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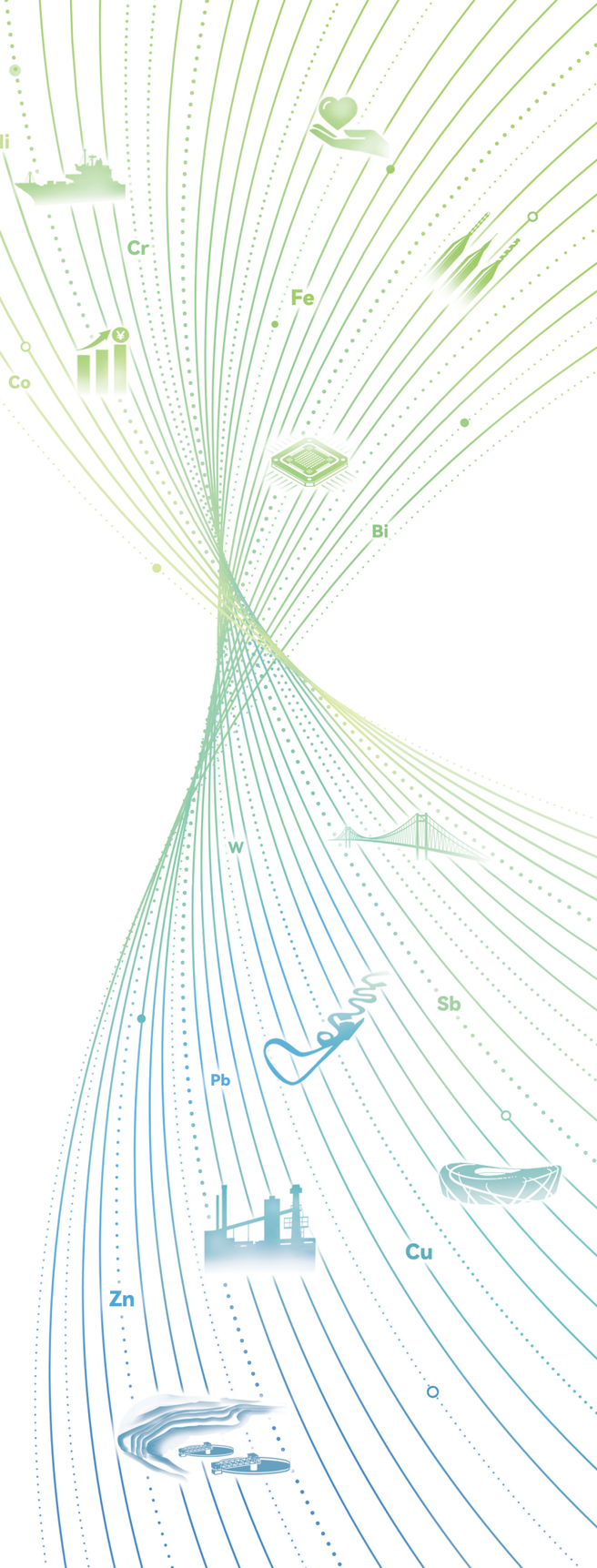
MINMETALS

China Minmetals Corporation 2024 Sustainability Report

2024
SUSTAINABILITY REPORT



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You may also read the PDF version of the Report in Chinese and English as well as the dynamic information related to CSR activities of the Corporation under "Sustainability" on the homepage of the China Minmetals' offcial website.

Offcial website: http://www.minmetals.com.cn

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About This Report

Reporting Period

This report covers the period from January 1 to December 31, 2024, and some parts may also involve significant years in the Corporation history.

Reporting Cycle

The Corporation publishes sustainability reports annually and this report is the 18th since 2007.

Reporting Scope

This report covers the information of the headquarters and subsidiaries of China Minmetals Corporation. Given the varied business attributes of subsidiaries, there will be slight differences in the boundary and scope of specific topics and explanations will be provided in corresponding paragraphs of this report.

References

For readability, China Minmetals Corporation is referred to as "China Minmetals", "the Corporation", "the Company" and "we".

Preparation Basis

The report is prepared in accordance with the requirements of the *Guidelines to the Central State-owned Enterprises Directly under the Central Government on Fulfilling Corporate Social Responsibilities with High Standards in the New Era released* by the State-owned Assets Supervision and Administration Commission of the State Council (SASAC) in 2024, and the *GRI Sustainability Reporting Standards (GRI Standards 2021)* issued by the Global Sustainability Standards Board (GSSB). It also refers to the *Guidance on Social Responsibility (ISO 26000:2010)* issued by International Organization for Standardization (ISO), and the *Guidance on Social Responsibility Reporting(GB/T 36001-2015)* issued by General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China and National Standardization Administration, the *Ten Principles of the United Nations Global Compact*, and *Guidelines for Social Responsibility in Outbound Mining Investments* issued by China Chamber of Commerce of Metals, Minerals & Chemical Importers & Exports.

Data Sources

All data contained herein are from the Corporation's official documents, statistics reports and financial statements as well as its sustainability practice information collected by sustainability information management system of the Corporation and reviews by the functional divisions and subsidiaries.

Report Availability

This report is available in both Chinese and English. Please contact us for a hard copy. You may also find the PDF version of this report in both languages as well as the updates related to CSR activities of the Corporation under "Sustainability" on the homepage of China Minmetals' official website.

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Statement

The China Minmetals Sustainability Report 2024 is to disclose the Company's activities and performance in value creation, innovation, health and safety, environment protection, employee growth, partnership and social harmony. Stakeholders are the most important resource for the Corporation's sustainable development. We adhere to the principle of "cherishing stakeholders and endeavoring to create unlimited value for them", and strive to disclose to the stakeholders the information about our CSR practices and performance as much as possible in an accurate, truthful and objective manner. By doing so, we hope to achieve the most effective communication with our stakeholders on an equal, comprehensive and in-depth basis, so as to enhance mutual trust and cooperation for common progress.

A third-party assurance engagement on this report has been performed by TÜV NORD (Hangzhou) Co., Ltd. ,a subsidiary of the TÜV NORD Group. The statement of assurance is attached hereto as an appendix.

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Chairman's Statement

This is China Minmetals' 18th *Sustainability Report* since 2007. We extend our sincere gratitude and highest respect to our partners, investors, stakeholders for your support and to all employees for your dedication to our sustainability efforts.

This past year marked a pivotal year for fully implementing Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era and the guiding principles of the 20th CPC National Congress and its Second and Third Plenary Sessions. Amid a complex global landscape, China Minmetals forged forward, deepened reforms, and embraced an entrepreneurial spirit. Bearing in mind matters of national significance, we embedded sustainability into our corporate strategy and governance, accelerating efforts to build a world-class enterprise with global competitiveness in the metal and mining industry. In 2024, we registered CNY 833.2 billion in revenue and CNY 22.5 billion in total profit, with total assets exceeding CNY 1.3 trillion. We ranked 69th on the Fortune Global 500 list and 190th among the World's 500 Most Influential Brands, delivering on our mission to contribute to human progress through developing the mining industry.

We set an example in strengthening the foundation of mineral resource security. As a key player in the metals and minerals industry, China Minmetals recognizes that the stable supply of minerals critical to social development—especially those for new energy—is vital to sustainable development. We are committed to the science-based exploration of important minerals, responsible development, reserves/output expansion, and global resource optimization. We also take proactive measures in resource acquisition, production, operation, supply chain management, sales, and reserves to pursue high quality development featuring resource efficiency and environmental safety. In 2024, our practice at the Las Bambas Copper Mine in Peru received global recognition. We assembled expert teams to surpass others in world-class salt-lake resource development, completed the delivery and operation of the Khoemacau Copper Mine in Botswana, and brought the Kinsevere Mine expansion project in the DRC into early production. These symbolic efforts secured a sustainable resource supply for the world.

We uphold governance as the backbone of long-term, steady growth. China Minmetals has further implemented the "two major political principles" and refined the "three lists and one process" model, ensuring in-depth integration of Party building and corporate governance. We standardize board operations at all levels and incorporate sustainability into every facet of decision-making, management, and operations. We deepen our compliance management, with nearly 100 policies formulated or revised. Based on compliance reviews, we ensure that all major decisions are reviewed and approved under statutory authority, procedural compliance, and legal screening. The Company enhances the end-to-end risk management framework, including risk identification, evaluation, prevention, and accountability, to ensure greater risk prevention coverage. With robust governance driving high-quality development, we have received an A rating in the annual performance assessment of central SOE executives for the fourth consecutive year and an A rating in the evaluation of the initiative to deepen SOE reform for the third consecutive year.

We anchor our efforts in green development for a low-carbon future. China Minmetals is committed to a path of green development that puts the environment first. We have increased investment in environmental protection and promoted cutting-edge, energy-saving, and carbon-reduction technologies. As a result, we have achieved significant progress in green mines, green factories, and green construction, with continuous improvement in key energy consumption and emission indicators. We explore an integrated model of mining and ecological restoration to build beautiful mining sites. Prioritizing new energy materials and other strategic emerging sectors, we contribute to a clean, low-carbon, safe, and efficient energy system in support of China's Carbon Peaking and Carbon Neutrality Goals. In 2024, 56 of our projects were recognized for green design and construction. We now operate 12 national-level green factories and 15 green mines, with the title of "2024 China's Top Runner for Industrial Carbon Peaking."

We leverage the power of innovation to drive transformation. China Minmetals has analyzed the R&D strengths of 19 research and design institutes and 48 national technology platforms. We focus on five priorities: building R&D platforms, improving R&D capabilities, tackling major technological challenges, commercializing R&D outcomes, and building a sci-tech talent team. In 2024, we added 2,837 valid invention patents, a 9.6% increase from 2023, and received three national sci-tech awards and 177 provincial-level awards. In addition, we made significant strides in tackling critical tech bottlenecks: unveiling the world's first 6,000-meter intelligent, electric, deep-sea heavy-duty mining vehicle platform, producing ultra-high purity graphite products with a purity level exceeding 99.99995%, and completing China's first ammonia-based silicon nitride powder production line. These achievements provide a "Minmetals solution" to sustainable growth in the industry.

We shoulder our responsibility to foster a new ecosystem of harmony and shared benefits. Putting people first, China Minmetals continues to give back to society and benefit others. In support of rural vitalization, we focus on the five key aspects of rural vitalization with CNY 62.859 million allocated as direct assistance funds and CNY 60.72 million in consumption-driven assistance. For six consecutive years, our paired assistance efforts have received the highest rating of "Excellent" in the assessments of central SOEs' paired assistance. For critical moments such as flood relief and earthquake recovery, we have donated over CNY 20 million and sent emergency teams to support reconstruction in Tibet, Zhenxiong County, and Chenzhou, sparing no effort to protect lives and property. On the global stage, our Las Bambas Mine in Peru contributes CNY 80 million to build the Kutuctay Bridge, benefiting 50,000 nearby residents. In partnership with Peru's Ministry of Education, we have launched a CNY 350 million aid program to enhance educational infrastructure and develop teaching capacity under the signed *Social Contract for Education*. On the safety front, we further strengthen our safety management system and foster a safety culture. No major work safety incidents occurred in 2024, and accidents and fatalities declined year-over-year, reinforcing a solid foundation for work safety.

Despite an arduous journey ahead, we will join hands with partners to reach new heights. In 2025, guided by Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era, we will fully implement our plan for 2025: ensuring stable growth, advancing innovation, strengthening industry, deepening reform, preventing risk, ensuring safety, and reinforcing Party building. With our lofty goal to build a world-class enterprise in the metal and mining industry, we will enhance our core capabilities and competitiveness. China Minmetals will shoulder our responsibility as a central SOE in supporting China's steady economic growth and make greater contributions to advancing the Chinese path to modernization and the great rejuvenation of the Chinese nation.

Chen Dexin

Party Group Secretary and Chairman

About Us

Company Profile

Established in 1950, China Minmetals Corporation (China Minmetals), a key SOE specializing in metals and minerals and directly administered by China's central government, serves as a pilot state-owned capital investment company. With a vision to build a world-class enterprise with global competitiveness in the metal and mining industry, the Company is committed to "contributing to human progress through developing the mining industry." China Minmetals has outperformed others in full value-chain presence from resource acquisition, prospecting and exploration, design and construction, mining and mineral processing, smelting and processing, to trade and logistics. The Company aims to become a national key metal supplier and metallurgical constructor and operator, sparing no effort to supply resources for global economic growth and low-carbon development. We ranked 69th on the Fortune Global 500 list in 2024, the 18th consecutive year for our inclusion in the list.

The Company's operations span metals and minerals, metallurgical engineering, technology, trade and logistics, financial services and real estate, with a global presence in over 60 countries and regions.

In 2024

CNY
1.3 trillion+
Total assets

CNY
833.2 billion
Operating revenue

CNY
22.6 billion
Total taxes paid

CNY
22.5 billion
Total profits

Corporate Milestones

Over its more than 70 years of development, China Minmetals has roughly undergone three main stages.

From its establishment to the period before China's reform and opening up	China Minmetals, as one of the first professional trading companies, was a main channel for China's imports and exports of metal and mineral products, hardware products and building materials in China.
After China's reform and opening up	China Minmetals began exploring a diversified and industrial development path in the market economic system, and it was one of the first Chinese enterprises to "go global".
Upon entering the 21st century	China Minmetals embarked on a strategic transformation characterized by restructuring and merger & acquisition in the the metal and mining industry. Especially, it completed the strategic restructuring in 2015 with Metallurgical Corporation of China Limited (MCC), another Fortune Global 500 company and established China Salt Lake Industrial Group Co., Ltd. with Qinghai Province in 2025. The strategic restructuring has given rise to a larger business scale, more diversified business operations, and stronger risk resilience.

China Minmetals owns 9 listed companies

Publicly listed on the Shanghai Stock Exchange and Hong Kong Stock Exchange

MCC (601618.SH, 1618.HK)

Publicly listed on the Shanghai Stock Exchange and Shenzhen Stock Exchange

Salt Lake Stock (0792.SZ)

Zhuzhou Smelter Group (600961.SH)

China Tungsten Hightech (000657.SZ)

Minmetals Development (600058.SH)

Minmetals New Energy (688779.SH)

Minmetals Capital (600390.SH)

Publicly listed on the Hong Kong Stock Exchange

Minmetals Resources (1208.HK)

Minmetals Land (0230.HK)

Organizational Structure

Corporate Culture and Brand Building

In 2024, China Minmetals deepened branding efforts, ranking 20th in the SASAC's benchmark list for central SOE branding. We were also included in the first batch of "5A enterprises in corporate culture building and management" by the China Corporate Culture Institute. For the first time, the Company was included in the World's 500 Most Influential Brands, ranking 190th.

In 2024, China Minmetals revised the *Corporate Culture Handbook* and *Corporate Image Identification Manual*, providing guidelines and institutional frameworks for standardized cultural development and management as well as brand logo application. We also established a long-term mechanism to build and select corporate culture exchange & demonstration bases, with six such bases receiving guidance on development and operation. The Company's "Minmetals as One Family" philosophy was rolled out in five pilot sites.

Core Corporate Culture

Founding Mission

Contribute to human progress through developing the mining industry

Strategic Vision

Become a world-class enterprise with global competitiveness in the metal and mining industry

Action Guidelines Value Orientation Corporate Spirit

Uphold world-class standards

Lead with independent innovation

Adopt a problem-oriented approach

Pursue excellence with unwavering determination

Fight with a desire for victory

Focus Areas of Corporate Culture

Innovation Culture
Lead the future through innovation-driven progress

Safety Culture
Prioritize life; safety above all

Talent Culture
Value both virtue and competence, unlock the full potential of every employee

Operation Culture
Create value and build win-win partnerships

Green Culture
Green development for harmonious co-existence

Risk Control Culture
Stay vigilant and plan ahead

Rule of Law Culture
Govern the enterprise by law and operate in compliance

Quality Culture
Value craftsmanship and pursue excellence

Integrity Culture
Uphold integrity and safeguard the bottom line

Major Honors and Awards in 2024

69th
On the Fortune Global 500 list

190th
World's 500 Most Influential Brands by the World Brand Lab

A
In the annual performance assessment of central SOE executives for the fourth consecutive year

A
In the evaluation of the initiative to deepen SOE reform for the third consecutive year

6
Advanced central SOE units

9
Employees awarded the Central SOE Model Worker title

1
Second prize of the National Technological Invention Award

2
Second prizes of the National Sci-tech Progress Award

Sustainability Management

Sustainability Context Analysis

Type	Risks and Opportunities
Resource supply	**Resource security:** Resource security is a ballast of the overall national security. Strategic mineral resources are crucial for the development of emerging strategic industries, with implications for both economic and national defense security. The increased uncertainty and volatility in the global resource market could lead to supply disruptions or significant cost rising. Therefore, it is essential to conduct in-depth analysis on the global resource market and establish early warning mechanisms to ensure the stability and reliability of resource supplies.
Technological innovation	**Intelligent technologies:** The mining industry is rapidly transitioning toward intelligent operations. Technologies such as drone-based exploration, autonomous haul trucks, and big data analysis platforms are being widely adopted. Investment in digital and automated technologies continues to grow, with technology leaders poised to shape the market landscape, while lagging enterprises face the risk of being phased out.
	Green technologies: Low-carbon technologies and circular economy models have become focal points across the sector. To meet China's goals of carbon peaking and carbon neutrality and adapt to the growing pressure of international carbon tariffs, companies must reduce energy consumption and emissions through technological innovations.
Ecological environment	**Environmental regulations:** With growing global awareness of environmental protection, environmental policies and regulations are becoming increasingly stringent. Emission standards are rising, requiring companies to rigorously implement environmental management standards across all stages of mining and production to ensure regulatory compliance.
	Green mines: Greening the entire lifecycle of mining operations has become an industry standard. From exploration and extraction to processing and mine closure, companies are expected to maximize resource efficiency.
	Information disclosure: As public sensitivity to the environmental impact of mining increases, companies that fail to meet ESG disclosure requirements may face financing constraints and market exclusion.
Social responsibility	**Community relations:** Community engagement is a vital aspect of corporate social responsibility. Failure to respect and address local community interests may lead to public opposition or policy restrictions.
	Employee safety: Frequent mining-related accidents worldwide have prompted higher safety standards. Companies must adopt advanced monitoring systems and training mechanisms to effectively mitigate operational risks.
Overseas development	**Overseas Investment:** Policy shifts in resource countries have increased the uncertainty of overseas investments.
	The Belt and Road Initiative: The Belt and Road Initiative has gained support from most countries worldwide, making deepening international cooperation a key strategic direction for enterprise development. China Minmetals should actively expand partnerships both domestically and internationally, and establish solid strategic cooperation with local governments, international organizations, and enterprises, jointly advancing the global sustainable development agenda and enhancing international competitiveness.

Communication Platforms

China Minmetals communicates effectively with stakeholders through diverse channels, including sustainability reports, the official website, WeChat account, and mainstream media.

The Company has issued 18 sustainability reports that systematically summarize our CSR practices, achievements, and gaps. We also compile country-specific sustainability reports to promote mutual understanding and cross-border cooperation. Subsidiaries meeting necessary conditions are encouraged to publish their ESG reports that demonstrate their ESG performance to stakeholders for greater transparency and reputation. This has formed a comprehensive sustainability reporting framework comprising group-level reports, subsidiary reports, and country-specific reports.

China Minmetals 2023 Sustainability Report

MCC 2023 Social Responsibility and ESG Report

China Minmetals Sustainability Report in Peru

Preparation Process

Information collection

- Gathering domestic, international, and industry data
- Collecting internal information

Content drafting

- Defining the report outline
- Drafting report content

Feedback collection

- Soliciting revision suggestions from departments and subsidiaries
- Revising reports based on feedback

Report review

- Conducting report reviews
- Addressing revision comments from review teams

Design

- Determining visual style
- Designing report layout

Report translation and design

- Translating into English
- Designing the English version

Final review

- Submitting the final draft for executive approval
- Finalizing and publishing the report

Materiality Analysis

We have established a priority determination process for material topics. After identifying sustainability issues highly relevant to our industry, we determine the scope of topics and the degree of disclosure to ensure more accurate and comprehensive information disclosure.

