimised the internal system of the *Management Procedure for the Right to Freedom of Organising Trade Unions and Collective Bargaining*, fully respecting the rights of all employees to freedom of speech and association. In 2023, we had no employment of child labour or forced labour; and the rate of collective agreement signing by employees was 100%, and the proportion of employees covered by worker representatives was 100%.

<sup>24</sup> The following data statistic scope includes Chinese on-duty employees (including overseas factories).

## Talent attraction

Nanshan Aluminium places a strong emphasis on ethics and strives to build a highly skilled and professional team. We have established the Equipment Management Department and the International Business Department and integrated personnel from departments such as flat-rolled products, aluminium profiles and aviation profile extrusion. This ongoing optimisation of our personnel management injects continuous drive into the high-quality development of our enterprise. Furthermore,

Nanshan Aluminium attracts talents who align with the Company's development needs and values through campus recruitment, core talent introduction and other methods. During recruitment, we integrate our resources, promote local employment, provide numerous job opportunities for local residents, and offer competitive welfare benefits to employees, thereby contributing to local economic development.

### Highlights of Nanshan Aluminium's Recruitment Activities in 2023

#### Campus recruitment

- In 2023, Nanshan Aluminium conducted spring and autumn campus recruitment drives for undergraduate students majoring in metallurgy, metal materials, mechanical and electrical engineering, and other related fields based on the principle of matching people with positions and focusing on key training areas. This effort aimed to continuously enrich Nanshan Aluminium's pool of high-end skilled talents and provide fresh talent for technical management positions in various workshop departments. The Company also integrated its recruitment efforts with the training of frontline technical backbone personnel to cultivate a reserve force for the Company's development. By the end of the report period, Nanshan Aluminium had signed contracts with 214 fresh graduates.

#### Recruitment for leading core positions

- Nanshan Aluminium understands the importance of high-end talents in driving continuous development and growth. The Company uses a combination of internal recruitment and external hiring to attract high-end technical research and development and management personnel for leading core positions, effectively filling the talent gap and further enhancing the Company's core competitiveness. By the end of the report period, the Company had introduced 47 core and cutting-edge talents.

#### First-line ordinary employee recruitment

- In 2023, Nanshan Aluminium conducted the recruitment of frontline ordinary employees in an orderly manner through the policy of cultivating new employees under the guidance of experienced employees.

The Company also pays continuous attention to employee turnover and retention. We provide a variable remuneration structure for employees of different ranks, consisting of basic salary, performance salary, and piece-rate salary. Additionally, the Company regularly conducts differentiated performance assessments and evaluations for employees of all ranks, including front-line employees, to encourage them to continuously improve their job capabilities and work performance, thus realising their self-worth.

#### Basic salary

A salary paid based on the evaluation of the position's contribution, capabilities, and performance accumulation of the employee.

#### Performance salary

A salary paid based on a certain percentage of the basic salary or a certain amount of salary as the base for performance assessment, and differential payments are made based on the actual assessment.

#### Piece-rate salary

A salary paid based on the quantity of work completed by the employee and the piece rate specified in advance, considering quality indicators and equipment capacity.

Nanshan Aluminium's performance assessment mechanism for employees at various levels

<b>Senior management personnel</b>	Conduct differentiated assessments of each entity's management team based on the Company's strategic development, unit production and operation, and the responsibilities of each leader.
<b>Middle-level management personnel</b>	Decompose unit operating indicators based on the assessment of the management team, and cascade them down to each workshop in each sub-factory for assessment.
<b>Functional departments and technical personnel</b>	Adopt a one-person-one-table assessment method, and evaluate individuals based on their job responsibilities and actual work completion against set indicators.
<b>Frontline employees</b>	Each sub-factory and department of the Company formulates corresponding standard operating procedures and daily behavioural norms based on company regulations and employee job requirements. Employees are assessed differentially every month according to the corresponding assessment criteria.

The Company considers the turnover rate as a key performance indicator for leaders of each entity and department. To maintain a stable workforce, the Company improves employee remuneration and welfare benefits, provides heatstroke prevention and cooling supplies during hot summers, and organises a variety of recreational activities. In 2023, we respected employees' personal preferences and prioritised internal transfers to retain high-quality talent and reduce turnover. By the end of the report period, Nanshan Aluminium's employee turnover rate was 17.48%<sup>25</sup>.

Employee Turnover of Nanshan Aluminium in 2023 (Unit: %)



<sup>25</sup> Turnover rate = Number of employees leaving in the year / (Number of employees at the beginning of the year + Number of new employees during the year) \* 100%.

## Talent cultivation

Nanshan Aluminium places a strong emphasis on cultivating high-quality talents, recognising them as the driving force behind the Company's sustainable operations. Through a personalised training system and a clear and defined promotion development mechanism, the Company is dedicated to nurturing professional talent, empowering Nanshan Aluminium's sustainable future.

### Employee training

Nanshan Aluminium leverages the educational resources of the Nanshan Training Academy. It has tailored training plans to meet the growth needs of employees at different levels and positions. The Company fully utilises various channels such as online learning platforms, offline training, and internal trainers to promote multidimensional enhancement of employees' business capabilities, providing strong support for their growth.

#### Highlight measures for employee training of Nanshan Aluminium in 2023

##### Skill and leadership training

- Nanshan Aluminium conducts training programs for reserve cadres to enhance their leadership skills continuously.
- Nanshan Aluminium organises training programs such as new apprenticeship systems, gold and blue-collar training, and enterprise self-assessment, involving job types mainly including aluminium electrolysis workers, alumina extraction workers, electricians, fitters and among others.



Standardisation and Normalisation Management Training for Production Systems



Multi-functional Unit Maintenance and Upkeep Training



New Apprenticeship Program



"Golden blue collar" Training Project

### University student training



- In 2023, Nanshan Aluminium conducted training programs such as Nanshan Star University Student Training to help newly hired graduates quickly adapt to their positions.

### Acquisition of professional qualification certificates



- Nanshan Aluminium benchmarks against the excellent practices of peers and provides subsidy bonuses to employees holding registered safety certificates. This enhances the enthusiasm for certification among all employees and improves the overall retention rate of professional talents in the Company.