Material topics identification process

Identifying stakeholders

Identifying 9 categories of core stakeholder based on the nature of the Company and industry characteristics.

Screening topics

Selecting topics highly relevant to the Company's development goals with reference to domestic and international standards, guidelines, and initiatives, and forming a topic pool.

Questionnaire survey

Conducting online and on-site questionnaire surveys.

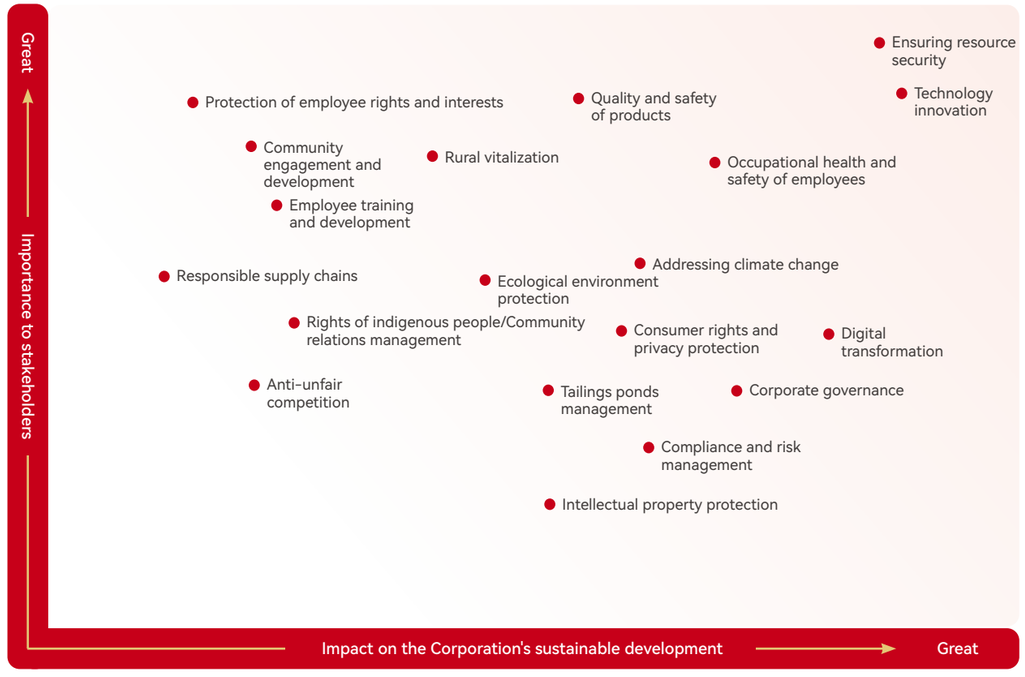
Topic analysis

Based on survey results, prioritizing topics according to their importance to stakeholders and the Company, and drawing a stakeholder matrix.

Defining the boundary of the report

Determining the key content in the report based on the identified material topics.

Materiality Matrix



Stakeholder Engagement

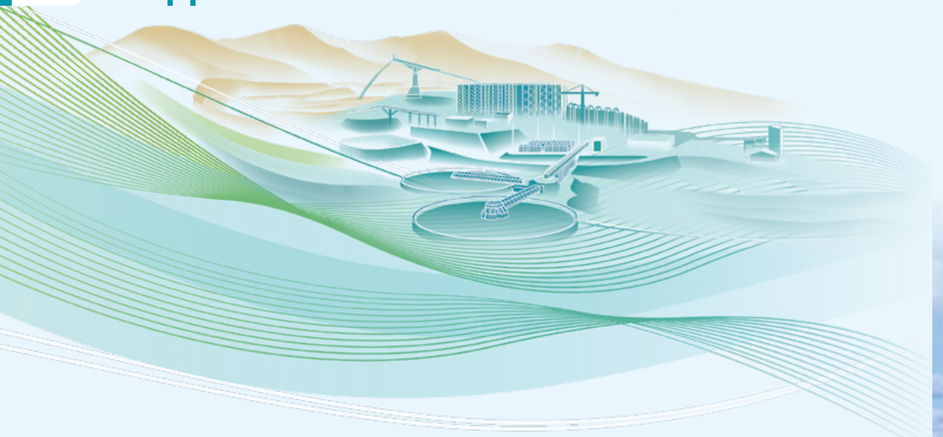
We prioritize communication and engagement with stakeholders. By analyzing their expectations and requirements, we develop targeted communication strategies to effectively address their needs. This approach ensures we meet stakeholders' demands and enhances two-way communication, fostering sustainable and high-quality corporate development.

SASAC / shareholders	Local governments	Customers	Suppliers / contractors
Expectations and requirements	**Expectations and requirements**	**Expectations and requirements**	**Expectations and requirements**
Operational compliance Satisfactory market capitalization Work safety Green development Brand promotion	Tax payment according to laws Employment promotion Economic development	Contract fulfillment High-quality products Quality service	Honesty and integrity Openness and fairness Mutual benefits
Communication response	**Communication response**	**Communication response**	**Communication response**
Special reports Increasing profitability Safety management Energy conservation and emissions reduction Brand building	Taking the initiative to pay taxes Providing support and guidance Driving economic growth	Honoring contracts Improving product quality Increasing service capacity	Honoring agreements Disclosing procurement information Seeking joint development

Employees	Partners	Peers	NGOs, communities, and the public	Media
Expectations and requirements	**Expectations and requirements**	**Expectations and requirements**	**Expectations and requirements**	**Expectations and requirements**
Equal opportunities Career development Occupational health Employee care	Regular communication Long-term stable relationship	Fair competition Industry development	Improving community environment Respecting community culture Supporting public welfare	Transparent and open information
Communication response	**Communication response**	**Communication response**	**Communication response**	**Communication response**
Democratic communication Education and training Providing protective equipment, facilities and labor protection articles Caring for employees	High-level visits Strategic cooperation	Maintaining business environment Participating in industry standard formulation	Engaging in community building Protecting aboriginal cultures Organizing public welfare activities	Enhancing information disclosure

Spotlight 1

High-Quality Construction and Operation of the Las Bambas Copper Mine



In 2024, during his meeting with the President of Peru and the publication of the article *China-Peru Friendship: Setting Sail Toward an Even Brighter Future*, Chinese President Xi Jinping mentioned the Las Bambas Copper Mine, owned by China Minmetals, twice, fully acknowledging the positive contributions Las Bambas has made to Peru's economic development and improvement of people's livelihoods.

> *"China has been Peru's largest trading partner and biggest export market for ten consecutive years. Major cooperative projects such as the Las Bambas Copper Mine, invested by Chinese enterprises, have played an important role in Peru's economic development and the improvement of people's livelihoods."*
>
> – Remarks by President Xi Jinping during his meeting with Peruvian President Dina Boluarte in Beijing on June 28, 2024

> *"The Las Bambas Copper Mine project, invested by Chinese enterprises, accounts for about 1% of Peru's GDP and has created tens of thousands of jobs."*
>
> – Excerpt from President Xi Jinping's article *China-Peru Friendship: Setting Sail Toward an Even Brighter Future*, published in *El Peruano* on November 14, 2024

"Peru is China's 'neighbor' across the Pacific." The Las Bambas Copper Mine is one of China Minmetals' key overseas mining projects. Located on the Andean Plateau in southern Peru at an altitude of approximately 4,000 meters, the mine is situated 75 kilometers from the ancient city of Cusco, surrounded by 33 communities and villages. It is a world-class large-scale copper mine. Since 2014, China Minmetals has adhered to the principle of "extensive consultation, joint contribution and shared benefit" in the high-quality construction and operation of the Las Bambas Copper Mine. At the same time, it has committed to promoting a series of "small but sophisticated" livelihood cooperation projects. These efforts have continuously supported Peru's economic development while significantly enhancing the well-being of local communities. This has become a vivid example of building a China-Latin America community with a shared future. Through its diligent work and fruitful results in the southern Andean Plateau, the Las Bambas Copper Mine has earned high praise and genuine recognition from both Chinese and Peruvian society.

> *"The collaboration between the Ministry of Education and the Las Bambas Copper Mine fully demonstrates a model of sustainable development and public-private sector cooperation."*
>
> – Dina Boluarte, President of Peru

> *"Las Bambas has not only brought significant economic benefits to Peru but has also actively fulfilled its social responsibilities, which improves the quality of life for local community residents."*
>
> – Gustavo Adrianzen, Prime Minister of Peru

Contributing to Economic Development

China Minmetals, guided by the philosophy of "We mine for progress", has always placed the creation of long-term value as the core objective of our corporate development. By utilizing advanced and applicable technologies, the Company is committed to the sustainable development of the Las Bambas Copper Mine. The steady growth in the operational performance of the Las Bambas Copper Mine has significantly contributed to Peru's economic development and strengthened China-Peru economic and trade relations. This success has further boosted the confidence and enthusiasm of Chinese enterprises in Peru's investment environment, making it a flagship project of China-Peru production capacity cooperation under BRI.

> *"As one of the leading global mining projects, Las Bambas has played a vital role in solidifying Peru's position as a major copper producer globally. It has also made significant contributions to enhancing Peru's mining GDP, which creates job opportunities, drives fiscal transfers, and promotes the development of the Apurímac region."*
>
> – Romulo Mucho Mamani, Minister of Energy and Mining of Peru

Panoramic View of the Las Bambas Copper Mine

Promoting economic prosperity

Las Bambas Copper Mine was acquired by China Minmetals in 2014. After exploration and construction, and successfully completing commissioning and ramp-up to full production, the mine achieved commercial production on July 1, 2016. Since its commencement, Las Bambas has maintained stable production operations, with key indicators such as ore processing capacity and recovery rates continuously improving.

By the End of 2024:

3 million+ tons
Copper contained in the copper concentrates produced by Las Bambas Copper Mine

CNY **12.7** billion
Average annual GDP of the Apurímac region, where the project is located, higher than the previous one (approximately CNY 3.6 billion)

CNY **27,000**
Per capita GDP

Apurímac has rapidly become one of the fastest-growing regions in Peru's economy

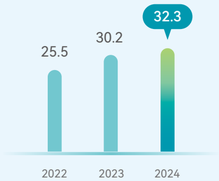
Since its commencement of production in 2016, by the end of 2024:

CNY **15.5** billion+
(or USD 2.125 billion)
Taxes paid to the Peruvian government

1%
Proportion of Las Bambas Copper Mine's annual output value to Peru's GDP

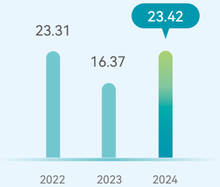
Copper Production at the Las Bambas Copper Mine

(10,000 tons)



Tax payments by the Las Bambas Copper Mine

(100 million yuan)



Applying advanced technologies

During the production and operation of the Las Bambas Copper Mine, China Minmetals has introduced world-leading open-pit mining technologies and automated beneficiation equipment. The Company has also extensively applied digital and intelligent technologies to enhance mining efficiency, setting a benchmark for the sustainable development of global mining industry.

Launch of Peru's first Integrated Remote Operations Center (IROC)


Integrated Remote Operations Centre (IROC) of the Las Bambas Copper Mine

The Las Bambas Copper Mine has established Peru's first Integrated Remote Operations Center (IROC), a digital platform that integrates process optimization, technological upgrades, human resource management, and team collaboration. This platform enhances operational processes and improves decision-making quality. Through this system, the Lima team at Las Bambas can remotely engage in the mine's operational management, effectively boosting production efficiency. In 2024, the Integrated Remote Operations Center of Las Bambas was showcased at the 7th Digital China Summit.

Geobank leads digital geological exploration data storage

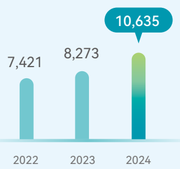
In the routine tasks of geological sampling, geologists continuously collect physical data to carry out tasks such as mineral exploration. However, visualizing exploration data in real-time has always been a technical challenge in the industry. To address this, Las Bambas Copper Mine has implemented a data analysis system that quickly transforms physical data into digital information, allowing geologists to access and analyze the data promptly. Operators in the grade control department can also visualize the status of blast holes in the shortest time possible, ensuring that data is interconnected and information is accessible throughout the entire mine, effectively eliminating data silos.


Digital geological exploration and storage system of the Las Bambas Copper Mine

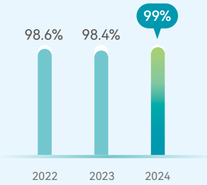
Driving local development

Las Bambas Copper Mine adheres to localized management practices, providing numerous job opportunities for communities located near the project site and offering stable income sources for local residents. Additionally, the mine has effectively driven growth in surrounding sectors such as transportation, catering, and hospitality, indirectly creating tens of thousands of jobs.

Number of employees at the Las Bambas Mine



Percentage of local employees



Total domestic procurement volume in Peru

(CNY billion)

Enhancing community business strength and expanding development paths

As one of the key outcomes of local empowerment, the Kewan Company in the Huanguire Community has strengthened its operational management, team development, and vehicle fleet with the support of Las Bambas Copper Mine. In March 2025, Kewan Company launched 30 new modern trucks, officially beginning its copper concentrate transportation business in the Las Bambas Copper Mine. This makes it the second community enterprise in Peru's mining industry to take on such high-end operations, thus broadening the community's economic development path.

Previously, a community enterprise named Apuayawa, with funding from the Las Bambas Copper Mine, signed a copper concentrate transportation contract with the mine. This enterprise is jointly owned and operated by 710 families from the Fulabamba village.

Protecting Lucid Waters and Lush Mountains

Peru is one of the most biodiverse countries in the world. At the Las Bambas Mine and in surrounding communities, China Minmetals takes proactive measures such as environmental monitoring, afforestation, and biodiversity conservation to minimize the adverse impact on the surrounding ecological environment.

Environmental monitoring

Las Bambas Copper Mine submits environmental monitoring results (water, air, noise, vibration, and sediment) to the relevant environmental authorities on a quarterly basis. The environmental monitoring system has been digitized to improve monitoring efficiency. Local residents are also encouraged to actively participate in environmental monitoring activities around the mine. Additionally, annual biodiversity monitoring is conducted, and the results are submitted to the competent authorities.

Establishment of an environmental protection laboratory

Las Bambas Copper Mine is the only mine in Peru to have a fully equipped water and soil environmental monitoring laboratory. The laboratory is equipped with advanced ICP (Inductively Coupled Plasma) laboratory equipment, enabling the analysis of water quality, soil, and other environmental factors. This further enhances the scientific and targeted approach of Las Bambas' environmental protection efforts.

Species protection

At the Las Bambas Copper Mine, we uphold the ecological philosophy of "respecting, adapting to, and protecting nature". In line with this commitment, we have implemented a range of biodiversity management measures aimed at delivering integrated value across economic, social, and environmental dimensions.

Afforestation efforts to preserve the ecological environment

Since 2015, with the support of 22 local nursery bases, Las Bambas has provided financial and technical assistance to help 34 communities across the provinces of Cotabambas and Grau plant pine and tara trees. Over the past decade, nearly 1.9 million saplings have been cultivated in the nurseries. On average, around 545 community members participate in monthly tree maintenance rotations. These once-fragile seedlings have now grown into flourishing forests.

"Our future generations will benefit from the trees we plant today. This is made possible through the collaboration between the Las Bambas Copper Mine and our communities. It is now our responsibility to care for these trees."

– Zeno Paniura, former President of the Pumamacau community

Being a Leader in Inspiring Wisdom

Education is the key to transforming lives and a vital driver of social progress. Las Bambas is deeply committed to advancing local education by supporting the development of school infrastructure and implementing a range of initiatives, including the Continuing Education, Educational Assistance, Intensive Education, and Talent Development programs. Through these concrete actions, we are planting the seeds of hope and opportunity across the region.

Signing the social compact for education

In 2024, under the joint witness of Peruvian President Dina Boluarte, Prime Minister Gustavo Adrianzen, and Chinese Ambassador to Peru Song Yang, Las Bambas signed a framework cooperation agreement with the Peruvian Ministry of Education, formalizing the *Social Compact for Education*. Under the agreement, the Las Bambas Copper Mine will launch a portfolio of support initiatives valued at CNY 255 million to help rebuild and upgrade educational infrastructure at 14 schools across Cotabambas Province. In addition, a further CNY 95 million will be invested to enhance the capabilities of local teachers and school principals. This effort aims to address the current learning gap, where only one in five students meet proficiency standards in reading comprehension and mathematics, and to bring lasting educational benefits to the local population.

The Las Bambas Copper Mine will launch a

CNY 255 million

portfolio of educational support initiatives

Las Bambas signs a framework cooperation agreement with the Peruvian Ministry of Education and formally entered into the *Social Compact for Education*.

Developing skilled talent within local communities

The Las Bambas Copper Mine places strong emphasis on local talent development, viewing residents from surrounding communities as a valuable pipeline for future employment. To this end, it has launched initiatives such as "Small Business Management Training, the Women in Copper Industry Program, and Local Talent Development" to equip community members with up-to-date knowledge and skills, thereby better fostering local employment.

Local talent development program

In 2024, the Las Bambas Copper Mine launched its local talent development program in the Fuerabamba community. Over a three-year period, the program will provide specialized training on mobile mining equipment maintenance to 26 local trainees. Upon completion, these participants are expected to become skilled technical professionals within Las Bambas' mining operations.

"Providing local community members with skills training empowers them with a trade and helps them fully integrate into the broader Las Bambas family. This is essential for building a new model of social management."

– Valery, Social Management Manager, Las Bambas

Being a Driver of a Better Future

The Las Bambas Copper Mine is committed to being a driver of a better future. The mine prioritizes employee safety and upholds a shared-growth approach that aligns corporate interests with employee rights. By actively integrating into local communities, we take an active role in supporting community development and contribute to the high-quality development of the country, region, and local communities.

Safeguarding employee safety

Safety is the foundation of all mining operations. The Las Bambas Copper Mine firmly believes that protecting the health and safety of its workforce is a prerequisite for sustainable and high-quality development. To this end, we have implemented two core safety management tools: OBROS and BIPED. OBROS is a safety management framework focused on maintaining order, cleanliness, and compliance with critical life-saving rules. It emphasizes accident prevention through task observation and proper equipment management. BIPED is an operational toolkit under the OBROS framework, built around five key management pillars: Lockout and Isolation, Risk Identification and Control, Safe Operating Procedures, Personal Protective Equipment (PPE), and Designated Work Zones. By reinforcing these pillars, Las Bambas enhances employees' awareness, response, and control of operational risks, delivering strong support for safe mining operations.

In August 2024, the Las Bambas released the *Pocket Guide to Critical Life-Saving Controls*, providing employees with clear guidance on complying with the mine's basic requirements for preventing 12 types of fatal risks

Advancing community development

While developing its mining operations, the Las Bambas Copper Mine remains deeply committed to the development of local communities. We actively promote a vision of shared development in more communities, aiming to integrate a brighter future into the broader blueprint of local development.

Kutuctay Bridge benefits over 50,000 residents

The construction of the Kutuctay Bridge has been a dream of the people of Cotabambas for more than 60 years. Las Bambas invested approximately CNY 80 million to build this vital infrastructure. Upon completion, the bridge has reduced travel time between several communities by four hours, significantly improving accessibility and benefiting over 50,000 local residents. In April 2024, the Kutuctay Bridge was officially inaugurated. The opening ceremony was attended by Raúl Pérez, Minister of Transport and Communications; Romulo Mucho, Minister of Energy and Mining of Peru; Werner Salcedo, Regional Governor of Cusco; Percy Godoy, Regional Governor of Apurímac, and representatives from local communities.

Kutuctay Bridge inauguration ceremony

Providing medical equipment and supplies to healthcare institutions

The Las Bambas Copper Mine has partnered with VIDAWASI, a well-known Peruvian nonprofit organization dedicated to pediatric medical aid, to save children's lives and improve the quality of life for children across Peru. This collaboration exemplifies our commitment to corporate social responsibility and our deep care for the health and well-being of Peruvian children. Under the cooperation agreement, Las Bambas donated medical supplies valued at approximately CNY 2,850,400 to multiple healthcare facilities in the Apurímac Region. These supplies include oxygen concentrators, medicines, medical instruments, and other pediatric medical equipment. The donations have significantly supported the treatment of children receiving care through VIDA WASI, contributing to the organization's growth and enabling the delivery of specialized medical services to children. In 2024, the Las Bambas Copper Mine was honored with a special recognition award from VIDAWASI in acknowledgment of its contributions.

The Las Bambas Copper Mine receives special recognition from VIDA WASI

> *"Las Bambas' benevolent actions have significantly alleviated the critical shortage of medical supplies faced by grassroots healthcare systems."*
>
> – Apurímac Regional Health Directorate

Spotlight 2

Promoting Common Prosperity for Rural Vitalization

China Minmetals earnestly implements rural vitalization decisions made by the CPC Central Committee and the State Council and upholds our "four no withdrawal" responsibilities. Guided by the principles of precision, customization, and long-term effects, the Company has gone all out to advance assistance programs steadily in six paired assistance counties and one partner assistance county. These efforts have contributed to consolidating poverty alleviation achievements and driving comprehensive rural vitalization. For six consecutive years, the Company has received the highest rating of "Excellent" in central government assessments of paired assistance.

In 2024, focusing on the "five aspects of rural vitalization", China Minmetals assistance to 7 Counties

6 paired assistance counties

Zhenxiong, Yiliang, and Weixin in Yunnan

Dejiang and Yanhe in Guizhou

Huayuan in Hunan, and Qilian in Qinghai

1 partner assistance county

Qilian, Qinghai

CNY **62.859** million
Directly invested as assistance funds

CNY **5.347** million
Introduced investment as assistance funds

CNY **60.719** million
Consumption-based assistance

9,748
Cadres trained

11%
YoY growth in directly invested as assistance funds

22%
YoY growth in consumption-based assistance

49%
YoY growth in cadres trained

Strengthening Organizational Leadership and Strategic Planning

China Minmetals continues to enhance organizational leadership and implement assistance programs in greater detail through special meetings, work planning, field visits, supervision and inspections, issue rectification, and the deployment of assistance cadres. In 2024, the Company conducted 82 field visits to paired assistance counties, including visits by Party group leaders to all seven counties. Our subsidiaries fulfilled their "double pegging" responsibilities, aligning support efforts with their business strengths through field visits and Party-building partnerships.

Appointed cadres to paired assistance counties serve as "vital bridges" that leverage policy support, operate projects, and secure funding to drive local economic and social development. In February 2024, the task force stationed in Jinzhong Community, Zhenxiong County, was honored as an "Advanced Group for Rural Vitalization in Zhaotong City." In April, Deputy County Chief Yong Jiancheng, stationed in Yanhe County, received a third-class merit award from the local Party Committee and local government. In June, Meng Kun, the first Party secretary stationed at Aiqun Village, was recognized as an Outstanding Party Affairs Officer by Tongren City.

In 2024,

82
Total field visits to paired assistance counties

7
Including visits by Party group leaders to all seven counties

Chen Dexin, Party Group Secretary and Chairman of China Minmetals, visits the Huayuan County

In December 2024, Chen Dexin, Party Group Secretary and Chairman of China Minmetals, led a team to Huayuan County, Hunan Province, to inspect local rural vitalization and paired assistance initiatives. During the visit, he emphasized the importance of implementing General Secretary of the CPC Central Committee Xi Jinping's instructions, strengthening the sense of responsibility and mission for rural vitalization, and fully carrying out the CPC Central Committee's rural vitalization decisions. He urged efforts to leverage local strengths to build exemplary assistance projects and called for greater contributions to consolidating poverty alleviation achievements and advancing rural vitalization in depth.

Chen Dexin and his team visit Shibadong Village in Huayuan County

Advancing Rural Vitalization in Five Aspects for Rural Harmony and Beauty

Drawing on the experience of the "Green Rural Revival Program," China Minmetals invests resources in five aspects of rural vitalization, namely industry, talent, culture, environment, and organizational structures. The Company continues to help seven paired assistance counties boost development confidence and growth momentum, laying the foundation for building harmonious and beautiful rural communities.

Supporting industrial vitalization to spur economic growth

To achieve industrial vitalization, China Minmetals prioritizes national policies, local resources, and people's needs in developing industries that enrich locals. The Company replicates the "small but sophisticated" industrial support model with the characteristics of China Minmetals: central SOE funding, cooperative-run operations, direct benefits to registered low-income households, enterprise-led product purchases, transparent profit sharing, and momentum fostering. We have developed distinctive industrial projects such as peach and pear cultivation in Yanhe, Gastrodia elata in Dejiang, Ganoderma in Yiliang, rice planting in Huayuan, and silkworm farming in Zhenxiong. In 2024, the Company supported 17 leading enterprises, 26 cooperatives, and 11 assistance workshops. We also facilitated the transfer of 1,772 individuals to new jobs and directly hired 498 people lifted out of poverty to help them secure an ongoing income rise. Yanhe County's "Happy Peach and Pear" rural vitalization demonstration park was recognized as a "Common Prosperity" case in the *Blue Book on Corporate Social Responsibility for Central State-owned Enterprises (2024)*.

17
Leading enterprises receiving our support

1,772
Employment transfers

498
Individuals hired after being lifted out of poverty

Supporting Huayuan County to achieve mechanized rice farming

In Huayuan County, Hunan Province, China Minmetals supports mechanized rice farming. At the 12 village-level collectives in Jiwei Township, we offer six integrated services—centralized seed procurement, seedling cultivation, machine transplanting, pest control, harvesting, and drying—combined with tech empowerment. As a result, annual rice output has reached 1,200 tons, with each participant seeing an average income increase of CNY 800.

Jiwei rice processing base, Huayuan County

Delivering customized support through the "futures + insurance" model

Claim settlement for the "insurance + futures" project in Yiliang County

Based on our full financial service licenses, China Minmetals has provided "futures + insurance" customized support for eight consecutive years. By utilizing the futures market's price discovery and risk hedging mechanisms, the Company helps farmers mitigate market volatility and secure stable income regardless of price fluctuations. Since 2024, fifty-two projects have been launched across 39 counties and districts—including all paired assistance counties—providing CNY 1.035 billion in coverage and settling claims totaling CNY 12.6314 million, effectively addressing industry development risks as the model is scaled up.

Driving talent vitalization to pool rural wisdom

Given the characteristics of each county, China Minmetals delivers targeted, practical training programs. In 2024. China Minmetals trained 9,748 individuals, marking a 49% year-on-year increase. This included 4,693 grassroots cadres receiving training in investment promotion, industry development, and financial policy; 1,767 rural vitalization leaders engaged in training related to MSME management, rural tourism, and online sales of agricultural products; and 3,288 participants involved in hands-on skill development such as cooking, embroidery, welding, and fruit tree management.

9,748
Trainees in 2024

49%
Year-on-year increase

Weixin County holds a specialized training program to enhance the professional capabilities of mid-level officials

Boosting cultural vitalization through education

China Minmetals has supported infrastructure improvements at Zhenxiong Dawan Middle School, Yiliang Xincheng Middle School, and Yanhe Ethnic Middle School, while advancing projects such as the "Mining Center" Vocational Education and the "Loving Packages" program. The Company has applied the experience of transforming the Zhenxiong Kindergarten into a top-tier provincial institution to the building of the third kindergarten in Yile Township, elevating overall preschool education across the county. Through the "1,000 Study Buddies, One Shared Dream" program, a total of 800 elementary students from Zhenxiong County and Beijing have been paired for online reading sessions. Additionally, we have donated over 4,000 books worth CNY 200,000 and built a Party Member Activity Center in Jinzhong Community to promote reading and cultural vitalization.

800
Elementary students from Zhenxiong County and Beijing paired for reading activities

4,000+
Books donated

Building a brand of talent vitalization through the "Mining Center" project

Panzhihua Institute of Technicians, a state-level key vocational institution producing three global welding champions, serves as the foundation for China Minmetals' "Mining Center" project. The project identifies talented, aspiring students from underprivileged families in paired assistance counties and provides three years of free vocational education, covering all living expenses and offering job placements upon graduation. Over the past six years, the project has enrolled 386 students, 110 of whom have graduated in the last three years. Nineteen graduates have been admitted to college, 91 are employed, and one has earned a national silver medal. In 2024, the project launched an advanced skills track, extending opportunities to high school and vocational school graduates. With high-quality educational resources, the project is expected to expand enrollment to 104 students, the highest number in a single year.

Zeng Zhengchao, WorldSkills Welding Champion, teaches students in a "Mining Center" class

Panoramic View of Huanhe Village, Dejiang County

Promoting environmental vitalization to build beautiful villages

Drawing on the experience of the "Green Rural Revival Program," China Minmetals focuses on developing cultural and tourism projects to build beautiful villages. The Company has helped implement drinking water projects for rural households, renovated 3,626 rural toilets, and carried out domestic waste and wastewater treatment at 152 villages. We have established six rural vitalization demonstration sites in Jinzhong Community (Zhenxiong County), Lianghe Community (Yiliang County), Shibadong Village (Huayuan County), Aiqun Village (Yanhe County), Huanhe Village (Dejiang County), and Shuanghe Village (Weixin County). In Dejiang's Huanhe Village, the Company has supported the construction of a campground and expanded the tourism value chain through rural B&B. Additionally, tapping into the village's heritage through short videos, the Company has built a livestream commerce hub for local agricultural products at Huanhe Village, with a new media talent training program, producing online influencers such as "Ailian Niangniang" and "Qiandong Nongcang." These efforts have generated more than CNY 35 million in livestream revenue and over CNY 4 million in tourism revenue, fostering an integrated model of tourism and experience-based economy.

3,626
Rural toilets renovated

152
Villages where we carried out domestic waste and wastewater treatment projects

6 Rural vitalization demonstration site

- Jinzhong Community (Zhenxiong County)
- Aiqun Village (Yanhe County)
- Lianghe Community (Yiliang County)
- Huanhe Village (Dejiang County)
- Shibadong Village (Huayuan County)
- and Shuanghe Village (Weixin County)

Fostering organizational vitalization through Party building

China Minmetals has facilitated themed joint Party-building activities between 15 Party branches and 18 villages and appealed to Party members to donate money (CNY 126,800 in total). For example, the Party Branch of Minmetals Mining Holdings Co., Ltd. has teamed up with the Shuitian Police Station Party Branch in Weixin County, which is recognized as an advanced unit for caring for left-behind and vulnerable children, for joint Party-building programs supporting sustained care for left-behind children. Following the January 22 landslide in Zhenxiong County in 2024, Minmetals Property was tasked with providing urgent logistics and property services for the resettlement site. Moreover, Cheng Kaiqiang, the first Party secretary stationed in Jinzhong Community, Zhenxiong County, braved snow and trekked 5 kilometers on foot to deliver relief supplies to the affected area. This moment was captured in a photo, one that was named one of the "top 10 heartwarming moments of 2024 among central SOEs".

Joint Party building activities

CNY **126,800**

Donations by Party cadres of China Minmetals

The "urgent action to support affected areas by rescue pioneers" selected as one of the "top 10 heartwarming moments of 2024 among central SOEs"

Expanding Consumption-based Assistance Channels to Support Agricultural Sales

Adopting new marketing approaches, China Minmetals organizes cadres stationed in Dejiang and Yanhe Counties to promote local quality agricultural products via livestreaming on Douyin. Through trade union networks, the Company purchased agricultural products worth CNY 30.514 million from areas lifted out of poverty in 2024 and supported the sales of CNY 30.205 million, totaling CNY 60.719 million.

CNY **30.514** million

Agricultural products purchased from areas lifted out of poverty

CNY **30.205** million

Supported sales

CNY **60.719** million

Total consumption-based assistance

Bringing local delicacies to hotel dining tables to serve our main business

Tapping into our dining business at Minmetals Narada Resort Hotel in Beijing and Howard Johnson Minmetals Plaza Yingkou, China Minmetals integrates specialty agricultural products from seven paired assistance counties into premium dining services, promoting these flavors to hotel guests from across the country. This stimulates demand for these agricultural products and their production.

Specialty products made from ingredients sourced from the paired assistance country by Minmetals Narada Resort Hotel

Launching the innovative program of "Adopt a Tree"

As an agricultural modernization model, tree adoption not only fulfills consumers' demand for safe, quality produce but also opens new avenues for rural economic growth. In 2024, China Minmetals launched the "Adopt a Tree" mini-app under the brand "Happy Peach and Pear". The platform allows consumers to adopt fruit trees online, participate in the entire growing process, and visit orchards to enjoy harvesting, with access to fruit produced during the adoption period. Nearly 2,000 trees were adopted within three days of the app's launch, securing early sales for the peach and pear harvests and effectively broadening marketing channels.

Self-developed fruit tree adoption mini-app

1 Fostering New Quality Productive Forces through Sci-tech Innovation

Sci-tech self-reliance and self-strengthening underpin national strength, prosperity, and security. Placing sci-tech innovation at the core of our development agenda, China Minmetals leverages the Company's expertise to serve national and industrial priorities. Based on the "five focuses,"[1] we accelerate the integration of sci-tech and industrial innovation. We also strive to set an example in advancing sci-tech self-reliance and self-strengthening at higher levels, building a modern industrial ecosystem, and nurturing new quality productive forces.

1.Five focuses:"focusing on the development of sci-tech R&D platforms", "focusing on the improvement of R&D capabilities", "focusing on the tackling of major technological challenges", "focusing on the commercialization of R&D outcomes", "focusing on building a sci-tech talent team"

Focusing on the Development of Sci-tech R&D Platforms

China Minmetals prioritizes sci-tech R&D, with the total R&D investment reaching CNY 20 billion in 2024. The Company focuses on building sci-tech R&D platforms and developing technical prowess to serve national strategies. So far, we have operated 48 national sci-tech R&D platforms, including one National Technology Innovation Center, four National Key Laboratories, and two national engineering research centers. These platforms span the entire industrial chain—from applied basic research and technology development to engineering application, commercialization, testing, and technical services—providing solid support for an "innovative China Minmetals."

48
National sci-tech R&D platforms

1
National Technology Innovation Center

4
National Key Laboratories

2
National engineering research centers

We have established an annual special fund of CNY 200 million for technological research and capability-building and a "fast track" to introduce talent, projects, and incentives for national key laboratories. In 2024, the Company released a development roadmap for key national initiatives, outlining 82 major tasks.

82
Major tasks outlined in the development roadmap for key national initiatives in 2024

Approved to build China's first national technological innovation center for mineral resources

In July 2024, China Minmetals, in partnership with multiple organizations, developed the National Strategic Rare Minerals Development and Technology Innovation Center (National Rare Minerals Innovation Center). It is the first state-approved innovation center in the field of mineral resources, contributing to national resource security and industrial control capabilities. Anchored in major national strategic needs, the Center focuses on secure supply of scarce resources, green and efficient development of abundant resources, and independent control over high-end rare metals. It undertakes critical technology R&D across exploration and evaluation, efficient mining, green beneficiation, clean smelting, advanced material preparation, recycling, and digital and intelligent operations. The goal is to deliver a series of high-end, symbolic original technologies and build a robust technical support system for the exploration and development of strategic rare metals and minerals. The center is positioned as a national hub for technological R&D and innovation, a hub gathering sector-specific technological resources, a hub of industry-wide technological innovation services, and an incubator for advanced technologies, in the "three hubs and one incubator" model.

Focusing on the Improvement of R&D Capabilities

China Minmetals strengthens the industry-university-research collaboration to advance the development of future industries and original technology hubs. We have restructured the China Minmetals Sci-tech Committee with a "dual-director" leadership system led by both the Chairman and the General Manager. The committee studies and discusses major innovation strategies, plans, and policies with enhanced leadership over sci-tech innovation. A dedicated task force for future industries and original technology hubs has been established. In 2024, the task force adopted a holistic approach to major tasks such as strategic emerging sectors, future industries, and original technology hubs, with an open competition mechanism to select the best project leader.

Building original technology hubs

Leveraging our technological expertise, China Minmetals, together with our partners, has launched 11 original technology hubs. Three of these hubs have received the second-round approval from the SASAC and thus have commenced operations. We have implemented 11 action plans on original technology hubs and improved the supply of original technologies.

11
Original technology hubs

Building a base for future industrial development

Future industries are the focus of new quality productive forces. To serve the "9+6" strategic framework for central SOEs, China Minmetals has taken on multiple initiatives in emerging and future industries. In 2024, the Company formed two industry innovation consortia focused on deep-earth and deep-sea exploration and secured approval for seven major future industry R&D tasks. We have received the first designation as a "Springboard Enterprise".

Guided by key technology programs, China Minmetals focuses on the development of an original technology hub for deep mineral exploration. We have established six internal innovation consortia—including one on "safe and intelligent mining of deep metal deposits reaching ten million tons"—with clear tasks and responsibility agreements signed with all leading and participating entities.

ENFI granted the Excellence Award at the Shining Star Innovation Competition hosted by the SASAC

ENFI's project on the development and application of vanadium flow battery electrolyte systems has received the Excellence Award in the new energy category at the fourth Central SOE Shining Star Innovation Competition, organized by the SASAC. The project has delivered a preparation system of electrolyte, the core material for vanadium flow batteries. The technologies of high-purity vanadium pentoxide preparation and short-process electrolyte preparation feature high vanadium recovery rates (≥98.0%), low impurities, and cost efficiency, addressing the problem of high electrolyte production costs. In addition, comprehensive stone coal utilization leads to higher vanadium resource efficiency (≥85%), expanding raw material supply while reducing costs. The solidification of electrolyte for transportation is efficient in addressing logistical challenges. These innovations significantly lower production and application costs of vanadium electrolytes, helping to advance the industry of vanadium flow batteries for energy storage and supporting China's energy transition.

Assuming a leading role in building the Future Industrial Innovation Consortium for Deep-earth and Deep-sea Mineral Resources Development

On July 5, 2024, guided by the SASAC and hosted by China Minmetals, the Launching Conference on the Founding of the Future Industrial Innovation Consortium for Deep-earth and Deep-sea Mineral Resources Development & Construction of the Original Technology Hub was held in Beijing under the theme "marching to the deep, sailing to the future."

In deep-earth mineral exploration, China Minmetals serves as the lead coordinator, with BGRIMM Technology Group as executive deputy coordinator. In deep-sea exploration, the Company co-leads with China State Shipbuilding Corporation Limited and China Merchants Group, working alongside 19 deputy coordinators. These efforts involve close collaboration with universities, research institutes, and private enterprises to jointly build future industrial innovation consortia. The two consortia aim to tackle critical technologies, make strategic plans on key technologies, typical scenarios, and major engineering projects, and foster healthy and comprehensive growth in the future industries of deep-earth and deep-sea mineral exploration and development.

Having gathered 20 central SOEs, China Minmetals has formed a command office and an expert advisory committee, with a consortia operation mechanism finalized. We lead the formation of implementation plans and set phased tasks on key technologies, typical scenarios, and major projects. Key future industry indicators have been incorporated into the performance evaluations of our directly managed subsidiaries. Core business units are required to sign responsibility agreements, and related technology projects and innovation funds are implemented to serve project delivery.