### Educational improvement

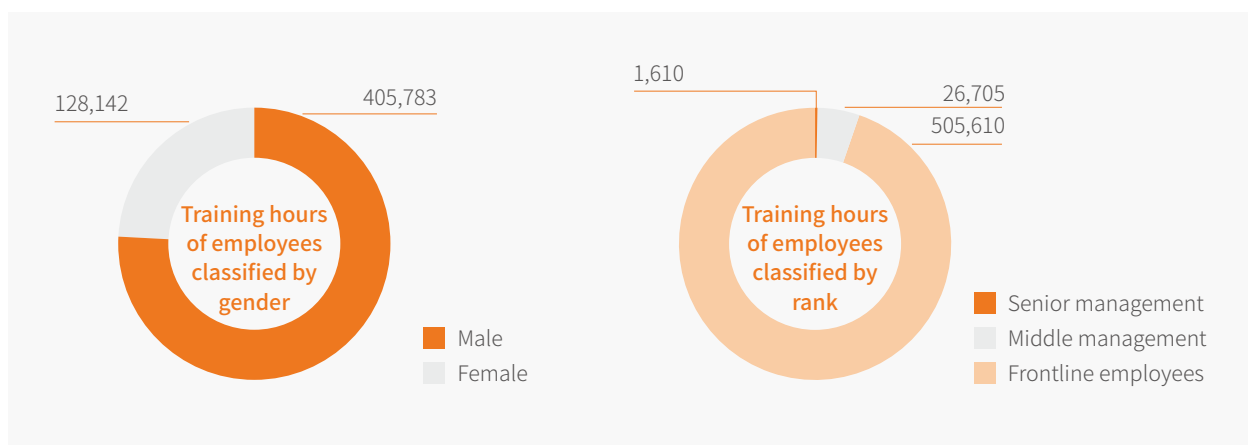


- Nanshan Aluminium collaborates with Yantai Nanshan University to provide academic advancement support for all employees. All employees can achieve academic advancement through forms such as correspondence education or self-registration in Yantai Nanshan University, following the voluntary principle.

During the report period, Nanshan Aluminium conducted a total of 3,679 training sessions, with a total training hours of 533,925 hours and an average training hours per employee of 35 hours.

#### Employee Training of Nanshan Aluminium in 2023

Number of trainees	Total training time	Training coverage of employees	Average training hours per employee
15,255 Person(s)	533,925 Hours	100 %	35 Hours



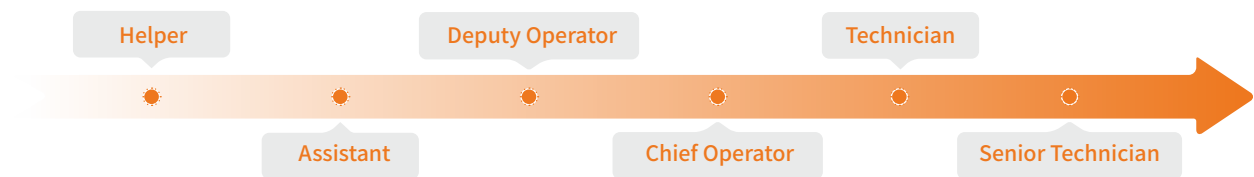
## Employee promotion

To further tap into high-potential talents, Nanshan Aluminium provides a career development path that combines vertical and horizontal promotions for employees in six major sequences: operation, function, management, logistics, marketing, and technology. This motivates employees to face challenges and continuously surpass themselves. We also continuously

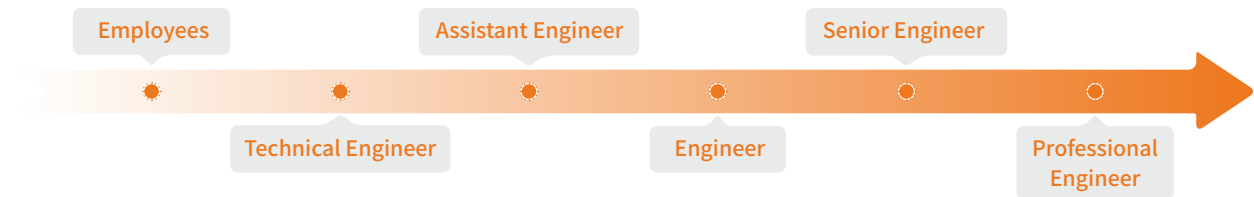
optimise the organisational structure, conduct orderly performance assessments and dynamic management for management positions, continuously enhance the leadership and performance capabilities of management personnel, and achieve "giving full scope to the talents and matching people with positions".

Sequence Promotion Case of Nanshan Aluminium

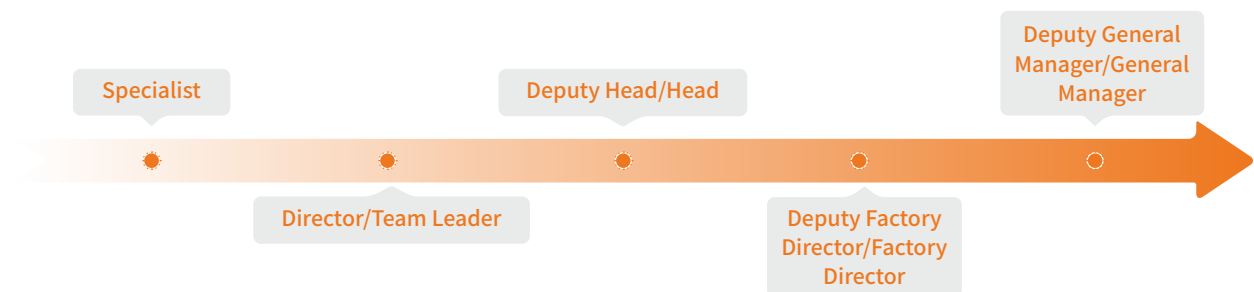
### Promotion channel of operation sequence



### Promotion channel of technology sequence



### Promotion channel of management sequence



## Employee care

Nanshan Aluminium understands that the growth of the Company relies on the efforts of every like-minded partner. Adhering to the principle of "people first", Nanshan Aluminium accurately target employees' common needs and provide them with a competitive remuneration and welfare mechanism in the industry. We continue to broaden democratic communication channels and convey corporate humanistic care through practical actions.

### Benefits

As a caring company, Nanshan Aluminium not only provides mandated benefits to employees but also offers non-salary benefits including welfare subsidies, performance rewards, welfare housing, and free travel. Through multi-dimensional humanistic care and welfare guarantees, we continuously enhance employees' happiness and satisfaction.

#### Employee Welfare System of Nanshan Aluminium

##### Mandated benefits

Paid annual leave, funeral leave, maternity leave, marriage leave and breastfeeding leave

##### Supplementary benefits

- **Welfare allowance:** Seniority allowance, overseas allowance, transportation allowance, high-temperature allowance, health allowance, heating allowance, holiday benefits, birthday allowance, night duty allowance, full attendance bonus and meal allowance
- **Performance incentive:** Overproduction bonus, project bonus and excellence bonus
- **Welfare housing:** Free dormitories and daily necessities such as water, electricity, and heating facilities for non-local employees, and gyms, sports venues, libraries, etc. for employees
- **Free travel:** Free visit of AAAAA Nanshan tourist attractions for internal employees

The Company regularly enriches employees' leisure activities through activities such as artistic performances and basketball games, helping employees achieve work-life balance. We show care and concern for employees in every detail, enhancing team cohesion and centripetal force. We also pay attention to the needs of female employees, effectively implement the internal system of *Management Procedures for Protection of Women*

*Employees*, set up specific places such as clinics, maternity rest rooms, and nursing rooms according to actual needs, and continue to convey care to female employees. In addition, the Company focuses on the needs of employees in straitened circumstances, provide regular condolences and assistance to the employees with difficulties and help them overcome difficulties.





Spring Festival Welfare Distribution



Basketball Game in Electric Power Company



Badminton Match in Aluminium Profile Company



Trekking in Nanshan Aluminium



Tug-of-war in Alumina Company

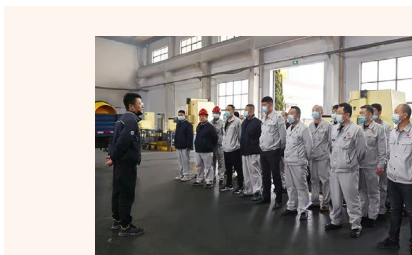


Spring Festival Chinese-Indian Employees Friendship Association in Indonesian Plant

## Democratic communication

Nanshan Aluminium attaches great importance to democratic communication. Based on internal systems such as the *Employee Complaint (Appeal) Management Procedure*, *Management Procedure for Staff Representative* and *Information Exchange, Negotiation and Control Procedures*, the Company encourages all employees to develop a sense of ownership and reflect their own demands through channels such as suggestion boxes, e-mail complaints, phone complaints,

and direct communication with leaders, providing suggestions for the Company's development. The Company's management can understand employees' thought through conferences of employee representatives, pre/post-shift meeting and symposiums, listen to and respond to reasonable suggestions and feedback from employees, and effectively enhance the cohesion of the employee team.



Pre/Post-shift Meeting



Symposium in Power Plant



Symposium in Alumina Company

### Democratic Communication Activities of Nanshan Aluminium

To further consolidate the achievements of democratic management, the Company conducts satisfaction surveys for all employees every year and analyses and improves the deficiencies in the Company's operation process based on the results. By the end of the report period, the average employee

satisfaction rate was 88.54%. We will continue to combine the survey results to enhance employee satisfaction through improvements in employee training, organisation of recreational activities, and logistic service guarantees.

# Safety production

Nanshan Aluminium considers safety production as the lifeline and bottom line of the Company's development. With a well-established safety management system, the Company implements effective health and safety management, safety risk prevention and control, and safety culture promotion to strengthen its safety production defense line, effectively safeguarding the physical and mental health of employees.

## Safety management

Nanshan Aluminium complies with safety production-related laws and regulations such as the *Production Safety Law* and has formulated internal management systems covering the Company and its subsidiaries, including the *Safety Management Standard System* and the *Safety Production Responsibility System for All Employees*. The Company continuously optimises the safety management structure consisting of the Company's General Manager, the Safety Management Department and each subsidiary, ensuring the smooth implementation of safety production work from top to bottom.

### Safety Management Structure of Nanshan Aluminium

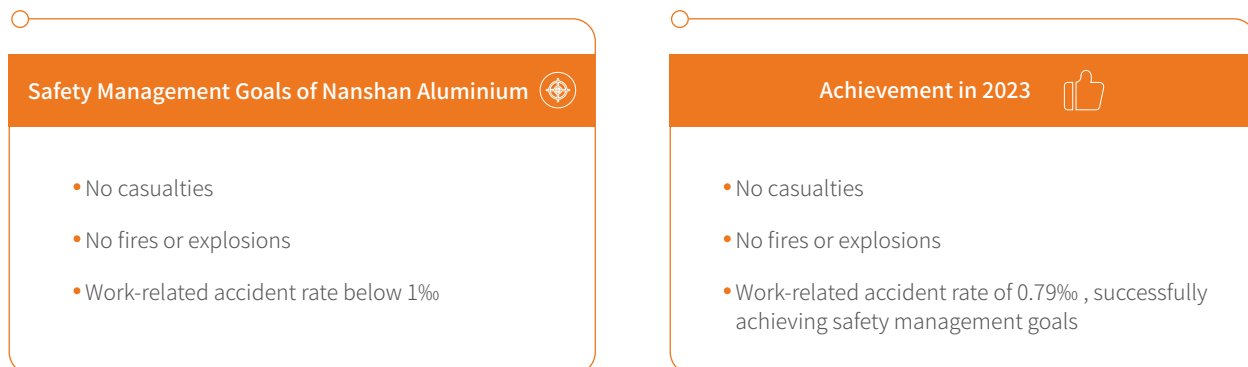


The Company has established and gradually implemented safety management goals covering all subordinate subsidiaries and contractors. Safety performance is listed as one of the important indicators for executive remuneration performance assessment. In the event of a serious or major safety accident, executive year-end bonuses will be deducted proportionately.

In 2023, the Company established a safety production responsibility system for all base front line employees and a reward and punishment mechanism for middle and senior

management, further refined the list of safety production responsibilities for all employees, and effectively implemented safety production responsibilities at all levels, helping to create an atmosphere of safety management with full participation and shared responsibility. By the end of the report period, the Company has successfully achieved its goal of a work-related accident rate below 1‰, with no serious or major safety accidents occurring. The actual work-related accident rate for the year was 0.79‰.

### Safety Management Goals of Nanshan Aluminium



## Security system certification

The subordinate companies in Nanshan Aluminium's operation places have actively promoted the certification of safety management systems. By the end of the report period, all branches of Nanshan Aluminium in different operation places carried out safety management based on the Occupational Health and Safety Management System Certification (ISO 45001)

and safety production standard certification requirements, while all domestic companies passed the Class II safety production standard certification, and established and improved a dual-prevention system. The Indonesian Plant has also passed the ISO 45001 external audit of certification<sup>26</sup>.

## Safety risk prevention and control

Nanshan Aluminium adheres to the principle of "prevention first, control as the main focus". It conducts internal safety risk assessments and audits in a three-year cycle. Based on the assessment results of the Company's safety management status, it clarifies the methods, cycles, and requirements for safety emergency drills and safety emergency plan compiling and training, and comprehensively prevents potential safety risks.