Launching Conference on the Founding of the Future Industrial Innovation Consortium for Deep-earth and Deep-sea Mineral Resources Development & Construction of the Original Technology Hub

Focusing on the Tackling of Major Technological Challenges

Leveraging our synergistic strengths, China Minmetals pursues breakthroughs in core technologies and develops key equipment and products to ensure control over critical technologies and sci-tech self-reliance and self-strengthening at higher levels. The Company has secured 30 sci-tech projects—including major national sci-tech programs, key initiatives, and National Natural Science Foundation grants—with 10 projects led by China Minmetals. These projects span deep-earth and deep-sea mineral exploration, research on cemented carbide and tools, and solid-state battery development. We have deployed the Company's annual science and technology innovation fund and youth science fund and set up six sci-tech initiatives with a total investment exceeding CNY 120 million and CNY 59.25 million allocated in 2024 for research on foundational and strategic frontier technology.

Formulating management measures

China Minmetals has finalized dedicated project management measures for major technology initiatives, clearly defining project scope, sources, approval procedures, support mechanisms, oversight, and application pathways.

Charting the route to future

The Company has formulated a three-year roadmap for technology advancement and set up over 100 sci-tech initiatives and sci-tech innovation funds.

Developing technology roadmaps

The Company has developed technical roadmaps for nine industrial segments, targeting critical tech bottlenecks, domestic tech substitutes, as well as the obstacles of supply chain building, supplement, extension, and upgrade. These roadmaps lay out plans for technological breakthroughs.

Gathering expertise for breakthroughs

China Minmetals has required the Central Research Institute's specialized committee to conduct comprehensive research on mines and smelting companies. They have identified and released thirteen key technological challenges in the open competition mechanism to select the best project leader.

CNY 5 million

Dedicated fund for the academician research program, which has launched its research project

6

New sci-tech initiatives in 2024

CNY 120 million+

Total budget

Completion of the three research tasks under the 1025 Initiative (Phase II)

- Development and small-scale application of high-performance natural graphite-based anode materials.
- Commissioning of China's first machine tool with an annual capacity of 300 tons and the production line for high-grade silicon nitride powder used in advanced chip packaging.
- Launch of a ton-scale scandium-zirconium powder production line with internationally leading product performance.

World's first 6,000-meter intelligent, electric, deep-sea heavy duty mining vehicle platform

Led by the Changsha Research Institute of Mining and Metallurgy, the project on the "Research and Demonstrative Application of Key Equipment for Deep-Sea Mineral Resource Exploration" focuses on deep-sea mineral development, a future industrial driver, including deep-sea mineral exploration, collection, and transport between 3,000 and 6,000 meters. So far, the project has developed six pieces of key equipment, including the first 6,000-meter intelligent, electric, deep-sea heavy duty mining vehicle platform, which passed acceptance in June 2024.

6,000-meter intelligent, electric, deep-sea heavy duty mining vehicle platform

China Minmetals hosts the Sci-Tech Innovation Conference

In January 2025, China Minmetals held the Sci-Tech Innovation Conference in Beijing, alongside and the Annual Academic Forum of Central Research Institute and a dedicated session on efficient and green recycling of lithium resources. The event provided a platform for technological exchanges and cooperation to explore technological trends, challenges, and future opportunities in the field of mineral resources. During the event, the Company released 20 major innovation outcomes and announced 13 major research tasks under China Minmetals' open competition mechanism. Additionally, the agenda included a roundtable strategic forum, a dedicated session on efficient and green recycling of lithium resources, and four thematic sessions covering mineral exploration and development, low-carbon steel metallurgy, clean nonferrous metal smelting and advanced materials, as well as intelligent mining and digital technology.

China Minmetals' Sci-Tech Innovation Conference

Prospecting technology for peripheral and deep mineral exploration in the Nanling old mine

In the Nanling old mine, Minmetals Exploration & Development Co., Ltd. has studied lead-zinc polymetallic mineralization under intraplate extension and proposed an all-temperature mineralization model. Supported by mineralization theory and new prospecting technologies, the company has made significant prospecting breakthroughs, securing large-scale reserves for lead-zinc, gold, silver, tungsten, and fluorite and medium-scale reserves for copper and iron, which ensure the continuous supply and increased production of key mines.

Focusing on the Commercialization of R&D Outcomes

Based on the China Minmetals Central Research Institute, we explore an innovation ecosystem integrating the institute with tech subsidiaries. Outstanding tech subsidiaries in each field lead research and industrial units to form key innovation consortia. They bring together internal and external innovators and innovation elements to execute key scientific missions and foster an open, win-win innovation ecosystem.

Establishing an outcome-to-application mechanism

China Minmetals has established an outcome-to-application mechanism connecting 19 research and design institutes with production subsidiaries. In 2024, three major outcome-to-application events were held, culminating with seven entrustment agreements on technology commercialization, pilot-scale experiment platform development, and industry-scale deployment between relevant institutions and enterprises. In addition, multiple industrial technology reports covering lead-carbon batteries, scandium-based materials, magnesium, high-purity antimony, and dark factories were formulated.

In 2024,

3

National sci-tech awards for our technological achievements

1

Achievement listed in the *Catalog of Recommended Central SOE Innovation Outcomes*

1

Equipment included in the *Catalogue of Guiding the Promotion and Application of First Major Technology and Equipment*

1

Pilot-scale experiment platform selected for the *First List of Extended Application of Central SOE Technological Achievements*

1

Enterprise included in the *Basic Public Service Platforms of Industrial Technology* by the Ministry of Industry and Information Technology

Removing commercialization obstacles

To improve the incubation and commercialization of technological outcomes, China Minmetals has built 14 pilot-scale experiment platforms, nine industry incubators, and six sci-tech industrial parks. In 2024, we formulated a key project list for pilot-scale experiment platforms and a plan to build and operate a platform connecting research and design institutions with production subsidiaries. We also established a dedicated technology commercialization fund to support common pilot-scale experiment platforms in critical fields.

14

Pilot-scale experiment platforms

9

Industrial incubators

6

Sci-tech industrial parks

Promoting sci-tech self-reliance and self-strengthening

We have released the *Action Plan for Enhancing Intellectual Property Quality (Standards)*, which provides comprehensive guidance on standardized IP management. By the end of 2024, China Minmetals had led or participated in the development of over 2,000 national, international, and industry standards. Our portfolio of active patents surpassed 60,000, including 19,500 invention patents and 554 PCT patents. The share of valid invention patents rose to 31.83%, up 3.23 percentage points from the year before.

2,000+
National, international, and industry standards (as a leader or participant in the drafting process)

60,000+
Valid patents

19,500
Invention patents

554
PCT patents

31.83%
Proportion of valid invention patents

China Minmetals won **3** National sci-tech awards

1 Second Prize in the State Technological Invention Award

Project: Core technology and application on low-calcium restructuring of fine-grained bulk solid waste into ultra-stable materials
Unit: China City Environment Protection Engineering Limited Company

2 Second Prizes in the State Scientific and Technological Progress Award

Project: System of efficient conversion, precise control, and intelligent automation in nonferrous metallurgy
Unit: China ENFI Engineering Co., Ltd. and Zhuzhou Smelter Group Co., Ltd.

Project: Development and application of key common technologies for electromagnetic control for large-scale metal billet production
Unit: Central Research Institute of Building and Construction Co., Ltd. MCC Group

Securing critical technology for ultra-high purity graphite products

The Minmetals Exploration & Development Co., Ltd. has developed a set of equipment for high-temperature graphite purification and the key technology of cascade purification, producing ultra-high-purity graphite (99.99995% purity), a world-class level with significantly lower costs. This breakthrough guarantees the supply of critical materials for the nuclear and semiconductor industries.


Chemical purification line of graphite at Minmetals Exploration & Development Co., Ltd.

Focusing on Building a Sci-tech Talent Team

China Minmetals strengthens institutional frameworks and operational mechanisms and steps up training for researchers to unlock innovation potential and foster a talent team of integrity and excellence. In 2024, the Company had 30,900 sci-tech professionals on the payroll.

30,900
Sci-tech professionals in 2024

The Company has formulated the *Implementation Plan of Sci-tech Talent Development Project*, which outlines seven categories of supportive measures for top-tier talent. The plan enhances platform development, research support, and policy incentives. It emphasizes the creation of a key researcher pool, with tiered management and training as well as continuous, targeted cultivation.

Strengthening talent selection

The Company continues to expand the pool of leading scientists, top-tier experts, and emerging young talent with talent profiling for potential academicians and young leaders. We have developed high-level talent development plans and established a dedicated academician research fund, which has made the first grant. In 2024, we added five new chief technical experts in emerging fields, and youth innovation fund applications doubled.

Attracting high-caliber talent

We have established a mission-oriented talent acquisition mechanism to meet the needs of future industries and original innovation hubs. Based on accurate assessments of talent needs, the Company has recruited high-end professionals for research in fundamental and cutting-edge fields. We have adopted a flexible recruitment model to bring in top talent for cutting-edge fields such as quantum mineral exploration, advancing the Company's future industrial strategies.

Training outstanding engineers

China Minmetals has partnered with 13 universities, including Tsinghua University, to jointly recruit and train students and frontline technical professionals across various disciplines. The cultivation of outstanding engineers has become an important pillar under the "Innovative Minmetals" initiative and the "Action Plan for Empowering the Corporation with Talent."

Training technology managers

The Company is focused on building a professional team dedicated to the commercialization of scientific achievements, making them a key role in driving technology commercialization and industrial incubation. In 2024, the first training program for technology commercialization professionals was launched among research and design institutes, producing an initial cohort of 32 "Senior Technology Managers."

2

Boosting Our Primary Business while Maintaining Steady Progress

The metals and minerals industry remains critical to national security, economic stability, and supply chain resilience. Committed to the mission of "contributing to human progress through developing the mining industry," we continue to highlight our primary business, optimize our business structure, and enhance our global resource acquisition and integration capabilities. Additionally, we reinforce our core role in safeguarding the security of metals and minerals in China and strengthen our competitiveness in the whole value chain of the metals and minerals industry.

Metals and Minerals

China Minmetals develops a modern business ecosystem anchored in the real economy. The Company has implemented the "five action plans" and formulated the *2025–2030 Work Guideline on Enhancing the Supply Capacity of Strategic Mineral Resources*. With a big picture of the whole industry in mind, we take proactive measures in project planning and execution.

Adding more resource reserves vigorously

China Minmetals holds abundant mineral reserves

43 Mines across Asia, Oceania, South America, and Africa

25 Mines within China

18 Mines outside China

World-class producing mines including

- Las Bambas copper mine in Peru
- Dugald River mine in Australia
- Ramu nickel-cobalt mine in Papua New Guinea
- Shizhuyuan polymetallic tungsten mine in China

The world's second-largest soluble potash-magnesium salt deposit

- Qarhan Salt Lake

Around **70**% China's listed strategic non-energy minerals owned by the Company

A global leader in the reserves of zinc, lead, antimony, chromium, and fluorite

A global leader in the reserves of tungsten, crystalline graphite, and bismuth

Note: 1.Data as of June 2025

China Minmetals remains focused on the primary business of metals and minerals, advancing a three-pronged strategic approach: mergers and acquisitions, deep and peripheral mineral exploration, and a new round of strategic exploration breakthroughs to improve resource security.

In 2024,
we made significant achievements in the deep and peripheral exploration across

11 key projects

including Saindak, Mes Aynak, Ramu, Dugald River, Rosebery, Kinsevere, Huangshaping, Shuikoushan, Shizhuyuan, Yuanjing Tungsten, and the Tin Deposit Mountain.

Establishing China Salt Lake to build a "aircraft carrier" of the salt lake industry

In 2025, China Minmetals and Qinghai Province jointly established China Salt Lake Industry Group Co., Ltd. (hereinafter referred to as "China Salt Lake"), a key force in developing a world-class salt lake industrial base and enhancing China's food and energy security. China Salt Lake is formed by Qinghai Salt Lake Industry Co., Ltd., Qinghai Huixin Asset Management Co., Ltd., and Minmetals Salt Lake Co., Ltd. It controls both the Qarhan Salt Lake—China's largest and the world's second-largest soluble potash-magnesium deposit—and the Yiliping Salt Lake, a large magnesium sulfate subtype salt comprehensive mineral deposit. With a mining area of nearly 4,060 square kilometers, China Salt Lake possesses the full suite of mature potassium chloride processing technologies and world-class large-scale lithium extraction technologies. It has an annual capacity of 5.3 million tons of potash, 58,000 tons of lithium salts, and one million tons of salt-lake-based chemical products, making it the largest production base for potash and lithium in China.

Qarhan Salt Lake in Qinghai

Substantial growth in multi-metal resource volumes at MMG

In 2024, MMG achieved significant increases in mineral resources across all metal categories. After deducting regular mining depletion, copper resources grew by 2.6 million tons and zinc resources by 1.4 million tons. Overall, newly added resource volumes across all mines and metal types exceeded the volumes extracted.

2.6 million tons
Net increase in copper resources

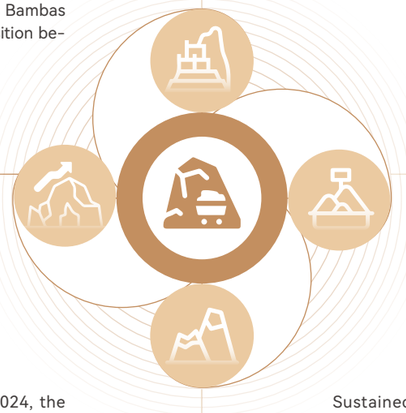
1.4 million tons
Net increase in zinc resources

Breakthrough at the Las Bambas Mine

Following four years of targeted exploration, the Ferrobamba deep orebody was confirmed for the first time, adding 2.5 million tons of copper, 130,000 tons of molybdenum, 31 million ounces of silver, and 370,000 ounces of gold. These additions represent approximately 23% of the total resource volume at the Las Bambas at the time of MMG's initial acquisition before development.

Significant breakthrough in deep exploration at the Dugald River Mine

Through deep exploration initiatives, the Dugald River Mine extended in depth. Zinc resources increased by 1.2 million tons after offsetting normal extraction, reinforcing the long-term development potential of this world top-10 zinc mine.



Sharp resource increase at the Khoemacau Mine

Since its acquisition in March 2024, the Khoemacau Mine has added 700,000 tons of copper and 30 million ounces of silver through exploration and operation at Zone 5 and updated modeling of the Banana, Zeta, and Zone 6 orebodies.

Extended mine life at Rosebery

Sustained exploration has increased the Rosebery's ore reserves by 47%, with metal volumes of zinc, lead, silver, gold, and copper each rising by more than 30%. The mine's life is now extended through 2033, supported by plans for expanded tailings storage capacity to ensure long-term operations.

Stabilizing production and achieving production goals

China Minmetals is a key player in China's copper, lead, and zinc smelting industries, with leading capacity in lead and zinc smelting in China. Our "torch brand" products are internationally recognized and our output of antimony oxide is among the top in the world.

Construction at the Chentaigou Iron Mine in full swing

As one of the first major projects under the national "Cornerstone Plan," the Chentaigou Iron Mine centers on the building of a belt-conveyor inclined shaft, with supporting key infrastructure including auxiliary shaft, air intake shaft, air return shaft, 1# air intake shaft, 2# air intake shaft, ramp, and ore crushing and conveying system.

Since breaking ground in July 2023, the project has maintained a clear target of initiating trial production by July 2026, with intensive efforts in shaft construction, meticulous scheduling, and accelerated building of key routes. In 2024 alone, 285,000 cubic meters were excavated. The beneficiation plant with an annual capacity of 11 million tons has commenced construction, where 295,000 cubic meters are expected to be extracted in 2025. Over 90% of shaft engineering is expected to be completed by the end of 2025, laying a solid foundation for production launch.

The Kinsevere Mine expansion project commissioned

On September 20, 2024, the Kinsevere Mine produced its first copper cathode using sulfide ore, marking the successful commissioning of the site's main expansion project. Thanks to existing sulfide reserves and newly discovered adjacent resources, the mine's operational life has been extended beyond 2035.

The new sulfide ore processing system under the roasting furnace ignition and feeding project at Kinsevere Mine includes sulfide and mixed ore beneficiation modules as well as roasting and acid production modules. Its centerpiece is a fluidized bed copper-cobalt roasting furnace with a chamber of 130 square meters—one of the world's largest single-series roasting furnaces in recent years. The system converts copper-cobalt concentrates into semi-acidified calcine for further processing via existing hydrometallurgical systems. Sulfur dioxide gas generated during roasting is captured through the wet sulfuric acid process into standardized sulfuric acid products, which are then used in the leaching stage of the hydrometallurgical process.

The Kinsevere Mine roasting furnace ignition and feeding

Strengthening trade and marketing

China Minmetals follows a "resources + technology + trade + services" model to deepen cooperation with companies such as Vale, BHP, and KGHM. We continue to build an integrated global marketing network across domestic and international markets, positioning ourselves as a globally competitive integrated supplier and industrial service provider of metals and minerals.

Optimizing customer services

We have implemented a "one client, one contact, one order, integrated processing" business approach and experimented with a "one-work-order" model for contract processing. These efforts accelerate the development of a modern trade and logistics system for metals and minerals that is independent, controllable, secure, and highly competitive.

Strengthening supply chain capabilities

We leverage long-term trade agreements, integrated trade-production models, and financial derivatives. We also deepen partnerships with key mining enterprises to expand and diversify imports of critical resources such as iron, chromium, and manganese. We tap into our overseas networks and customer relationships to grow our overseas market and trade.

Improving port-based iron ore blending operations

Focusing on ports, the key hubs in the global logistics of bulk commodities, we leverage port inventory as a buffer for resource security and shift blending processes to ports, which reduces ore handling efforts, streamlines logistics, and lends technical support for the steel industry's low-carbon transition.

Upgrading bulk commodity transportation

We advance intermodal transportation to shift bulk shipments to containerized and rail-based transport. Two multimodal logistics corridors for metals and minerals have been launched: one linking South America with South China and the other connecting Africa with North China reciprocally, targeting minerals in demand such as copper and chromium.

2024 trade volumes

8.7%
YoY growth in copper concentrate

22.4%
YoY growth in aluminum ingots

60%
YoY growth in zinc ingots

33.9%
YoY growth in nickel (metal)

5.7%
YoY growth in chrome ore

Successful delivery of Minmetals standard fines futures contract


China Minmetals Caofeidian Company port integrated green furnace feed base – ore storage facility

Through sustained technical improvement at China Minmetals Caofeidian Company, key quality indicators such as concentrate recovery rate and fine iron grade for Minmetals standard fines have reached industry-leading levels. Leveraging both futures and spot trading, China Minmetals Caofeidian Company has successfully delivered 10,000 dry metric tons of Minmetals standard fines under the Dalian Commodity Exchange I2501 futures contract, marking the platform's first completed domestic mixed ore futures delivery.

Engineering Construction

China Minmetals continues to accelerate transformation in steel metallurgy and infrastructure development, breaks obstacles, and strengthens market expansion and project delivery to build more flagship projects.

Metallurgical engineering

China Minmetals owns world-class metallurgical construction subsidiaries, having undertaken planning, surveying, design, and construction for nearly all medium and large steel producers in China. As a key player in laying China's steel industry foundation, the Company commands core technologies across eight major functional areas and 19 specialized business units, with unparalleled strengths in the metallurgical engineering industry. In 2024, we won the bid for the Suroyam vanadium-titanium magnetite mine and metallurgy complex project in Russia.

Building the largest steel base in Southeast Asia

On December 24, 2024, the No. 1 blast furnace at the Hoa Phat Dung Quat Phase II 2×2500m³ ironmaking project in Vietnam, undertaken by MCC WISDRI, was successfully ignited. The furnace produced iron the next day, while the EPC railway project of Hoa Phat Phase II also commenced production. The project cluster includes the engineering, procurement, and construction (EPC) of two 2500m³ blast furnaces, two 300-ton steelmaking EPC units, a railway EPC project, hot rolling water treatment EPC, leveling EP, and recoiling EP. Supported by proprietary new technologies and equipment, the project not only sharpens the overseas reputation of Chinese constructors but also pushes the Dung Quat steel base's capacity beyond 10 million tons annually, making it the largest steel base in Vietnam and Southeast Asia.