In 2023, the Company formulated and implemented the *Major Hidden Safety Hazards Special Inspection and Rectification 2023 Action Implementation Plan of Nanshan Aluminium* based on the *Standards for Determining the Potential Risks of Major Accidents of Industry and Trade Enterprises* (Order No. 10 of the Ministry of Emergency Management). This provided guidance for the Company's safety hazard work. An Activity Leadership Working Group was established with

the Company's Chairman of Board as the main person in charge to guide and supervise the major hidden danger elimination and rectification stages, including publicity and learning, inspection and diagnosis. The Company also combines the results of the hidden danger elimination to promptly rectify major safety hazards discovered and reviews the effectiveness of related safety training and emergency drills to achieve the closed-loop management of safety production.

During the report period, the Company conducted a total of 9 safety inspections focusing on major hidden dangers and seasonal checks and carried out special governance work for identified safety hazards. By the end of the report period, all safety hazards have been eliminated.



Special Inspection of Deep Well Casting in the Flat-Rolled Product Division



Fire Protection Special Inspection of the Electrolytic Aluminium Company



Hazardous Chemicals Special Inspection of Donghai Power Plant

### Nanshan Aluminium Safety Inspection Projects (Selected)

<sup>26</sup> Except for the newly commissioned Recycled Aluminium Company, the ISO 45001 occupational health and safety management system certification coverage rate of the subsidiaries of manufacturing of Nanshan Aluminium in China is 87.5%. The Indonesian Plant has passed the ISO 45001 external audit of certification. We will continue to strengthen the management of overseas operating subsidiaries, promote the implementation of occupational health and safety management in strict accordance with the ISO 45001 standard.

## Highlights of measures implemented to reduce safety risk in 2023 by Nanshan Aluminium

### Safety risk assessment

- Risk assessment for limited space operation

In 2023, Nanshan Aluminium developed the *Limited Space Operation Safety Management System* to assess risks in hazardous places such as limited space, promoting safety and emergency management in limited spaces.

### Establishment of safety control systems

- Intelligent video surveillance system for vehicles

In 2023, Nanshan Aluminium established an intelligent video surveillance system for vehicles to have an intelligent surveillance of vehicles and drivers and enhance the vehicle transport safety.

### Safety inspection and special rectification

- Summer fire safety inspection

In 2023, Nanshan Aluminium integrated fire inspections with the Company-wide fire safety responsibility system, and conducted a summer fire safety inspection. The inspection focused on identifying safety hazards in key fire-prone areas such as special operations and flammable/explosive zones, and implementing relevant corrective measures based on the identified risks.

- Special rectification campaign of hazardous operations

In 2023, Nanshan Aluminium launched a special rectification of hazardous operations. This initiative aimed to systematically identify and evaluate potential safety risks related to operation preparation and on-site management, clearly defining hazardous factors and devising risk control measures.

- Safety inspection before holidays

In 2023, Nanshan Aluminium concentrated on areas including natural gas, hazardous chemicals, special operations, and general production safety, and organised a safety inspection before holidays. This effort further reinforced safety risk management, hidden danger elimination and control, effectively preventing and mitigating major safety production risks and hazards.

Aligned with the *Appraisal Standard for Human Injury Degree* and industry accidents, Nanshan Aluminium formulated and continuously improved the safety accident reporting process, clarifying safety management responsibilities and report deadlines to protect employees' physical and mental health. During the report period, Nanshan Aluminium had 12 industrial accidents, with the work-related accident rate of 0.79‰ and the lost time injury rate (LTIR) of 0.39.<sup>27</sup> The Company has not experienced any major accidents in the past three years.

Additionally, Nanshan Aluminium hires third-party organisations annually to conduct comprehensive safety production diagnoses on high-risk units regarding safety management systems and on-site safety. This effectively identifies risks and harmful factors in the Company's safety management process. For each diagnosed issue, the Company analyses and discusses it, formulates corresponding safety risk response measures, issues safety status evaluation reports, and continuously improves its safety management level.



Third-party Safety Evaluation Report of Nanshan Aluminium in 2023

During the report period

Nanshan Aluminium had industrial accidents

12

Work-related accident rate

0.79‰

Lost time injury rate (LTIR)

0.39

Company major accidents in the past three years

Not experienced

### Safety culture publicising and implementation

Nanshan Aluminium continued to deepen the culture of "safety first" through employee training. Starting from legal regulations, safety rules and regulations, job operation procedures, emergency plans, occupational health, dual prevention system, fire safety knowledge, safety professional knowledge, and accident cases, the Company strengthened employees'

safety awareness from multiple perspectives and scenarios and continuously improving their ability to identify and control safety risks. By the end of the report period, Nanshan Aluminium had conducted a total of 3,072 safety training sessions, with an average training duration exceeding 24 hours per person.



Limited Space Operation Safety Training of Flat-Rolled Product Division



Special Safety Training in Electrolytic Aluminium Company



Factory Headquarters Monthly Training in Electric Power Company

Safety Training Organised by Nanshan Aluminium

<sup>27</sup> Calculation formula: Injury rate per million working hours = number of injured employees / (employees \* working hours per day \* working days per year) \* 10<sup>6</sup>.

## Contractor safety management

Nanshan Aluminium extends its commitment to health and safety to its collaboration with contractors. In accordance with ASI requirements, the Company has formulated and continuously refined the *Contractor (External Contracting) Safety Management System* and established a health and safety target for contractors with a work-related accident rate below 1‰. All contractors are required to comply with and effectively implement these standards. The Company diligently monitors

the safety performance of contractors, implementing a series of safety management measures such as on-site hidden danger elimination and contractor safety training to safeguard the well-being of contractor employees. In 2023, Nanshan Aluminium conducted safety audits for 10 contractors focusing on quality management systems, occupational health, work at height, and on-site safety.

### Contractor safety management measures

#### Contractor tendering

- Require all entering contractors to meet 100% of ASI safety management requirements and provide qualification documents such as safety certificates, special operation personnel certificates, and construction grade certificates
- Require all contractors to sign a safety management agreement, clarifying the safety production management responsibilities of both the Company and the contractor

#### Daily management of contractors

- Require contractors to voluntarily comply with safety regulations applicable to the operating location and actively co-operate with Nanshan Aluminium in conducting safety hazard elimination and on-site audits
- Regularly conduct on-site inspections for special hazardous operations and high-risk operations to ensure the implementation of safety measures
- Implement a work approval system for operations, and continuously strengthen safety protection for high-risk operations by contractors

#### Training to contractors

- Urge the contractors to carry out daily safety education and training on construction personnel and ensure the construction personnel are trained before entering the construction site.