Hoa Phat Dung Quat project in Vietnam

China's largest top-charging coke oven produces coke

In June 2024, China's largest top-charging coke oven, the No.2 coke oven of the Guizhou Meijin Phase I Project undertaken by MCC5, produced coke, marking the consecutive commissioning of the two largest top-charging coke ovens in China under the Phase I Project within a single month. As the largest top-charging coke oven in China, the facility adopts clean production, with an annual capacity of 3.8 million tons of quality metallurgical coke and 40 million standard cubic meters of high-purity hydrogen. The project is expected to cuts CO_2 emissions by nearly 50,000 tons annually, injecting strong impetus to foster new quality productive forces for green coking and the new-type industrialization of the metallurgy industry.

Guizhou Meijin Huayu launches a demonstration project of the integrated use of coal, coke, and hydrogen

The world's widest rolling mill commences hot commissioning at the Henan Zhoukou Iron and Steel Base

In October 2024, the 5600 mm wide heavy plate roughing mill, the world's widest plate mill independently designed and supplied by Capital Engineering and Research Incorporation, commenced hot commissioning at the Henan Zhoukou Iron and Steel Base with the successful rolling of its first wide heavy plate, signaling the dawn of a new era of 5600 mm wide heavy plate rolling mills in the world.

The 5600 mm wide heavy plate roughing mill commences hot commissioning successfully at the Henan Zhoukou Iron and Steel Base

Infrastructure construction

Building on decades of technological expertise in metallurgical construction, China Minmetals has undertaken a series of landmark infrastructure projects both in China and abroad. In 2024, the Company secured contracts for several projects valued over CNY 10 billion, including the advanced electromechanical equipment and logistics park for the Chongqing International Logistics Hub Park and the Resorts World Sentosa waterfront development in Singapore.

The terminal steel structure of Xiong'an International Trade Center completed

Undertaken by MCC5, the Xiong'an International Trade Center adopts an integrated investment, construction, and operation model with a total investment of approximately CNY 12.5 billion and a floor area of around 1.06 million square meters. As one of China's few ultra-large-scale TOD (transit-oriented development) projects, it integrates premium office spaces, upscale retail, luxury hotels, serviced apartments, an urban terminal, and metro transit, creating a model of vertically layered, multifunctional space for future cities. Once completed, the project will enable seamless connectivity between Xiong'an New Area and Beijing Daxing International Airport.

Xiong'an International Trade Center

The Palace Museum's northern branch project completed

In November 2024, the first phase of the northern branch of the Palace Museum, constructed by Shanghai Baoye Group, reached structural topping-out. As key cultural infrastructure under China's 14th Five-Year Plan, the project covers a floor area of 41,760.1 square meters and its construction process incorporated new technologies, materials, and methods. A dedicated innovation workshop was established to develop and apply low-carbon, long-life, self-healing concrete, significantly improving concrete densification and waterproof performance. Additionally, the project employed digital tools such as BIM and smart site management to enable lean construction and digital twin integration.

The Palace Museum's northern branch project

Strategic Emerging Industries

China Minmetals has institutionalized mechanisms to extend strategic emerging industries into higher value-added business in line with the Company's main business. The Company is involved in central SOE initiatives to invigorate strategic emerging industries and advance future industries, accelerating development in fields such as metal materials, special materials, equipment manufacturing, digital economy, and energy conservation and environmental protection. China Minmetals now owns many subsidiaries in strategic emerging industries, including 10 national manufacturing single-item champions, 19 "little giants" among specialized and sophisticated SMEs, and 13 "Science and Technology Reform Enterprises" and "Double Hundred Enterprises".

In 2024, aligning with national efforts to promote the resource recycling industry, the Company contributed to the formation of China Resources Recycling Group and advanced the smooth transition of the operation of Lihuitong, a battery recycling service platform.

We own,

10

National manufacturing single-item champions

19

"Little giants" among specialized and sophisticated SMEs

13

"Science and Technology Reform Enterprises" and "Double Hundred Enterprises"

New energy battery materials

Leveraging our resources and accumulated technical expertise, the Company continues to upgrade core products. We have secured the stable production of hydrometallurgical nickel-cobalt intermediates, high-nickel low-cobalt single-crystal ternary cathode materials, and high-temperature graphite purification technologies and equipment, offering solutions to common technical challenges. China Minmetals has spearheaded the breakthrough in ternary battery materials, thus maintaining a leading market position.

Minmetals New Energy Materials (Hunan) Co., Ltd. upgrades its production line

In 2024, Minmetals New Energy Materials (Hunan) Co., Ltd. completed R&D and production line commissioning for several high-voltage 4.4V fast-charging ternary battery products, which would be produced in batches. The medium-nickel ternary materials for plug-in hybrid vehicles (PHEVs) have passed initial validation by international clients and achieved ton-level supply. In addition, ultra-high-nickel ternary materials have passed tests for automotive, drone, and manned aircraft applications by top-tier clients and have achieved small-batch production.

Advanced cemented carbide

China Minmetals operates a fully integrated tungsten value chain that spans mining, smelting, processing, and trading. As of 2024, the Company had managed tungsten mines with 1.23 million tons of tungsten resources, representing 11.7% of China's discovered tungsten reserves. Our cemented carbide products maintain a market share of over 30% in China, with leading offerings including cutting tools, IT tools, cemented carbide rods, button bits, rolls, and powders.

Ultra-hard nanocomposite-coated tools

- Zhuzhou Cemented Carbide Cutting Tools has enhanced coating performance through multi-element blending and layered structural design, resulting in ultra-hard nanocomposite-coated cemented carbide tools. They meet application requirements in aerospace, automotive, energy, and mold manufacturing, successfully breaking the foreign monopoly in titanium alloys and high-temperature alloy processing.

- Zhuzhou Cemented Carbide Cutting Tools' 10,000-ton intelligent production line for tungsten carbide powders, designed for high-end cemented carbide, has been listed in the "Top 100 Major Projects" by the SASAC. The listed entity also completed a major asset restructuring.

Flagship products from Zhuzhou Cemented Carbide Cutting Tools' diamond brand cutting tools

Silicon-based materials

China Minmetals has established a hybrid innovation system that combines in-house R&D with collaborative development, resulting in three major product clusters: zone-melting grade polysilicon, silicon-based electronic special gas, and silicon-based functional materials.

China Silicon Corporation Ltd. has fast-tracked technological upgrades and industrial deployment, successfully developing technologies and equipment for ultra-high-purity silicon-based electronic materials. Twenty-two products have been commercialized, and small-sized zone-melting grade polysilicon has replaced imported alternatives.

22

Products that have been commercialized

Developing key technology for producing ultra-high-purity silicon-based materials

To meet strategic national demands in integrated circuits, China Silicon Corporation Ltd. has developed a technology system featuring "catalysis–adsorption–complexation–deposition" for producing ultra-high-purity silicon-based electronic materials. The company has built an industrial platform covering 14 product types with a capacity exceeding 10,000 tons, now applied at scale by over 50 companies as substitutes to imported alternatives.

Key technology for producing ultra-high-purity silicon-based materials

3

Cementing Management Foundation at a Steady Pace

China Minmetals regards General Secretary of the CPC Central Committee Xi Jinping's important remarks on SOE reform as the fundamental guide for SOE reform in the new era. With the overarching goal of "working to see state-owned capital and enterprises get stronger, do better, and grow bigger", the Company, deepens reforms to drive high-quality development, contributing to the Chinese path to modernization.

Deepening Reform

Reform and innovation are the drivers of high-quality corporate growth. In response to key decisions of the CPC Central Committee and the State Council, China Minmetals advances the initiative to deepen SOE reform. We continue to standardize management and modernize governance. Focusing on priority areas, we have made tangible progress in both functional and institutional reforms. For three consecutive years, the Company has received an A rating in the central SOE reform performance evaluation. By the end of 2024, approximately 79% of the tasks in the initiative to deepen SOE reform had been completed, and all tasks under the value creation actions for benchmarking against global first-class enterprises had been fully achieved.

Modernized governance

Enhancing decision-making systems

We have thoroughly implemented the *Opinion on Strengthening Party Leadership in the Improvement of Corporate Governance by Central SOEs* and its supporting principles. This includes refining the "three lists and one process" model to clarify the authority and responsibilities of each governance entity. A streamlined, well-functioning decision-making framework has been established, supported by long-term mechanisms that promote democratic and science-based decision-making and improve overall decision quality and efficiency.

Strengthening subsidiary boards

We continuously assess what subsidiaries should set up formal boards and ensure that all qualified subsidiaries establish proper board structures. We urge subsidiary boards to standardize establishment and differentiate board functions. As of the end of 2024, all 113 subsidiaries with established boards had begun exercising their board responsibilities.

Advancing differentiated authorization and delegation

In 2024, we reviewed and optimized our *Core Control Items (Authorization and Delegation) List*, enhancing the differentiated authorization and delegation system through practical measures. This approach ensures consistent standards, effective management, and controllable risks.

Reinforcing organizational management and control

We have reinforced the headquarters' roles in service, guidance, supervision, and evaluation. We have strengthened daily supervision and evaluations for greater oversight penetration and defined quantitative criteria for the entry and exit of key subsidiaries. A dynamic mechanism is in place, allowing subsidiaries and individuals to be either promoted or demoted. Meanwhile, we optimize our business layouts and management structures to ensure streamlined governance.

Optimizing legal entity structure

We continue to optimize legal entity and management hierarchy. Restructuring efforts such as the absorption of Nonferrous Holdings and equity adjustments within MCC have been completed. The proportion of subsidiaries structured within five tiers has risen from 75% to 83%, while those structured within four tiers has increased from 19% to 60% dramatically.

Streamlining entities to improve governance efficiency

Following the SASAC's decision to streamline corporate structures and improve quality and efficiency, China Minmetals has advanced efforts to remove structural redundancy. Using a number-controlled and plan-based approach, we have issued the 2024 reduction targets, monitored changes in the number of legal entities, and reported the management of legal entities to the SASAC each month. We have completed the tasks assigned by the SASAC to reduce structural redundancy. By the end of December 2024, more than 540 existing legal entities had been removed, accounting for over 40% of the total targets. In addition, we have strictly controlled the establishment of new entities, resulting in a net decrease of over 100 entities from 2016, or more than 8%. Our successful practices have been formally recognized by SASAC and featured in *State-Owned Enterprise Reform Dynamics* under the title "Accelerating Digital Transformation and Enhancing Governance: China Minmetals Normalizes Legal Entity Reduction," promoting the Company's model to other central SOEs.

Standardized management

Establishing a performance-benchmarking analysis mechanism

- Guided by performance evaluation indicators, we have adopted benchmarking analysis as a key tool to enhance operational efficiency. This enables us to review all aspects of our operations, identify critical business problems, and look for solutions to our problems.
- We have put in place a long-term benchmarking system. By grasping key issues in business operations, we have identified benchmarking enterprises and indicators and carried out benchmarking.

Launching daily operations reporting mechanism

- We track production volume and status at metals and minerals subsidiaries every day and monitor the weekly progress of construction projects. This mechanism enables the timely resolution of issues at the earliest stage when they are not serious. We also urge metals and minerals subsidiaries to stabilize and increase output, and construction subsidiaries to improve efficiency.
- On cost control, China Minmetals Nonferrous Metals Co., Ltd. has launched a "process cost" analysis system at Las Bambas mine, to identify areas for cost reduction and implement corresponding measures that have yielded significant results.

Advancing lean manufacturing among metals and minerals subsidiaries

- In 2024, we formulated the *Lean Operations Plan for Metals and Minerals Subsidiaries (2024)*, guiding subsidiaries to focus on output, quality, and efficiency. The plan integrates lean manufacturing principles into project development, operations, technological innovation, and talent training.
- Based on the lean manufacturing framework, each subsidiary has developed customized improvement plans and institutionalized reform gains to improve indicator performance and reduce costs.

Optimizing category-specific performance evaluations

- Subsidiaries are categorized into seven groups: mining, metal materials, design & prospecting, construction, financial service and asset management, trade and logistics, and real estate development. Given their characteristics and roles, we have customized a set of category-specific performance indicators according to the core functions and "one profit and five ratios" of these enterprises.
- The tiered performance management approach has shifted to a two-tiered "manage and guide" model, with over 80 directly affiliated and key subsidiaries brought under the category-specific evaluation framework.

Digital and intelligent management

Prioritizing digitalization, China Minmetals leverages the "digital brain" to build a "digital minmetals." We accelerate digitalization, which helps modernize our management systems and capabilities. In 2024, we advanced structural design and foundational digital capability improvement in key areas and built a supply chain platform and treasury system. All functions have been rolled out.

Digital brain drives governance reform

The "digital brain" is central to modernizing corporate governance. China Minmetals has adopted a business-driven approach to advance digitalization in all aspects and build a "5+1+N" platform framework, making progress in lean, digital, and intelligent management. Through digital tools that enable connectivity, sharing, and empowerment, we promote a model of intelligent oversight, management, and governance, shifting from basic informatization to digitalized governance.

Integrating internal and external data of key areas and elements

At the core of the digital brain is a big data platform, integrating AI, IoT, and other innovative technologies. Externally, it consolidates data to build a shared database; internally, it combines the data of existing systems to build a data and business platform. The treasury and procurement platforms under the "digital brain" contribute to a top-down ecosystem of six flows: logistics, cash, invoices, contracts, and others. Real-time data and scenario-based modeling enable real-time monitoring, smart sensing, and intelligent recognition.

Enhancing risk management and improving risk prediction and early-warning

We have established a major credit risk early-warning system that monitors major overdue accounts and external anomalies among clients and suppliers in real time with automatic warnings, ensuring that major credit risks remain measurable, controllable, and manageable. A dedicated procurement monitoring platform has been launched to address risks throughout the procurement cycle, leading to a 30% reduction in monthly risk incidents since the platform was launched. Additionally, we have built a savings rate model and procurement price range tool, significantly lowering costs and strengthening our core competitiveness.

Building an open and shared data system to drive data flow

Based on management elements, the Company has developed the *Digital Minmetals Element Dictionary*, cataloging 40 application scenarios, 275 management elements, and 565 performance indicators related to the digital brain. Subsidiaries are urged to adopt a "data-as-an-asset" mindset and promote open, shared data systems. Under the principle of "data sharing is the established principle unless otherwise provided," we amplify the effects of data flows. We have launched a "corporate data asset catalog platform" covering strategic, operational, financial, and HR domains, with over 1,400 metrics. This system delivers overall data visibility and helps eliminate longstanding information silos.

Digitalization drives business model innovation

Focusing on our core businesses, we have advanced both industrial digitalization and the development of digital industries, resulting in a series of typical transformation cases and best practices.

Industrial digitalization enhances cost reduction, quality, and efficiency

Across mining, smelting, and metallurgical construction in ferrous and non-ferrous metals, the Company integrates next-generation information technology with our business to modernize our business ecosystem.

The development of digital industries powers integrated value chain upgrades

We deepen the integration of digital technologies into the transformation of conventional industries and develop digital platform products based on our business know-how, supporting digitalization in the steel and non-ferrous metals sectors.

3
Outstanding achievements in the SASAC smart supervision model innovation program

1
Project receiving the excellence award in the Ministry of Public Security's fifth central SOE cybersecurity competition, and the award of top construction-manufacturing team

CISDI shortlisted in the SASAC central SOE digitalization pilot program

3
IoT-enabled cases selected by the Ministry of Industry and Information Technology as benchmarks of IoT empowering industrial development

2
Digital solutions ranked among the Top 50 at the 7th Digital China Summit

Successful deployment of DeepSeek within the digital brain

Embracing artificial intelligence, China Minmetals completed private deployment of the full-blood DeepSeek version. Leveraging its capabilities, we have created a series of "AI+" smart office applications, such as "Intelligent Answers about Policies" and "AI-powered Knowledge Search," within the digital brain to enhance governance systems and capabilities. In response to the trend in digitalization, all subsidiaries integrate DeepSeek and similar models into their systems, optimizing production and management efficiency while maintaining robust data security.

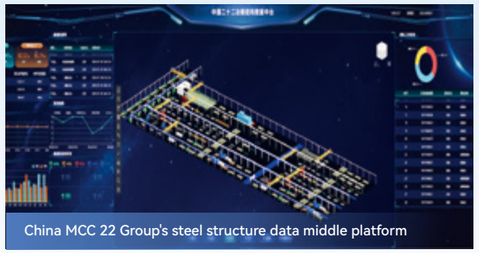
Building smart mines to improve mine management efficiency

Given the needs at the Kangjiawan mine, Hunan Nonferrous Metals Holding Group (HNG) adopts next-generation wireless communications technology (smart MAN + 5G) integrating systems of smart mining, comprehensive excavation, ventilation, drainage, transport, and safety monitoring for data analysis and prediction. These systems realize deep sensing and full monitoring, laying the foundation to build a national first-class benchmark of intelligent mines. The 5G deployment has improved management efficiency by 30%, reduced underground workers from more than 600 to just over 300, increased per-unit mining efficiency from 60 to 115 tons, boosted excavation efficiency by 36%, and improved labor productivity by 45%, generating over CNY 20 million in annual incomes.

Kangjiawan mine smart command center

Smart factory initiative realizes both economic and environmental benefits

The project of "smart steel structure manufacturing demonstration factory based on an industrial internet platform" at China MCC 22 Group covers four core modules: digitalized product design and R&D, precise quality traceability for quality control, applied industrial technology for factory building, and remote product operation and maintenance in after-sales services. Given the problems of steel structure manufacturers, such as multi-factory, multi-project fragmented management, raw material waste, and high costs, the project applies advanced digital technologies in depth to pursue delicacy management and operational excellence, resolving long-standing thorny issues in the industry.



China MCC 22 Group's steel structure data middle platform

Smart integrated assembly-and-welding workstation

At the same time, in response to hindered information sharing during steel structure design, production, and construction, as well as problems in quality control and parts traceability throughout the life cycle of steel components, the demonstration factory has created a full life cycle management system to promote coordination and quality improvement in all links.

At factories, supporting intelligent equipment is updated. This, coupled with efforts to expand the design, manufacturing, installation, and maintenance of high-quality steel structure projects, has improved the utilization rate of main materials by 1.5%. The CNC rate of key equipment has surpassed 90%, the data acquisition rate has exceeded 98%, and productivity has increased by 21.4%, realizing a "win-win" model of both economic and environmental benefits.

Preventing and Controlling Risks

To ensure proactive, comprehensive risk prevention, we reinforce our bottom-line mindset, improve control mechanisms, and conduct in-depth inspections and rectifications. These measures aim to foster a positive dynamic between high-quality growth and high-level security.

Strengthening compliance practices

Enhancing policy formulation and promotion

In response to problems identified in central authorities' inspections, the instructions of the CPC central committee, and legal requirements, the Company has conducted a thorough review and evaluation of existing policies to identify and close compliance gaps. Nearly 100 rules and regulations have been formulated or revised.

Reinforcing compliance reviews

The Company has issued the *Trial Plan on Strengthening Compliance Review for Decision-Making Matters*, with a two-tier compliance review system: a "first line of defense" for focused reviews and a "second line" for comprehensive reviews. This joint mechanism ensures all major decisions are fully reviewed and approved under statutory authority, procedural compliance, and legal screening.

Clarifying compliance evaluations

We have clarified standards for evaluating the effectiveness of the compliance system and established an self-assessment-feedback-rectification process for compliance management. Parent companies are tasked with assessing the effectiveness of compliance systems in their key subsidiaries to identify weaknesses and ensure timely corrective actions.

Raising compliance awareness

We have implemented a monthly legal education system with an annual plan. Party members and department heads are involved in collective study sessions of key laws and regulations, including the *Company Law of the People's Republic of China, Mineral Resources Law of the People's Republic of China,* and *Measures of Compliance Management for Central SOEs*. This practice is extended to subsidiaries, cultivating a strong culture of respecting, learning, following, and applying laws and an atmosphere of compliance.

Implementing precise risk prevention measures

We have established a comprehensive risk management framework centered on four mechanisms: risk identification at all levels, decision risk evaluation, collaborative risk control, and risk control accountability. These interconnected systems form a cohesive approach to risk control. Key documents such as the *2024 "1+N" Major Risk Assessment Report* and 2024 *Risk Management and Internal Control Guidance* have been issued, embedding risk control into daily operations and management, and realizing classified risk management across subsidiaries and areas in greater coverage.

PPP and EPC+F projects: Considering the risks of existing projects, we apply on-account management to off-account projects, ensuring all existing projects are included for supervision. To curb the risks of new projects, we tighten PPP project approval and entry standards in line with updated public-private partnership policies, while revising control frameworks to establish long-term safeguards. We enhance daily oversight and urge subsidiaries to take project-based measures. In 2024, we realized the exit of six PPP projects.

Financial business: We thoroughly investigate the risks of financial business to reduce exposure. Risky business reported through central authorities' inspections has been cut by CNY 687 million. Real estate and government-credit-related risk exposures were reduced by over CNY 23 billion in 2024.

Real estate business: We have enhanced a three-level coordinated mechanism to maintain funding balance in real estate operations. Inventory has been reduced by CNY 10 billion year-on-year. Notable progress has been made in revitalizing outstanding projects such as Guanshan, Yingkou Industrial Park, and Linxidi.

Trade: Fraudulent trading activities, including financing-based trade, false transactions, and order fabrication, are strictly prohibited, with dedicated audit and rectification.

Advancing compliance in overseas projects

In overseas projects, we enhance compliance, improve management over legal issues, and mitigate major risks to ensure overseas business compliance.

Investigating overseas compliance risks

In 2024, we required all directly affiliated subsidiaries engaged in international operations to investigate compliance risks. Identified risks were thoroughly analyzed to understand root causes, and corresponding mitigation measures were developed.

Deepening legal research in key countries and regions

We study relevant laws, regulations, and industrial policies in countries and sectors prioritized in our overseas investment. These findings directly guide our international business activities.

Training legal professionals for overseas business

In 2024, more than 20 members of our "International Legal Talent Pool" participated in three rounds of targeted training—both in-person and online—organized by the SASAC to strengthen their legal capabilities in handling cross-border legal matters.

Developing Industrial Finance

China Minmetals aligns financial service tools and models with each stage of the industrial value chain, embedding financial services into the whole industry to support the development of the real economy.

Hosting the 3rd Minmetals Industrial Finance Forum

From September 26–27, 2024, Minmetals Capital and the China Minmetals Research Institute for Finance co-hosted the 3rd Minmetals Industrial Finance Forum in Shanghai. The event brought together over 400 experts from the government, industry, finance, and academia to explore how innovation in technology, capital allocation, and industry development can mutually reinforce each other for more advanced, intelligent, and green mining in the future. They also discussed trends in industrial finance, new opportunities, and new quality productive forces in the mining industry.

The 3rd Minmetals Industrial Finance Forum

At the forum, the China Minmetals Research Institute for Finance released four outcomes: *Study on Business Models for Deep-sea Mining,* the "Minmetals Metal Mining Advantage Index", the "Lithium Carbonate Spot Price Index", and the *ESG Report for the Trust Industry.*

Promoting green finance and replicating the zero discharge model of high-salinity wastewater at the Jinchuan nickel smelting facility

Minmetals International Trust and Minmetals Leasing jointly advance innovation in green finance and promote the BOT (Build-Operate-Transfer) model. In collaboration with ENFI, they have upgraded Zero-Liquid-Discharge Retrofit Project for High-Salinity Wastewater in the Nickel Electrolysis Workshop III in Jinchuan nickel facility.

This project integrates capital tools—such as trust and leasing—into low-carbon environmental management, enabling equity-debt synergy and leveraging technological advancements. It transforms a conventional environmental remediation initiative into a low-carbon, resource-recycling operational model, using green finance to accelerate the shift from R&D to large-scale industrial application.

4 Embracing Responsibility to Uphold Safety and Environmental Bottom Lines

Work safety and environmental protection are the "lifelines" and "red lines" essential to an enterprise's survival and development. China Minmetals deeply studies and implements Xi Jinping Thought on Ecological Civilization and the General Secretary's important statements and directives on work safety. We continuously improve our safety and environmental management systems, promoting the integrated advancement of safety performance, ecological benefits, and economic outcomes. Through high standards of safety and superior ecological quality, China Minmetals supports the high-quality development of the economy and society.

Strengthening Safety and Environmental Management

We continue to strengthen the construction of our safety and environmental protection systems by improving regulations and procedures, conducting supervision and inspections, and enhancing safety and environmental culture, thereby continuously solidifying the foundation of our safety and environmental work. In 2024, no major or severe production-related accidents occurred throughout the year. Both the total number of incidents and fatalities declined year on year, with fall-from-height incidents reduced by 50% compared to the previous year.

Both the total number of accidents and fatalities **declined** year on year

50%

Year-on-year decrease of fall-from-height incidents

Improving management mechanisms

The Company has developed and revised a series of regulations. Key initiatives include the formulation of the *China Minmetals Work Safety Management Evaluation Measures,* and the revision of the *Implementation Rules for Safety and Environmental Performance Assessment at China Minmetals*, the *Measures for Accountability of Safety and Environmental Protection Incidents at China Minmetals, the Implementation Measures for Safety and Environmental Protection Notifications and Interviews at China Minmetals,* and *the China Minmetals Guidelines for Ecological and Environmental Protection Management of Investment Projects*. Together, these measures establish an integrated evaluation system combining results-based assessment with process-based evaluation, reinforcing the role of performance reviews as a "guiding compass" for continuous improvement.

Enhancing supervision and inspection

Conducting safety inspections

We maintain a high frequency of rigorous and in-depth safety inspections. All China's domestic mines achieve full inspection coverage, while overseas operations such as RAMU NICO MANAGEMENT(MCC) LIMITED and Khoemacau undergo remote video inspections. In 2024, 45 subsidiaries (projects) were subjected to thorough inspections targeting high-risk industries and key risk enterprises. These inspections identified 569 hazards, all of which have been rectified. Across all subsidiaries, more than 740,000 hazards were identified and addressed, achieving a rectification rate of 99.87%.

Conducting environmental protection inspections

We have implemented targeted governance on environmental administrative penalties, including warning interviews with responsible leaders of units that incurred repeated penalties within one year. An environmental protection negative list has been established, clearly defining the "Ten Prohibitions" for on-site production activities. Environmental risk identification and control measures for construction projects have been integrated into the standardized project management manual, strengthening comprehensive environmental management throughout the entire process. In 2024, subsidiaries at all levels conducted 150 special inspections, successfully maintaining a record of zero moderate or above environmental emergency incidents.

150

Special inspections conducted by subsidiaries at all levels

Successfully maintaining **a record of zero** moderate or above environmental emergency incidents

Improving safety and environmental competence

Enhancing educational awareness and warnings

We organized group viewings of the *Yangtze R iver Economic Belt Ecological Environment Warning Film,* reaching over 660 subsidiaries and more than 48,000 employees. Additionally, nearly 200,000 participants across subsidiaries at all levels viewed the safety-themed educational documentary *Work Safety Responsibility on Our Shoulders*. We also compiled and distributed analyses of typical accident cases, and convened accident warning and education meetings that penetrated down to project departments and workshops, effectively strengthening the role of accident warnings.

Reinforcing emergency response drills

To further improve our emergency preparedness and response capabilities, the Company's headquarters, in collaboration with Minmetals Capital Company Limited and Minmetals Mining Holdings Limited, conducted fire and underground mine fire emergency drills. Directly managed subsidiaries organized over 13,000 emergency exercises tailored to their respective operational risks, including scenarios such as roof collapses, falls from height, and hazardous chemical leaks. In 2024, the Rosebery Mine emergency response team won first place in the Tasmanian Mines Rescue Competition in Australia.

13,000+

Emergency exercises organized

In 2024, the Rosebery Mine emergency response team won **first place** in the Tasmanian Mines Rescue Competition in Australia.

Safeguarding Safe Operations

Safety is the foundation and prerequisite for all work and is vital to the Company's stability and development. China Minmetals continues to strengthen its dual-prevention mechanisms, comprising graded safety risk control and hidden hazard investigation and remediation. We actively advance the development of intelligent systems and take proactive measures to prevent and eliminate work safety incidents, reinforcing our bottom line of safety.

Identifying safety risks

We enhance risk assessment for critical areas, proactively and effectively preventing and responding to potential threats, thereby promoting high-quality development alongside a dynamic balance of high-level safety.

Mining subsidiaries

We conducted in-depth surveys and remediation of hidden disaster factors in mines and strengthen flood-season safety risk prevention and control for tailings reservoirs.

Construction subsidiaries

We have continued to strengthen the management and control of high-risk projects and hot work operations.

Hazardous chemicals, smelting, and processing subsidiaries

We maintain rigorous control over key regulated hazardous chemical processes, monitored hazardous chemicals, and major hazardous sources, and reinforce safety management across specialized equipment and fire protection in buildings, ensuring all risks remain well monitored and controlled.

Eliminating safety hazards

We implement a dynamic zero-clearance campaign for major accident hazards, supervise frontline production teams to strengthen standards training, and improve mechanisms for corporate self-inspection and correction, alongside Group-level checklist-based monitoring and rectification. In 2024, subsidiaries at all levels identified a total of 315 major accident hazards, of which 314 have been fully rectified. In the construction sector, dynamic clearance has been achieved. For the remaining unresolved items, risk mitigation measures have been implemented, and full closed-loop management has been ensured.

315

Major accident hazards identified across subsidiaries at all levels in 2024

314

Rectified

Strengthening safety through technological advancement

We are committed to enhancing both intrinsic safety and operational efficiency by vigorously promoting technology-driven safety initiatives. By leveraging digital and intelligent technologies, we continue to reduce work safety risks.

The work safety situational awareness system significantly improves intrinsic safety

The Hunan nonferrous metals work safety situational awareness platform deploys an always-on AI-powered "virtual safety officer" across 21 operational scenarios to enhance the foresight and predictability of risk management. The system enables real-time detection and intelligent alerts for high-risk behaviors, abnormal conditions, and potential safety hazards. Since the system was launched, it has driven a shift in risk management from "manual prevention" to "technological defense" and "intelligent control." As a result, the number of warnings for "unsafe human behaviors" at major production enterprises in Hunan Nonferrous Metals decreased significantly from 1,746 in July 2024 to 592 in November, markedly enhancing intrinsic safety levels.

Hunan nonferrous metals work safety situational awareness platform

Leveraging AI-based recognition technology to promote "no operation without video surveillance"

Anhui Kaifa. Mining Co., Ltd. is advancing the application of AI-powered recognition technology to earnestly implement its "no operation without video surveillance" policy, strengthening major hazard prevention and control in non-coal mining operations. Since its widespread deployment in February 2024, the initiative has seen the installation of 30,000 meters of fiber-optic cable and 100 communication boxes. A ring network has been established at the -300m level of the Lilou shaft, along with an intelligent video surveillance platform, achieving full network coverage at Lilou -300m, Wuji -300m, and areas below -525m. By integrating the existing production monitoring system with the AI recognition platform, the Company now enables real-time monitoring of critical areas and automatic detection and alerts for unsafe or non-compliant behaviors. This allows the dispatch center and relevant management personnel to remotely track operations and enforce real-time oversight, significantly enhancing the precision and effectiveness of safety management.

The full-process intelligent control system enhances the level of safety management in mining operations

China Minmetals Exploration & Development Co., Ltd. actively advances mine safety and sustainable development by integrating digital and information technologies into its mining operations, and promoting the integration of intelligent control systems with mine safety management. It operates a green, low-carbon intelligent mine with an annual production capacity of 6 million tons. The mine runs under a fully integrated intelligent management system that unifies ore flow, energy flow, and data flow, forming a comprehensive digital control framework that enhances operational efficiency, environmental performance, and intrinsic safety.

The affiliated Yunshan Graphite Mine has become a model enterprise in all aspects of mine data collection, data governance, data security, and data application. It was selected as an innovative application enterprise in the 2024 list of *Standards for Integrated Data Sharing in Intelligent Mines* issued by the National Mine Safety Administration. Yunshan Graphite Mine is also selected as one of the "Outstanding Cases for Enhancing Intrinsic Safety through Digital Mine Integration", recognized nationwide for its advanced technology, proven effectiveness, and replicability, one of only 20 mines in China to receive this distinction.

Full-process intelligent control system of China Minmetals Exploration & Development Co., Ltd.

BIM + Smart Construction platform enhances construction safety

The EPC project for the Chenjiaji Resettlement Housing, an important development in Wuhan Yangtze River New District undertaken by WISDRI Engineering & Research Inc. Ltd. (WISDRI), is supported by a customized BIM + Smart Construction platform. This platform integrates modules such as safety risk classification and control, and large-scale machinery management. By applying BIM technology for detailed design, the project enables construction simulation and risk prediction throughout the building process. In terms of large machinery control, the system monitors 13 tower cranes, accurately identifies work zone statuses, analyzes crane efficiency, and allocates resources accordingly. For safety management, the project implements a dual-prevention system for risk and hazard control. A total of 731 safety hazards are recorded and addressed through strict PDCA closed-loop management, achieving a 100% on-time resolution rate and ensuring zero safety incidents during construction.

BIM Design 3D Model of WISDRI's Chenjiaji Project

Addressing Climate Change

China Minmetals actively responds to China's carbon peaking and carbon neutrality strategy by integrating carbon peaking and carbon neutrality goals into the Company's overall development plan. We accelerate the restructuring and optimization of our industrial and energy structures, while promoting energy conservation, emissions reduction, green and high-quality development across relevant industries. In 2024, the Company was honored as a "Pacesetter Enterprise for Carbon Peaking in China's Industrial Sector".

Pioneering the carbon peaking and carbon neutrality strategy

Governance

We have optimized our organizational structure by establishing a Carbon Peaking and Carbon Neutrality Task Force. The task force is headed by the Company's top executive, with the executive vice president serving as deputy head, and department heads of relevant functions as members. This structure ensures centralized planning and unified leadership in advancing our "carbon peaking and carbon neutrality" agenda, and enables a top-down mechanism to drive green development.

We have established and refined an internal assessment and evaluation mechanism for achieving carbon peaking and carbon neutrality. A performance evaluation system for carbon reduction responsibilities has been put in place, incorporating carbon reduction tasks and targets into the business performance appraisals of all operating units. By establishing well-defined evaluation and incentive mechanisms, we are reinforcing the primary responsibility of enterprises for energy conservation and carbon reduction. We also strengthen policy guidance and oversight to enhance initiative and engagement across business units, continuously improving carbon reduction performance.

Strategy

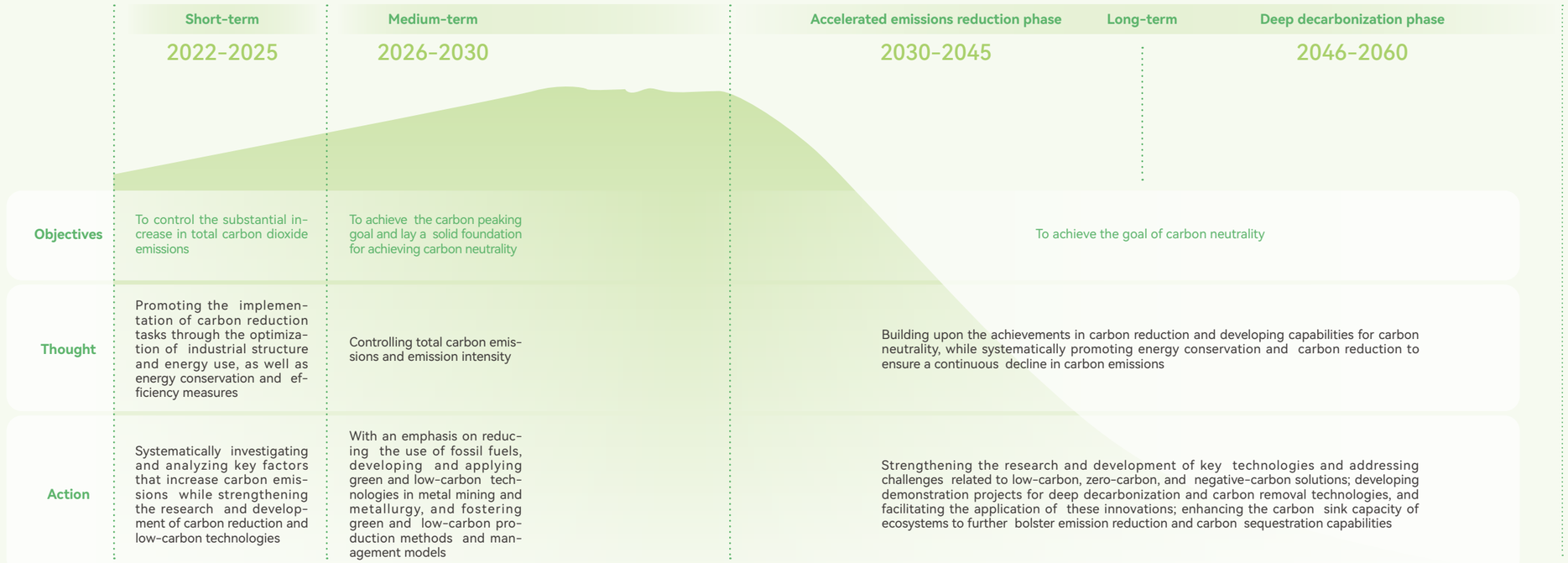
We have identified two key strategic tasks for achieving carbon peaking, based on the distinct characteristics of our various business segments and in alignment with national and industry-specific guidelines on carbon peaking and carbon neutrality.

1 Focus inward to lead the transition toward green and low-carbon development

We are accelerating the adjustment and optimization of our industrial and energy structures, advancing energy conservation, emissions reduction, and green and high-quality development across key sectors. Through solid performance, we are fulfilling the responsibilities and mission of a central SOE in the new era. Leveraging our role as an industry leader, we are driving technological progress and management improvement across the sector, striving to be at the forefront of the national "dual carbon" strategy and setting an example in leading the transition toward green and low-carbon development.

2 Focus outward to empower the industry-wide shift to sustainability

We will fully leverage our advantages in green technology innovation, full-industry chain system integration, and comprehensive financial services to drive and empower the green transition of the industry and the broader economy and society.



Risk management

To enhance resilience to climate change and manage climate-related risks, we conduct comprehensive identification of such risks and their potential impacts, and develop targeted response measures accordingly.