## Occupational health

Nanshan Aluminium diligently upholds the responsibility for ensuring employee occupational health and safety. The Company has constructed and continuously enhances the occupational health and safety management system and co-ordinate various safety culture promotion activities to effectively reduce occupational health and safety risks in the workplace.

The Company strictly complies with occupational safety-related laws and regulations, such as the *Prevention and Control of Occupational Diseases* and the *Regulations on Supervision and Management of Occupational Health in Workplace*. It also refers to industry best practices and company health and safety objectives to continuously optimise internal systems, such as the *Management Procedures for Infrastructure and Work Environment*. These efforts systematically implement the identification and control of occupational hazards. In 2023, through regular employee physical examinations and improvements to the working environment, the Company ensured the life and health of every employee were protected from the source.

### Occupational health and safety protection measures of Nanshan Aluminium

#### Identification and control of occupational hazards



- The Company has established the *Safety Production Risk Grading and Control Management System* and the *Hidden Danger Elimination and Governance Management System*, clarifying the standards and basis for risk identification and judgment.
- The Company continues to promote the grading control of occupational disease hazards, elimination and governance of hidden dangers, identification of hazards, risk assessment, and control work, achieving the normalised management of occupational hazard risks.

#### Working environment improvement



- Provide labour protection supplies to employees free of charge according to job requirements
- Distribute heatstroke prevention and cooling drugs and food during the summer high-temperature season
- Conduct on-site occupational hazard factor detection and strengthen on-site protection facilities management and control based on detection data

#### Carry out regular employee physical examinations



- Conduct screenings of employees' physical health status, formulate targeted control measures for diseases such as cardiac disorders, abnormal blood pressure and blood sugar, and issue employee health risk notification letters.

# 06

## Shouldering Responsibility Co-creating a Better Future

Nanshan Aluminium actively embraces the ethos of collaboration and shared responsibility, striving to foster a mutually beneficial and transparent relationship with suppliers. We are dedicated to enhancing supplier management, standardising the raw material procurement process, and partnering with suppliers to uphold ESG responsibilities. While we are committed to building a responsible supply chain, we recognise the importance of actively contributing to society to ensure the long-term and sustainable development of our enterprise. We prioritise engagement in public welfare and charitable initiatives within our operation places, aiming for reciprocal benefits and integration with the local society.



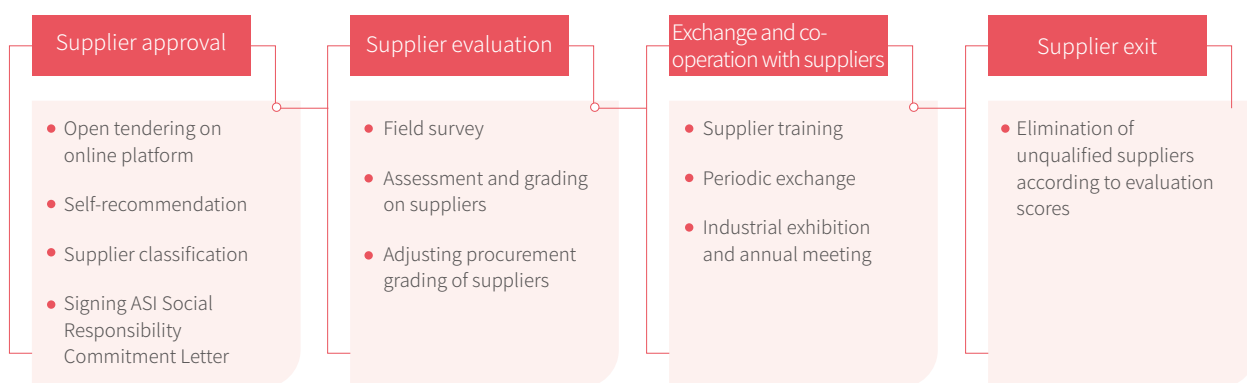


# Responsible supply chain

Developing a responsible supply chain is crucial for ensuring the sustainability of our business operations. Nanshan Aluminium has standardised its whole process supplier management process to ensure that suppliers adhere to our sustainable development guidelines, particularly in environmental management, health and safety, business ethics, and human rights. We continuously enhance the resilience of our supply chain, striving to create a clean, transparent, and sustainable procurement environment.

## Whole process supplier management

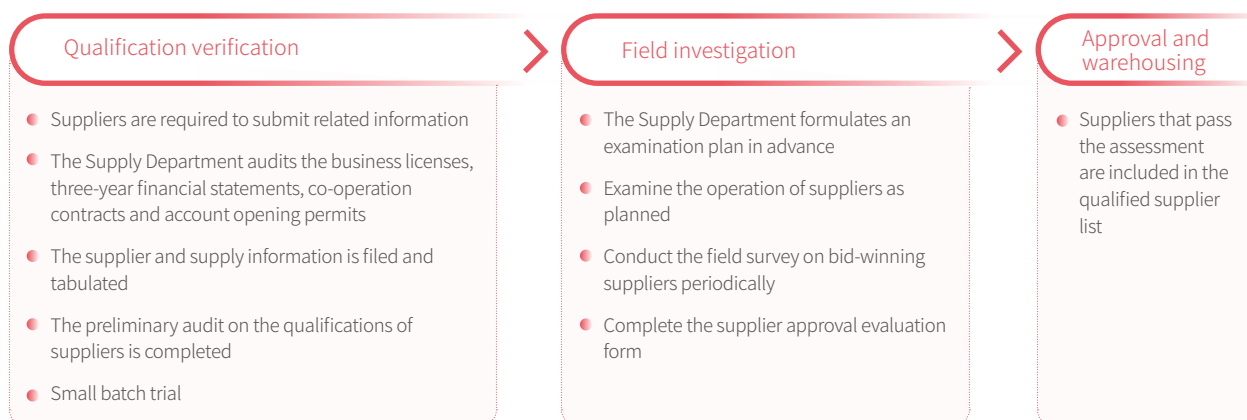
Nanshan Aluminium adheres to the purchasing principle of fairness, impartiality, and openness, strictly complying with laws and regulations such as the *Civil Code* and *Tendering and Bidding Law*. We formulated internal regulations and procedures, such as the *Supplier Management Regulations*, *Management Procedures for Implementation of ASI by Suppliers (Contractors and Service Providers)* and *Management Procedures for Prohibiting the Use of Conflict Minerals*, to rigorously govern our procurement and supplier management processes.



Whole Process Supplier Management

## Supplier approval

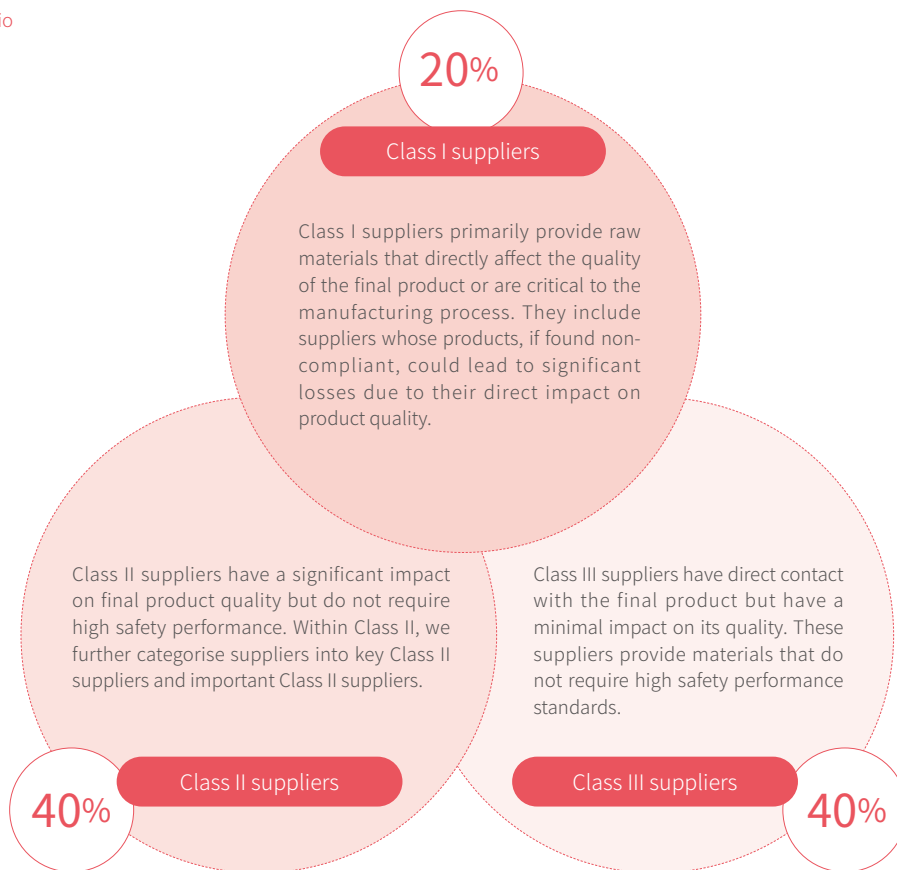
We have clear approval conditions for the suppliers and carry out prequalification, small batch trial and field audit to confirm whether they have the ability in long-term and stable supply. During the report period, we streamlined the open tendering process for long-term co-operative suppliers, consolidating online, temporary, and offline tendering into a unified tendering platform. This initiative has enhanced the standardisation, informatisation, and transparency of our procurement process. All tendering project information is publicly disclosed on our official website and China Bidding Network and other platforms, with communication channels provided for reporting any irregularities, ensuring the openness and fairness of our tendering process.



Supplier Approval Process of Nanshan Aluminium

In 2023, Nanshan Aluminium further refined its supplier classification based on the criticality of supplied materials to product processing. Suppliers are categorised into Class I, Class II, and Class III, each subject to specific tendering and management protocols. In implementing the classification and management of suppliers, we adhere to ASI management standards to promote responsible aluminium procurement, regularly supervise and ensure that suppliers meet ASI requirements.

Supplier Classification



Supplier evaluation and exit

We have established scoring and evaluation mechanism for suppliers to assess suppliers based on indicators such as product delivery timeliness and product quality acceptance rates. These evaluations are conducted monthly, and the results are used to generate annual supplier performance scoring. Suppliers are then categorised into four levels based on these scorings, with procurement prioritised according to their level.

Assessment results	Suppliers scoring above 90 (inclusive)	are categorised as Class I suppliers and are given priority in procurement co-operation.
	Suppliers scoring between 80 (inclusive) and 90	are categorised as Class II suppliers. They undergo annual field audits to assist in improvement and are closely monitored.
	Suppliers scoring between 70 (inclusive) and 80	are categorised as Class III suppliers. They undergo annual field audits to assist in improvement and are closely monitored.
	For suppliers scoring below 70	if there are other suppliers providing the same product/process/service who can fully meet our requirements, we will terminate procurement from the underperforming suppliers and revoke their qualified supplier status.

Supplier Scoring and Evaluation Mechanism

In addition, we conduct regular annual field audits and inspections of suppliers. Different categories of suppliers are subject to varying frequencies of performance evaluations to effectively monitor co-operation quality. Based on the assessment results, we promptly disqualify underperforming suppliers.



Supplier Performance Assessment, Rating, and Field Audit Frequency

## Enhance the resilience of supply chain

The Company consistently optimises the supply chain structure, establishes prudent safety stocks, deepens collaboration within the supply chain, and consistently identifies and mitigates supply chain risks. These efforts are aimed at preventing disruptions in the supply chain, ensuring a stable supply of strategic resources, and comprehensively enhancing the supply chain's ability to withstand risks, thereby strengthening its flexibility and agility.

In 2023, we continued to reduce supply chain risks by enhancing the flexibility and reliability of our supply chain through diversified supply strategies. The Procurement Department closely collaborated with various business departments, considering factors such as commodity and service prices, supplier assurance capabilities. In the tendering process, we adopted a multi-lot bidding model to stimulate market competition, selecting the most cost-effective and high-quality service providers for each category of goods.

Measure	Description
Safety stock and emergency incident response	<ul style="list-style-type: none"> <li>Conduct regular emergency drills for material interruptions to cope with supply disruptions caused by emergencies, ensuring the stability and continuity of the supply chain to maintain normal business operations</li> <li>Monitor safety stocks to ensure the Company has sufficient backup supplies to respond quickly and provide alternative products or services</li> </ul>
Enhance strategic supplier co-operation management	<ul style="list-style-type: none"> <li>Established the system of <i>Supplier Whitelist Management</i> to deepen strategic partnerships with high-quality suppliers, ensuring the stability of material supply in terms of timing, price, and quality</li> <li>Closely co-operate with 2-3 long-term strategic suppliers in terms of bulk commodities and other production guarantee materials and establish stable co-operation with at least five or more suppliers in terms of routine materials</li> </ul>

Supply Chain Risk Management Measures of Nanshan Aluminium

During the report period, we conducted comprehensive capacity-building for the procurement team, focusing on issues like supplier management, business communication and negotiation, and fine cost control. We customised and implemented 15 professional training sessions, totalling 25 hours, covering 450 participants. These trainings significantly strengthened the team's professional knowledge base, laying a solid foundation for establishing deeper co-operation with suppliers. Moreover, to build solid and efficient co-operation with suppliers, we invite high-quality suppliers to industry conferences and company annual meetings every year. This aims to deepen mutual understanding and grasp of industry dynamics and strategic co-operation, jointly promoting the progress and development of both parties.