		Description of risks and potential impacts	Mitigation measures
Physical risks	Acute risks	• The increasing frequency of natural disasters such as storms, floods, and earthquakes caused by climate change may damage infrastructure and production facilities, leading to business interruptions. This could disrupt the supply chain and market supply, resulting in economic losses. • Extreme weather events also pose safety and health risks to employees, potentially causing accidents and injuries.	• Closely monitor weather forecasts and early warning information during daily operations to stay informed of typhoons, floods, and other natural disasters, enabling timely alerts and response. • Reinforce production and infrastructure facilities to enhance their resilience against disasters, including earthquake resistance, flood prevention, and wind protection. • Establish an emergency warning system, strengthen employee safety awareness through regular training and emergency drills, and provide necessary safety equipment and education.
	Chronic risks	• Long-term climate changes, including sea level rise, rising average annual temperatures, and shifting precipitation patterns, may affect the layout of resource development and undermine the stability of production systems.	
Transition risks	Policy	• As global attention to climate change intensifies, governments around the world are introducing policies and regulations in response. These regulatory changes, such as carbon pricing mechanisms and emissions caps, may significantly impact business operations.	• Stay up-to-date with and comply with relevant regulatory laws and regulations, and, in accordance with these requirements, standardize the working mechanisms of all our business operations
	Technology	• Traditional, energy-intensive, and high-emission extraction and smelting models face urgent pressure to upgrade through technological transformation. • Companies must continuously invest in research and development and adopt new technologies and processes to reduce carbon emissions.	• Continue phasing out outdated production capacity and upgrading technologies, while advancing electrification and implementing energy-saving and carbon-reduction initiatives • Optimize and expand process workflows to strengthen resource conservation and promote efficient utilization • Enhance green and low-carbon technological innovation by intensifying R&D efforts and tackling key core technologies
	Market	• Investors and customers are placing increasing emphasis on corporate carbon emissions and sustainability performance, driving greater market demand for low-carbon and environmentally friendly products. Conversely, demand for high-carbon and heavily polluting products is declining, potentially undermining the Company's market competitiveness.	• Promote the adoption of mature low-carbon and energy-saving technologies • Advance low-carbon building solutions and develop green buildings • Leverage the Company's full-spectrum financial licenses to build a green finance system and offer diversified green financial services • Provide smart and green transportation solutions to both internal and external clients • Implement green procurement practices by prioritizing energy-saving, water-saving, and resource-efficient materials and services
	Reputation	• Sustainable development is receiving increasing public attention. Failure to effectively address climate change challenges may result in negative perceptions from the public and investors, potentially undermining the Company's reputation and impacting its revenue performance.	• Actively explore international cooperation on scientific research standards and technology exchange in the dual carbon ("carbon peaking and carbon neutrality") fields • Enhance ecological and environmental services and support for projects along the BRI route • Strengthen the development of a green culture by integrating environmental values into the Company's corporate culture framework and manuals • Proactively respond to public and investor concerns and expectations regarding the Company's climate action, and improve the quality and transparency of climate-related disclosures

Adopting low-carbon technologies

We actively engage in research on green and low-carbon technological innovation, strengthen systematic breakthrough planning, and focus on key core technological advancements. This enables us to develop a range of critical technologies that contribute to the implementation of the "dual carbon" strategy.

Our "High-Efficiency Power Generation Technology Using Low-Calorific-Value Gas" and the "Development and Application of Key Technologies and Equipment for Recycling Retired Photovoltaic Modules" have been included in the *Outstanding Green and Low-Carbon Practices of Central SOEs*.

3R carbon-hydrogen blast furnace drives efficient decarbonization in the steel industry

To address the global challenge of reducing carbon emissions in large blast furnace operations, CISDI has successfully developed the high-efficiency reduction 3R Carbon-Hydrogen Blast Furnace technology. This breakthrough fully utilizes surplus gas resources within steel plants by recycling reducing gases in the process stream, thereby improving gas utilization efficiency and significantly reducing the carbon consumption of the furnace. The 3R Carbon-Hydrogen Blast Furnace integrates multiple innovative technologies, including carbon-hydrogen coupling for enhanced reduction, gas-based IPS dynamic regulation and deep decarbonization, synergistic injection of gas and pulverized coal, and intelligent furnace condition control, ensuring stable and efficient blast furnace operations.

Since 2023, two 2,000m^3 blast furnaces equipped with this technology have been in stable operation at Hebei Zongheng Group Fengnan Iron & Steel. The technology enables annual carbon emissions reductions of approximately 400,000 tons, representing a 5-10% reduction compared with domestic furnaces of the same scale. Key technical indicators have reached internationally advanced levels. Thanks to its outstanding performance, CISDI signed an EPC contract in July 2024 with Zenith Steel Group (Nantong) Co., Ltd. for the deployment of three additional 3R Carbon-Hydrogen Blast Furnaces.

Hebei Zongheng Group Fengnan Iron & Steel Phase I 3R Carbon-Hydrogen Blast Furnace Project

Launch of the "Carbon Traceability System" for quick access to carbon data

In response to industry challenges such as upstream enterprises' concerns over data security, high tracing costs for downstream companies, difficulty in providing real-time data, and poor data connectivity along the industrial chain, China ENFI leveraged its comprehensive process technology and digital capabilities to develop and launch the "Carbon Traceability System" in September 2024 for applications in non-coal mining, non-ferrous metal smelting, and other sectors. Built on an industrial internet platform, the system supports customized development, precise modeling, and localized deployment, enabling automatic data capture, calculation, and transmission. It ensures data security and reliability while meeting domestic carbon footprint policies as well as international regulations such as the *EU Battery and Waste Battery Regulation*.

Implementing a smart low-carbon building O&M system to create a near-zero carbon building

MCC5 (China MCC5 Group Corp., Ltd.) Science and Technology Center project integrates China's carbon peaking and carbon neutrality strategy throughout its design, construction, and operational phases. Guided by the green, low-carbon design principles of "demand reduction, efficiency enhancement, energy production and storage, and control", the project adopts a "passive-first, active-optimization, integrated hybrid" technical strategy. It incorporates more than 20 technologies, including a self-developed intelligent low-carbon building operation and maintenance (O&M) system. The project received near-zero energy certification from the China Association of Building Energy Efficiency, becoming the only public building in Sichuan to obtain this certification in 2024. It was also recognized as one of the "Top 10 International Sustainable Innovation Cases in Human Settlements".

MCC5 Science and Technology Center

Developing CO_2 capture and utilization technologies for the metallurgical industry

Capital Engineering & Research Incorporation Limited (CERI) focuses on advancing carbon capture and utilization (CCU) technologies tailored to the metallurgical sector. Addressing the technical challenges of chemical absorption, such as high energy consumption, poor oxidative stability of absorbents, degradation, and strong corrosiveness, the Company has developed a novel CO_2 capture technology that combines high absorption efficiency with low energy demand. Its newly built pilot-scale CO_2 capture, liquefaction, and purification facility, designed for a capacity of 1,000 tons per year, marks the first application of phase-change absorption technology in the steel industry. After three months of continuous operation, the system achieves a stable CO_2 capture rate of over 90%, with an average regeneration energy consumption of approximately 2.1 GJ per ton of CO_2, about 45% lower than that of conventional MEA-based methods.


Schematic diagram of CERI's CO_2 capture and liquefaction technology demonstration project

Delivering green products

We remain committed to sustainable development by continuously advancing technological innovation and industrial development to provide more high-quality, green, and low-carbon products.

Three product categories from ZGCCIE certified for carbon footprint

A product's carbon footprint refers to the total greenhouse gas emissions it generates throughout its entire life cycle, from raw material extraction to final disposal. ZGCCIE has completed carbon footprint assessments for three product categories: ammonium paratungstate (APT), nickel-based alloy powder, and precision bushings. These products have been certified by the accredited institution COM in accordance with the ISO 14067:2018 standard. By obtaining carbon footprint certification, ZGCCIE gains a clearer understanding of greenhouse gas emissions across its product life cycles, helping to identify opportunities for carbon reduction. In addition, the company can now provide customers with accurate and reliable product carbon emission data to support their carbon management efforts and sustainable development.


Precision bushing

Promoting the use of renewable energy

We actively explore new approaches to energy utilization and significantly increase the share of renewables, such as solar power, in our energy mix, injecting new momentum into the Company's green transition and sustainable development.

First, more than ten subsidiaries, including North China Aluminium Co., Ltd. , Zhuzhou Smelter Group Co..Ltd, and Nanchang Cemented Carbide Co., Ltd., have develop photovoltaic power generation projects, with a total installed grid-connected capacity of approximately 100 MW.

Second, leveraging Qinghai's natural advantages, China Minmetals Salt Lake Co., Ltd. advances a solar thermal project to meet the heating needs of its lithium carbonate adsorption units. Compared to direct natural gas heating, the CO_2 emissions per CNY 10,000 of output decrease by 41.3%.

Third, we actively participate in green electricity market trading. Companies such as MCC Ruimu New Energy Technology Co., Ltd., Zhuzhou Smelter Group Company Limited, and Minmetals New Energy Materials (Hunan) Co.,Ltd drive green electricity procurement, with total annual transactions exceeding 500 million kWh.

Developing photovoltaic power projects

In December 2024, Nanchang Cemented Carbide Co., Ltd.'s MWp distributed photovoltaic power project at its green, low-carbon, and smart industrial park was successfully connected to the grid. The project is expected to generate 4 million kWh of electricity annually, saving approximately 491 tons of standard coal and reducing carbon emissions by about 2,100 tons. It also helps lower electricity costs. As a result, the proportion of green electricity used by Nanchang Cemented Carbide Co., Ltd. has increased from 10% to 19.89%.

North China Aluminium Co., Ltd. has implemented a rooftop solar project, installing photovoltaic panels on the main plant roof of its cold rolling and aluminum foil workshops. A total of 13,312 photovoltaic modules have been installed on the plant's color steel rooftops, forming a solar power station that supplies green electricity for daily production operations.

Rooftop solar project at North China Aluminum Co., Ltd.

The Dugald River Mine explores green and clean energy transition

The Dugald River Mine Solar Farm

The Dugald River Mine actively explores a transition to clean energy. In March 2024, the mine officially connected to the largest off-grid solar power facility in Australia, marking a significant step toward a greener and more sustainable future. With a total capacity of 88 MW, the Dugald River Solar Farm is expected to supply approximately one-third of the mine's energy needs, reduce carbon emissions by around 34%, and lower dependence on traditional gas-fired power generation. This also helps mitigate high electricity costs and lays a solid foundation for the Company's 2050 carbon neutrality goal. As a demonstration project for green transition, Dugald River Mine is also exploring a hybrid energy model combining solar and wind power, with the aim of meeting up to 75% of its energy demand through renewable sources, further enhancing energy efficiency.

Construction of 98MWp photovoltaic power generation installation project in Linxiang District, Lincang City

The 23rd Metallurgical Construction Group Co., Ltd. of Minmetals implements a 98 MWp distributed photovoltaic (PV) power generation project in Linxiang District, Lincang City, Yunnan Province. The project utilizes residential rooftops across various towns and townships, covering 93 villages and 9 communities. Scheduled for completion in August 2024, the project is expected to generate approximately 130 million kWh of electricity annually. Rural households are not required to make any financial contributions. In addition to generating clean energy, the project also resolves rooftop leakage issues and improves thermal insulation, delivering a well-rounded set of economic, ecological, and social benefits.

Conducting Green Operations

In strict compliance with environmental laws and regulations, we make every effort to reduce emissions of atmospheric pollutants and regulate waste discharge. We improve energy recycling, and conserve water resources, emerging as a resource-efficient and environmentally-friendly enterprise. Zero major environmental incidents or significant violations in energy conservation and environmental protection occurred throughout 2024.

Management of waste gas, waste water, and solid waste

Air pollution control

Strengthening management for flue gas emissions

We have furthered pollution control facilities. Hunan Shui Kou Shan Nonferrous Metal Group upgraded its Bottom-blowing furnace and desulfurization system, Anhui Kaifa. Mining Co., Ltd. transformed its gas-fired boilers into low-nitrogen ones, and Minmetals New Energy Materials (Hunan) Co.,Ltd completed dust removal treatment of sintering waste gas, ensuring stable compliance with flue gas emissions standards.

Enhancing dust control

MCC rigorously implements measures for controlling dust pollution in construction and cracks down on illegal dust emissions in the construction industry. Minmetals Mining Holdings Limited carried out dust control projects in slag dump, ore stockpile, pit-to-market hub, and mineral trading yard.

Water pollution control

Advancing heavy metal treatment

Hunan Shizhuyuan Nonferrous Metals Co., Ltd installed new treatment facilities in 2024 and lowered the manganese concentration in discharged water to 20% of the emission standard value, with a reduction in overall pollutant emissions.

Strengthening sewage pipe network

Huangshaping Mining, China Minmetals Beryllium Co., Ltd. carried out optimization of rain and sewage diversion, reducing sewage discharge at the source. Minmetals New Energy Materials (Hunan) Co.,Ltd conducted overall inspection of underground drainage pipe network and discharge outlets across the plant and provided targeted measures to rainwater and sewage pipe network, preventing risks of exceeding discharge limits at an early stage.

Conserving water resources

High emphasis is placed on conserving and protecting water resources. Advanced water-efficient technologies are utilized to improve water use efficiency, and reduce water wastage.

Solid waste management

Anhui Kaifa. Mining Co., Ltd.'s mine tailing extraction project, Anhui Qingfa Group's tailings comprehensive utilization project has been completed and put into operation. Beimaihe Iron Mine, Hecheng Mining, and Laixin Mining's press-filtered tailings backfill treatment in open-pit mining projects are being implemented in an orderly manner.

Jinchi Energy Materials achieves zero liquid discharge for production wastewater

Jinchi Energy Materials has optimized its process flow. by utilizing plate and frame filter presses, precision filters, and processes including lithium precipitation, fluorine removal, and phosphorus removal, enabling categorized and graded wastewater treatment for stabilized water quality. By upgrading equipment and employing triple-effect MVR evaporators for brine desalination, Jinchi Energy Materials has achieved zero liquid discharge of production wastewater. Meanwhile, the precursor ammonia gas absorption tower has been adjusted from water washing to acid washing, with a nearly 100% absorption. Full-process smart monitoring of ammonia gas emission treatment have been implemented, greatly enhancing the production environment.

Jinchi Energy Materials achieves zero liquid discharge for hazardous chemical wastewater

Recycling

Following the principle of waste reduction, comprehensive resource utilization, and harmless processing throughout the entire lifecycle, we expedite researches on comprehensive recycling and resource utilization to improve the overall resource utilization, striving for a balance between resource development and environmental protection.

Anhui Qingfa Group's tailings sand comprehensive utilization project put into operation

In June 2024, Anhui Qingfa Group under MMG had its iron ore tailings sand comprehensive utilization project undergone successful joint testing. The project has been designed to handle 300,000 tons of tailings per year. The processed tailings sand can be widely used in building materials, cemented backfill raw materials, etc., delivering significant economic and environmental benefits.

Qingfa Group's tailings comprehensive utilization project put into operation

Emerging as the model of "Zero Waste Group" in the nonferrous industry

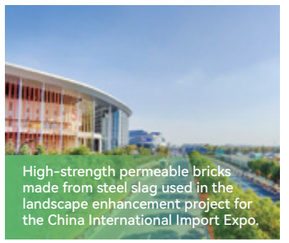
In December 2024, Hunan Nonferrous Metals was approved as a pilot enterprise for the building of the first "Zero Waste Group" in Hunan Province. In recent years, Hunan Nonferrous Metals has taken the lead in the industry by practicing the comprehensive recycling of copper, lead, and zinc base slag materials. The Company prioritizes waste reduction, comprehensive resource utilization, and harmless processing throughout the entire process, integrating the concept of "zero waste" into the entire process of solid waste management process. By addressing the challenges of high-quality recycling and efficient utilization of internal solid waste, it has achieved comprehensive recycling of mining, smelting, and hazardous solid waste within Hunan province. This advancement promotes the Company's high-level protection and high-quality development of environment, striving to create a model of a "Zero Waste Group" in the nonferrous industry.

Turning slag into "Green" and transforming waste into treasure

The Metallurgical Slag Processing and Comprehensive Utilization Engineering Technology Center was established by MCC Baosteel Technology Services Co.,Ltd.(MCC Baosteel) to carry out technological breakthroughs in improving steel slag resource utilization- the worldwide challenge. Core products such as "powder, sand, bricks, and soil" were recycled from steel slag, with 95 authorized national patents. The Company established a product and application standard system at the national, local, and enterprise levels, enabling the recycling of steel slag resources.

Among these, permeable concrete and permeable pavement bricks made from steel slag are ideal materials for the building of sponge city. Both are effective at collecting and utilizing rainwater to reduce the urban heat island effect. They were honored with the title of "Shanghai Green Low-carbon Technology Product". These products have been applied in over 20,000 square meters of ecological pavement at Shanghai Disneyland, over 1 million square meters of landscape road renovation projects at the China International Import Expo for five consecutive years, and were fully utilized in landscape enhancement projects at the Expo in 2024. Moreover, this technology has been adopted in Shanghai's urban ecological permeable road network, ecological pavement in tourist resorts, and permeable landscape roads at the training center of Special Olympics, with a coverage area exceeding 4 million square meters.

MCC Baosteel self-developed high-strength permeable bricks made from steel slag.



High-strength permeable bricks made from steel slag used in the landscape enhancement project for the China International Import Expo.

Facilitating Ecological Conservation

We actively explore the path of green mine development that is compatible with the environment. To achieve this aim, we move faster to build green mines, take steps to protect biodiversity and habitats, and take measures to restore the ecology. Through these efforts, we maintain ecological harmony and contribute to the common building of a global community with a shared future for all life on Earth.

Green mine

We take solid steps to restore domestic mines environment and promote the overall transformation and upgrading of green mines; with 15 domestic green mines (12 national-level and 3 provincial-level).

We continuously enhance the carbon sequestration capacity of ecosystems. All operational domestic mines have completed the formulation, review, and filing of mine geological environmental management plans, with a 99.9% mine rehabilitation rate achieved in 2024.

15
Domestic green mines

99.9%
Mine rehabilitation rate in 2024

The Khoemacau Copper Mine develops and applies a strategy for land protection, restoration, and reclamation

The Khoemacau Copper Mine formulates a comprehensive strategy for land protection, restoration, and reclamation, minimizing the impacts of mining on nature. This strategy includes applying best practices for environmental restoration and adhering to mine closure and reclamation management standards. Key actions taken by the mine are to conduct land disturbance assessments according to comprehensive indicators across the Khoemacau Mine area, map and continuously monitor ecological and biodiversity zones within the lease area, as well as managing archaeologically sensitive sites, according to the archaeology management plan approved by the Botswana Department of Environmental Affairs. In 2025, Khoemacau Copper Mine will further strengthen monitoring of affected habitats, review team capabilities, and develop a five-year reclamation plan, with a focus on capacity-building in alignment with the *MMG Nature Strategy*.

Natural landscape of the Khoemacau Copper Mine

"Distributed Photovoltaic + Green Mine" project

To fully utilize the value of idle land resources, Hunan Nonferrous Xin Tian Ling Tungsten Company Limited has initiated the "Distributed Photovoltaic + Green Mine" project. This project is located within Xin tian ling in Beihu District, covering around 600 mu. It is divided into 7 individual projects with 43.3344 MWp installed capacity. Closed tailings ponds, abandoned factory buildings, and closed landfills for tailings disposal have been transformed to construct distributed photovoltaic power generation project. The project was fully completed and connected to the grid by the end of June 2024. After production, it generates 40 GWh of electricity annually, alleviating the power supply pressure on the power grid of Chenzhou, Hunan. 11,400 tons of standard coal are saved per year, carbon dioxide emissions are reduced by 34,300 tons, and the air environment quality is improved.

Xin Tian Ling Tungsten Distributed Photovoltaic Project Photovoltaic Power Station

Reviving the Green Transformation of the Eastern Mining Area in Sanhe

In the fifth phase of the geological environment management project in the eastern mining area of Sanhe, MCC has restored vegetation in the mining area through disaster prevention, cut-and-fill mining, and greening. The eastern mining area has been completely rejuvenated, with restored area reaching 6.95 square kilometers and an additional usable land of over 5,500 mu. The ecology of the managed mining area has significantly improved, creating a model of "green city" for Sanhe City.

Biodiversity conservation

We value environmental protection in production, operations, and project development, aiming to minimize the impact of resource development on vegetation and animal habitats, while maintaining ecological balance and biodiversity in the vicinity of our projects.

MMG develops the *Nature Strategy*

In 2024, MMG conducted a comprehensive review of its nature responsibility and formulated the "Nature Strategy," which was approved by the MMG Board in March 2025. Currently, the strategy is overseen by the Executive Committee, and each mine team will adjust and implement it according to local circumstances.

The *MMG Nature Strategy* goes beyond traditional environment management, committed to coordinating the interrelationships between nature, climate, and communities. Meanwhile, the strategy focuses on biodiversity, climate resilience, and the sustainable development of MMG's entire value chain.