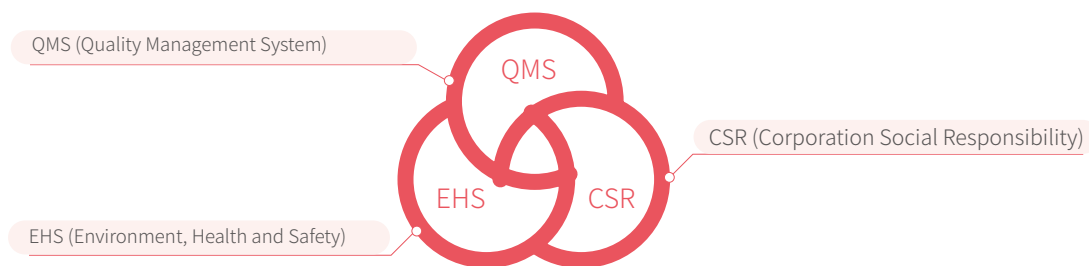


## Supplier ESG management

To enhance the development of a responsible and sustainable supply chain, Nanshan Aluminium encourages and urges suppliers to actively embrace their responsibilities for sustainable development. We integrate suppliers' performance in sustainable development into our evaluation scope and provide improvement suggestions based on the results. For suppliers whose performance in sustainable development falls below standards, we will issue warnings, reduce, or even terminate supply co-operation based on the actual situation.



In 2023, to ensure alignment between suppliers' sustainable development guidelines and our own, the Company has incorporated ASI requirements into regular supplier management. Relevant suppliers are required to undergo field audits in 240 items by us in areas such as quality, environment, occupational health and safety, and labour rights. During the report period, we conducted field audits for 10 core raw material suppliers, of which 9 passed the audit. All 39 tracked and verified issues identified have been rectified.



### Supplier Field Audit Assessment Factors<sup>28</sup>

Evaluation dimensions	Inspection content
ASI requirements	<ul style="list-style-type: none"> <li>• Include Aluminium Stewardship Initiative (ASI) requirements in normalised management, and require relevant suppliers to sign an <i>ASI Social Responsibility Commitment Letter</i> and comply with the requirements of product quality, environmental protection, health and safety, business ethics, human rights, and other related provisions</li> <li>• Conduct regular on-site audits and reviews of core raw material suppliers to assess their QMS, EHS, and CSR</li> </ul>
Environment, safety, labour, and human rights	<ul style="list-style-type: none"> <li>• Comply with national and local laws and regulations related to the environment</li> <li>• Prioritise co-operation with suppliers of green-power aluminium raw materials and encourage suppliers to prioritise the use of clean energy</li> <li>• Carry out safety production to ensure the occupational health and safety of employees</li> <li>• Have no child labour, forced labour, or work that harms physical health</li> </ul>
Business ethics and integrity	<ul style="list-style-type: none"> <li>• Comply with national and local laws and regulations related to the environment</li> <li>• Sign <i>Sunshine Commitment Letter</i>, <i>Integrity Commitment Letter</i>, <i>ASI Social Responsibility Commitment Letter</i> and other integrity constraint documents for all co-operating suppliers. In Case of breach of contract, Nanshan Aluminium has the right to terminate co-operation with suppliers or transfer the matter to judicial authorities.</li> </ul>
Conflict mineral	<ul style="list-style-type: none"> <li>• All core suppliers have signed the <i>Commitment Letter on Not Using Conflict Minerals</i> and provided the <i>Investigation Report on Conflict-free Minerals</i>.</li> </ul>

### Sustainable Development Evaluation Dimensions for Suppliers of Nanshan Aluminium

<sup>28</sup>The field field audit contents mainly include: 1) QMS: Conduct related audits around the quality management system; 2) EHS: Conduct related audits around system management, occupational health, occupational safety, work at heights, chemicals, emergency preparedness, etc.; 3) CSR: Conduct related audits around labour rights and interests, human rights, salary benefits, fair trade, anti-corruption, responsible procurement, supplier management, management systems, etc.

In the entry process such as bidding and tendering, we attach great importance to the feedback and opinions of suppliers and hope to eliminate all illegal activities. Should suppliers encounter or discover any problems during the co-operation process, please provide feedback through our publicly released "Supplier Complaint Email (group-gysts@nanshan.com.cn)". The Company will designate personnel to reply, provide feedback, and coordinate in a timely manner to ensure that the problems can be resolved promptly and effectively, jointly maintaining the smooth and stable co-operation between both parties.

### Sunshine Commitment Letter

- **Undertake** to strictly adhere to relevant laws and regulations in our business dealings with Nanshan Aluminium, upholding principles of openness, impartiality fairness and integrity and pledge not to seek undue benefits or trading opportunities and to abstain from engaging in any form of unfair trade practices
- **Undertake** to possess the requisite licenses, qualifications, approvals, permits, certificates, and any other necessary documents as mandated by law for business operations, and furthermore, ensure that the goods provided meet Nanshan Aluminium's specified technical requirements
- **Undertake** not to discriminate against Nanshan Aluminium in terms of pricing or sales policies, and that transaction prices and sales policies will not surpass those of any third party in the market
- **Undertake that the Company** will safeguard any commercial information and secrets of Nanshan Aluminium that we and our representatives become privy to during the tendering period

Supplier Sunshine Commitment Letter Excerpts

## Green supply chain

To drive carbon emission reduction within the supply chain and meet the needs of downstream customers, Nanshan Aluminium is committed to reducing the carbon emissions associated with the entire product life cycle at the source. We require suppliers to implement measures to reduce carbon emissions, encourage the development of green products, and prioritise the use of clean energy sources such as wind and hydropower. This effort aims to make a substantial contribution to building a low-carbon, environmentally friendly supply chain system.

## Conflict mineral management

All our core suppliers have signed the *Commitment Letter on Not Using Conflict Minerals* and provided *Investigation Report on Conflict-free Minerals*. They provide proof of origin and inspection certificates for the products we purchase to eliminate the use of conflict minerals from the Democratic Republic of the Congo and its neighboring regions. The Company never supports or uses the metals obtained from armed conflicts, illegal mining and poor working environment.

### Commitment of Nanshan Aluminium



We never support or use the metals obtained from armed conflicts, illegal mining and poor working environment, i.e., "conflict minerals". Suppliers should investigate their products for metals such as gold (Au), tantalum (Ta), tin (Sn), tungsten (W), aluminium (Al) and identify their sources in accordance with the "OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-affected and High-risk Areas (DDG)".

## Contributing to society

Nanshan Aluminium recognises that corporate growth is reliant on societal support, thus making it an imperative duty to give back to society. Over the years, we have actively participated in social welfares, embodying corporate social responsibility, and firmly believe that by fulfilling these commitments, we can coexist harmoniously with society and progress together.

Nanshan Aluminium has consistently honored its commitments to the community, respecting and supporting its economic development. We actively encourage employee participation in volunteer services, blood donation, and other charitable activities. We continue to engage in charitable projects such as educational assistance and community festival outreach, striving to give back and make a contribution to the society.

### Commitment of Nanshan Aluminium



The Company focuses on solving the adverse effect of enterprise operation on local communities through active communication in strict accordance with national laws and regulations, fully maintains the legitimate and traditional rights and interests of local communities in land, livelihood and natural resources, and makes unremitting efforts to promote community development.

Nanshan Aluminium recognises the importance of community protection and respecting culture. We take internal guidelines such as the *Indigenous Protection and Autonomy and Protection of Prior and Informed Consent Rights*, the *Management Procedures for Protection of Cultural Sites and Religious Shrines*, *Control Procedures for Local Community*

*Impact* as the guidance. Throughout the project advancement process, we consistently focus on the impact on the local community and actively communicate and co-operate with indigenous residents and local institutions. We also rectify operational projects that may affect local cultural sites and religious shrines and their environment and safety.

### Case | "Lesser Bairam" visits and welfare activities



During the traditional Muslim New Year period of "Lesser Bairam" in April 2023, our Indonesian factory organised employees to visit and console surrounding villages, nursing homes, and orphanages totalling 1,020 people. We provided flour, rice, edible oil, butter, sugar, and other daily necessities to improve the lives of local residents.

Visit and console surrounding villages, nursing homes, and orphanages totalling

**1,020** people

Commitment of Nanshan Aluminium



We fully respect the basic rights and interests of indigenous residents, including but not limited to the rights to survival, development, use of natural resources (such as mines, land and scenic spots), benefit sharing and informed consent. During new construction (reconstruction and expansion), closure, decommissioning, divestment and natural resource acquisition, we promise not to collude with the local government, but provide compensation or resettlement after the expropriation of natural resources in strict accordance with laws and regulations. We also promise to communicate well in advance, treat the recruitment, work arrangement, salary and job promotion of indigenous residents with a fair and just attitude, and completely eradicate all discriminations.

We are keenly aware that projects such as raw material extraction may have certain impacts on local communities and the environment during implementation. Therefore, we have a responsible attitude and foster deep communication and collaboration with indigenous residents and local organisations to ensure the responsible development and utilisation of minerals, water resources, and other natural assets, with full respect for and consent from indigenous residents. In various stages of project construction, renovation, and expansion, we strictly comply with relevant laws and regulations, striving to

achieve a win-win situation for economic development and community harmony.

To better protect the rights of indigenous residents, we have established a dedicated indigenous peoples' complaint channel according to the *Indigenous Protection and Autonomy and Protection of Prior and Informed Consent Rights*, and steadily promote related work around labour rights, women's rights, resettlement compensation, and other key issues, aiming to provide comprehensive and multi-level protection of the rights and interests of indigenous residents.

Commitment of Nanshan Aluminium



We fully respect the freedom of religious belief in operation place and promise to protect the ancient cultural sites and religious shrines by laws and regulations during daily operation.

The Company has always regarded the protection of cultural sites and religious shrines as its own responsibility, strictly following the guidance of the cultural relics administrative department, and implementing the internal management procedure of the *Management Procedures for Protection of Cultural Sites and Religious Shrines*. During the project implementation, we balance environmental, social, and financial costs and benefits, and take prudent steps to carry out avoidance, protection, and, when necessary, relocation of cultural sites and religious shrines. For operational projects that may affect the environment and safety of local cultural sites and religious shrines, we actively make corrections to ensure the integrity and safety of cultural heritage. The Company is committed to translating its firm commitment to material cultural protection into practical actions, contributing its own strength to the protection of humanity's common cultural heritage.

# Annex I: Reader Feedback Form

Dear readers,

Thanks for your attention and support to the ESG of Nanshan Aluminium. In order to provide more professional and valuable information in environment, society and governance and further improve the ESG report quality, please answer the questions in the Reader Feedback Form.

1. Are you satisfied with the report? Please write down your comments.

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2. Do you think our social responsibility has been fully disclosed?

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3. Is the information you wish to know fully disclosed in the Report?

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4. What improvement suggestions do you have for the Report?

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Your information:

Name

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Work unit

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Post

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Fax

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Tel.

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Email

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## Annex II: ESG Policies and Key Systems

### ESG governance

*Working System of the Sustainability (ESG) Committee of Shandong Nanshan Aluminium Co., Ltd.*

### Environment

*Greenhouse Gas Emission Targets and Implementation Plan*

*Management Methods for Environmental Protection*

*2022 Pollutant Emission and 2023 Emission Reduction Plan*

*Standardised Management Measures for Solid Waste of Nanshan Aluminium*

*Environmental Information Disclosure System of Nanshan Aluminium*

*Management System for Greenhouse Gas Inspection*

*Emergency Response Plan of Shandong Nanshan Aluminium Co., Ltd.*

*Management Procedures for Biodiversity Protection of Nanshan Aluminium*

*Control Procedures for Sewage Discharge*

### Society

*Management System Manual for Intellectual Property Protection*

*Control Procedures for After-sales Service*

*Control Procedures for Customer Satisfaction Measurement*

*Implementation Rules for Trade Secret Management*

*Control Procedures for Production Process*

*Management Procedure for the Prohibition of Discrimination*

*Management Procedures for Protection of Underage Workers*

*Management Procedures for Prohibition of Forced Labour*

*Management Procedures for Prohibition of Child Labour and Remedial Measures*

*Management Procedure for the Right to Freedom of Organising Trade Unions and Collective Bargaining*

*Management Procedures for Protection of Women Employees*

*Safety Production Responsibility System for All Employees*

*Supplier Management Regulations*

*Management Procedures for Implementation of ASI by Suppliers (Contractors and Service Providers)*

*Management Procedures for Prohibiting the Use of Conflict Minerals*

### Governance

*Work System of Independent Directors*

*Management Procedures for Information Disclosure*

*Anti-corruption Policy*

*Standards of Suppliers' Business Conduct*

*Reporting Management Policy*

*Management System for Data Security*



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