Objectives of the *MMG Nature Strategy*:

- Implement customized actions that comply with jurisdictional requirements and address unique operational environment challenges
- Enhance the health, richness, diversity, and resilience of natural ecosystems
- Tailor reclamation, ecological restoration, and other protective measures according to specific ecological needs of the mines
- Collaborate with peers and the entire value chain to address natural-related risks and opportunities together
- Integrate innovative practices, respect indigenous knowledge, and cultivate partnerships that benefit employees, local communities, and the entire planet

Conducting aquatic animal community survey at Ruimu Nickel-Cobalt KBK Mine

In June 2024, to gain a deeper understanding of the health status of the aquatic ecosystem surrounding the Ruimu Nickel-Cobalt KBK Mine, RAMU NICO MANAGEMENT(MCC) LIMITED(Ramu NiCo) conducted a thorough survey of the aquatic animal communities in the key rivers near the KBK Mine. The aim was to get a comprehensive understanding of the species, quantity, distribution of aquatic animals in these rivers, and their associations with the environment. The analysis of this data provides a scientific basis for environment management at the KBK Mine and robust support for the regulatory efforts of the Department of Environment and Conservation, Papua New Guinea.

Safeguarding ecosystems to unleash nature's splendor

The MCC Southern Urban Environmental Protection Engineering Technology undertook two water ecological projects in the Maojiangang of Bahe Town and Shiguan River of Guankou Town in Baxihe, Xishui County. To create a picturesque environment with green waters and lush mountains, the project team meticulously tailored a comprehensive restoration plan, including pollution source control, ecological restoration, and the establishment of a humanistic ecological landscape. Specifically, ecological restoration involves artificial wetlands, ecological floating islands, aquatic plant communities, and other ecological engineering technologies to enhance the self-purification capacity of water bodies, thus providing habitats for flora and fauna and increasing biodiversity.

Efficient restoration of aquatic ecology

5

Advancing together to Build an Enterprising Team

China Minmetals remains focused on selecting talent with clear direction, nurturing talent aligned with industry needs, and employing talent in a scientific and rational manner. With these priorities, we have steadily advanced the "Action Plan for Empowering the Corporation with Talents", dedicated to cultivating outstanding engineers, craftsmen of the nation, and highly skilled professionals. This effort provides strong organizational assurance and talent support for building the Company into a world-class metal and mining enterprise with global competitiveness.

Enhancing Talent Development

Advancing systematic talent cultivation

In 2024, China Minmetals formulated and revised 30 talent-related policies and operational plans, covering a wide range of professional areas such as job classification systems, cadre selection and supervision, talent recruitment, performance evaluation, and compensation and incentives. This comprehensive "1+N" management framework for cadres and talent has become increasingly structured and standardized, significantly enhancing the scientific, institutionalized, and standardized approach to talent development.

Hosting the 2024 National Vocational Skills Competition

From September to October 2024, China Minmetals, in collaboration with the China Employment Training Technical Instruction Center (CETTIC), hosted the "2024 National Vocational Skills Competition – China Minmetals Corporation Second Vocational Skills Competition". Approved by the Ministry of Human Resources and Social Security, the competition featured three events for technicians in cemented carbide forming, lathe operation (CNC lathe operation), and building information modeling (BIM). The competition served not only as a comprehensive evaluation of employees' technical capabilities but also as a key initiative for the Company to expand talent development channels and implement the talent-driven strategy. It also enabled the rapid identification and cultivation of a cohort of highly skilled professionals distinguished by their craftsmanship, precision, and a pursuit of excellence.

National vocational skills competition

Building development platforms

Valuing talent development, China Minmetals unblocks career pathways and improves its training systems, offering employees a broad development platform. This enables them to achieve rapid personal development and realize their individual value.

In addition, we focus on medium- and long-term key and strategic sectors such as metals and minerals, strategic emerging industries, exploration, and deep-sea development to address talent shortages. We actively attract strategic talent from high-end markets both domestically and internationally. For top-tier professionals and teams possessing critical core technologies, we implement flexible recruitment policies such as "immediate negotiation", "individual-specific consideration", and "customized policy". We have strengthened the recruitment of high-level talent at all levels, both at home and abroad, and incorporated the introduction of science and technology talent into CPC organizational reviews and executive performance evaluations to ensure accountability.

1,240,533

Participants in employee training

To strengthen our management talent pipeline, we have fostered a merit-based system where highly capable individuals are promoted, outstanding performers rewarded, average performers reassigned, and underperformers phased out, laying the groundwork for cadre development.

We have implemented the "skilled talent enhancement program" and leveraged vocational skills competition as a platform for identifying and cultivating high-skilled talents to continuously enhance the development of our skilled workforce.

To reinforce the development of our scientific and technical workforce, we have formulated the *Implementation Plan for Science and Technology Talent Development Program*, accelerated the cultivation of outstanding engineers, deepened enterprise-university reforms, and promoted joint master's and doctoral training programs of engineering. We have also expanded our chief technical expert team to solidify our position as a hub for metals and minerals talent.

We have developed the *International Mining Talent Enhancement Plan*, and introduced a "five-in-one" full life-cycle management system to strengthen the development of international industry-leading talents in the metals and minerals sector.

Launching the first "Metals and Minerals Pioneer Plan" training program

With a focus on international mining, China Minmetals launched the first "Metals and Minerals Pioneer Plan" training program with its structured content revolving around three aspects, values, professional competence, and international perspective, to ensure the effective development of exceptional mining professionals and solidify the Company's talent foundation. The program prioritizes the growth and deployment of outstanding young mining professionals. By integrating mining talent resources and promoting cadre exchanges over a three-year development cycle, we have established a complete, effective and well-aligned full life-cycle management system for talent selection, development, evaluation, and deployment under the "five-in-one" framework.

Reforming the industrial workforce development

We improve our skills development system for industrial workers to help them adapt to the demands of new industrialization. Under the theme "fostering new quality productive forces for high-quality development", we have organized the "Top 100 Teams" selection campaign to encourage frontline teams to engage in innovation, aiming to foster grassroots innovation and support the rise of new quality productive forces. At the same time, we launched the "60-Day Sprint for Annual Excellence" competition to recognize outstanding teams and encourage productivity and performance at the frontline.

"Top 100 Teams" selection campaign

Fostering craftsmen of the nation

Advocating the spirit of model workers, dedication, and craftsmanship, China Minmetals has advanced the reform of the industrial workforce by strengthening the development of highly skilled personnel through policy formulation, awareness campaigns, exemplary story publicity, skill enhancement, outcome consolidation, and platform development. Notably, Liu Xiangguo from Hunan Nonferrous Metals and Wu Chunqiao from CFMCC were selected as the first batch of craftsman candidates, under the nomination of the Trade Union of Financial and Commercial Workers, Light Industry and Textile Workers, Tobacco Industry Workers and the Hubei Federation of Trade Unions respectively. This marks a breakthrough for China Minmetals in advancing the craftsmen of the nation initiative.

Liu Xiangguo inspects the conductivity of cathode plates

Wu Chunqiao adjusts a bricklaying robot

Supporting training for the 47th World Skills Competition and winning the silver medal in welding

China Minmetals has fully leveraged vocational skills competitions as a platform to cultivate and select high-skilled talent. As the lead unit for the Chinese training bases in architectural metal construction and welding for the 47th World Skills Competition, the Company implemented comprehensive support measures and developed a detailed training plan to ensure scientific and standardized training for participants. These efforts resulted in China winning one gold and one silver medal in the competition's metal construction and welding categories. Hu Zehong, a young employee from China 19th Metallurgical Corporation, won the silver medal in welding. By the end of 2024, China Minmetals had produced three champions (Zeng Zhengchao, Ning Xianhai, and Zhao Pubo), two runners-up (Liu Hao and Hu Zehong), and three Excellence Award winners (Bian Tao, Wang Chenyu, and Zhuang Xueyu) in the World Skills Competition. In total, 21 employees from the Company have won awards and 79 have been honored with the title of National Technical Expert in the competition. These accomplishments have contributed to cultivating urgently needed, socially respected, and enterprise-valued skilled professionals and supporting the upgrading of China's manufacturing industry.

Hu Zehong of China 19th Metallurgical Corporation wins silver in welding at the World Skills Competition

Protecting Employee Rights

Upholding equal employment

We conduct our operations in accordance with laws and regulations and firmly prohibit illegal practices such as child labor, forced labor, and harassment or abuse to safeguard employees' fundamental rights and interests. Committed to fairness and impartiality, we reject discrimination based on race, gender, age, religious belief, or other factors, and ensure equal opportunities for all job applicants. Furthermore, we strictly regulate information management processes to fully protect employee privacy and foster a fair, diverse, and inclusive workplace environment. In terms of compensation and benefits, we have established a scientific and reasonable remuneration system while exploring diversified supplementary benefits to promote the coordinated development of employees and the Company.

Enhancing employer branding

In 2024, China Minmetals coordinated its subsidiaries to carry out a series of on-campus promotional events across nine universities in seven cities. Using a unified recruitment platform, the Company centralized the display of job openings across 93 subsidiaries with recruitment needs for the first time, offering one-stop application services. During the recruitment period, the platform received a record-high number of resume submissions, successfully attracting talents through China Minmetals' brand influence.

DRC Kinsevere Mine receives "Outstanding Employer" honor

As one of the largest industrial and mining enterprises in the Upper Katanga Province of the Democratic Republic of the Congo (DRC), DRC Kinsevere Mine has long adhered to lawful and compliant operations in accordance with local labor laws and regulations. We create employment opportunities, standardize international employee management, and safeguard their lawful rights. In 2024, DRC Kinsevere Mine was awarded the "Outstanding Employer" honor by the Ministry of Labor of Upper Katanga Province in the DRC in recognition of its lawful protection of employee rights and its "zero violation" record during the province's annual corporate labor inspection.

DRC Kinsevere Mine receives the "Outstanding Employer" honor

As of the end of 2024:

166,811
Employees in total

9,410
New hires

152,385
On-post employees

35,363
Female employees

13,990
Female managers

Note: The above data does not include Qinghai Yanhu Industry Co., Ltd. and Qinghai Huixin Asset Management Co Ltd.

Promoting democratic management

China Minmetals continues to enhance its employee democratic management system with Staff Congress as its core to effectively foster employees' sense of ownership and to encourage their active participation in corporate governance. This has further promoted democratic management practices and contributed to the Company's stable development. By broadening channels for information disclosure and building diverse participation platforms, we ensure that employees are fully granted the rights to know, participate, vote, and supervise to fully safeguard their legal rights and interests.

In 2024, China Minmetals completed the election for the second session of Staff Congress. Among the newly elected representatives, there are:

20 Model workers or leading high-skilled talents

10 Outstanding industrial workers

7 Seats over the previous session

raising their proportion from 2.2% to **7.2%**

Reinforcing Employee Care

Safeguarding employee health

We carry out occupational health initiatives by eliminating workplace hazards at the source and leveraging intelligent and digital technologies to reduce employee exposure to harmful environments. Meanwhile, we organize traditional Chinese medicine wellness consultations and on-site medical check-ups at project sites. We have also established an employee mental health hotline to ensure the overall physical and mental well-being of our workforce.

Conducting employee mental care program

Employees are the most valuable asset of an enterprise, and caring for their physical and mental health is essential to securing its future. In December 2024, to enhance humanistic care and psychological support for employees, MCC CISDI Group launched the employee mental care program which offers professional counseling services for employees. The program aims to help employees raise awareness about mental health, learn effective stress management techniques, and build a healthy mindset and well-rounded personality, thereby laying a solid foundation for enhancing work efficiency and the quality of life.

Caring for employees

We promote traditional initiatives such as holiday greetings, assistance for employees in need, care for female employees, and employee care programs in summer and winter. On top of that, we continue to innovate in our employee care systems to enhance employees' sense of fulfillment, happiness, and security.

MMG's high-performance leadership program

In 2024, MMG launched the high-performance leadership program for female managers across the company. Closely aligned with corporate strategy, the program aims to enhance gender diversity in senior management roles and promote internal career development. This 12-month program is structured around three core pillars (leading self, leading others, and leading strategy) and is led by organizational development psychologists. It covers comprehensive leadership assessments, one-on-one and group coaching sessions, and a wide range of online theoretical courses.

The inaugural high-performance leadership program saw the participation of eight female employees from MMG's operational sites and headquarters. After the program, they are expected to apply their knowledge and insights to their day-to-day work.

Conducting collective wedding ceremony for young employees

On September 25, 2024, China MCC 22 Group held a collective wedding ceremony for young employees under the theme "A Shared Celebration of Love" at the Caofeidian Wetland Leisure Sports Park. A total of 131 couples tied the knot in the presence of leaders, managers, family, and friends. This collective wedding was a vivid expression of the Company's care and concern for its employees and embodied its people-centered governance philosophy.

The labor union of headquarters hosts family day event

On June 1, 2024, the labor union at China Minmetals headquarters hosted a family day event in celebration of Children's Day, bringing together over 160 participants from 46 families. Featuring fun sports, handicrafts, and workshops on intangible cultural heritage, the event challenged children both intellectually and physically while strengthening their teamwork and communication skills. It also deepened family members' understanding of the Company, enhanced employees' sense of happiness and belonging, and further grounded the concept of "China Minmetals Family".

Hosting a sports event

Minmetals Securities, in collaboration with MCC South China Construction Investment Co., Ltd, China 19th Metallurgical Corporation Shenzhen Branch, Minmetals Futures Co., Ltd., and Kingland Group, successfully hosted a themed sports event titled "Ignite Power to Unearth a Bright Future". More than 500 employees and family members took part in the event, showcasing the spirit of striving for excellence and maintaining a positive and forward-looking attitude among the workforce.

6

Adopting a Responsibility-driven Approach to Promote Shared Success

China Minmetals has always regarded improving people's well-being as a key component of its development strategy. We work together with stakeholders to fulfill our social responsibilities—alleviating burdens for the Party, fulfilling responsibilities for the nation, and benefiting the people. We respect local customs, cultural practices, and religious beliefs in the regions where we operate, and are committed to improving living standards and contributing to the building of a community with a shared future for mankind.

Boosting Mutually Beneficial Cooperation

We engage in extensive collaboration and communication with stakeholders to provide customers with outstanding products and services. Dedicated to building a responsible supply chain, we strive to foster long-term and stable partnerships that promote shared benefits of industrial development.

Bettering customer service

Refined quality management

Focusing on "meeting customers' demands and improving effective supply", China Minmetals continues to improve its quality management. By providing high-quality products and services, we enhance the effectiveness of customer services and safeguard customers' rights and interests.

Thoughtful customer service

Guided by its own corporate policies, China Minmetals manages customer relations through its digital procurement and monitoring platforms to ensure information-based oversight and digital supervision. We have implemented a standardized registration-based process for customer onboarding and strengthened transaction management and performance evaluation.

As of 2024, the customer management module of the Company's supply chain platform had registered over

90,000 clients

Zhuzhou Smelter Group recognized with two quality management honors in the nonferrous metals industry

Drawing on addressing operational challenges, Zhuzhou Smelter Group has achieved substantial breakthroughs in energy conservation and product quality improvement. In August 2024, at the national evaluation conference for outstanding quality management team and trustworthy quality team in the non-ferrous metals industry, the "Bee" QC Team from the zinc roasting plant was awarded the title of Excellent (Special Grade) Quality Management Team for its outstanding QC achievements and was nominated as the National Outstanding Team by the China Association for Quality. Meanwhile, the Operations Team II from the power automation plant, focusing on cultivating a quality team through lean management and quality improvement, was recognized as the Trustworthy Quality Team in the Non-Ferrous Metals Industry and nominated as the National Trustworthy Quality Team.

Zhuzhou Smelter Group is recognized with two quality management honors in the nonferrous metals industry

Refining supply chain management

China Minmetals leverages its sound policies, intelligent and efficient platforms, and well-functioning mechanisms to establish a comprehensive supply chain management system. These efforts earned the Company the title of A-level enterprise in the "Benchmarking Evaluation 2024 for Procurement and Supply Chain Management of Central State-owned Enterprises" by the SASAC.

Tighter supplier management

We have promoted intelligent supplier access and approval processes and conducted comprehensive evaluations of suppliers' qualifications, credibility, social reputation, technical capabilities, and service competence from the start. We continue to refine our supplier evaluation metrics, optimize supplier resources with a dynamic evaluation mechanism that retains high-performing suppliers and phases out those that fall short.

100%
Supplier evaluation coverage in 2024

56,000
Suppliers under contract from the previous year covered

Green supply chain management

To enhance our supply chain management policies, we incorporate green and low-carbon principles into supply chain management, promote green supply chains and green procurement principles, and integrate environmental performance indicators into supplier evaluation process.

Green procurement

We prioritize green products, such as selecting energy-saving and environmentally sustainable materials in procurement. In engineering design tenders, we emphasize green design principles and encourage long-term collaboration with suppliers holding environmental certifications.

Green transportation

We promote "single-waybill" transportation trials, expand direct factory shipment operations, and encourage the use of new energy logistics vehicles to reduce mid-route energy consumption and carbon emissions. We aim to provide green transportation services to internal and external clients, thereby supporting sustainable development.

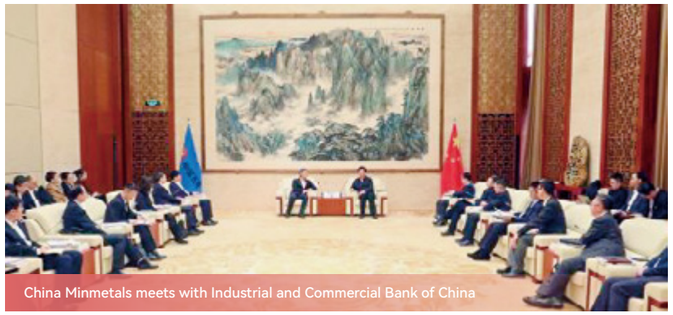
Procurement management and supervision

We have effectively reduced procurement risks by strengthening oversight of the closed-loop risk warning response mechanisms on the supply chain monitoring platform and conducting targeted supervision and inspections. Based on data from the supply chain monitoring platform, as of December 31, 2024, the number of risk alerts triggered during the year decreased by 10% year on year. We also continue to monitor and inspect suppliers in the database and have promoted more standardized supplier management by clearing and deactivating inactive vendors.

Promoting diversified cooperation

Government-enterprise cooperation

China Minmetals coordinates external strategic partnerships to expand its business development scope. The Company engages in in-depth exchanges with the people's governments of Beijing, Shanghai, Guangdong, Qinghai, Liaoning, Gansu, Chongqing, Hunan, and other provinces and cities to strengthen government-enterprise cooperation, broadening cooperative areas, elevating cooperation levels, and assisting in high-quality regional development.



China Minmetals meets with Industrial and Commercial Bank of China

Enterprise-enterprise cooperation

China Minmetals deepens exchanges with local enterprises to forge new cooperation models between SOE and local enterprises. The Company has actively pursued strategic discussions with numerous companies, including China National Nuclear Corporation, Industrial and Commercial Bank of China, China First Heavy Industries, Shanghai Pudong Development Bank Co., Ltd., China Reform Holdings Corporation, Jiangxi Copper Company Limited, and Xinjiang Nonferrous Metal Industry Co., thereby expanding its network of corporate alliances.

China Minmetals meets with China Reform Holdings Corporation

University-enterprise cooperation

China Minmetals collaborates with renowned universities, such as Tsinghua University, Central South University, and the University of Science and Technology Beijing, to explore the development of a sustainable academic ecosystem, creating a new model of university-enterprise cooperation.

International cooperation

China Minmetals continues to advance pragmatic collaboration with international companies such as Vale, KGHM, and BHP. By leveraging its full industrial chain strengths, the Company has explored mutually beneficial partnership models with global mining enterprises.

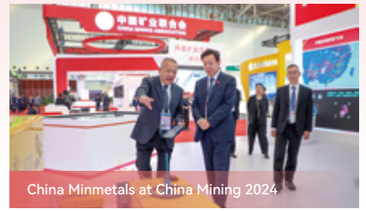
China Minmetals meets with the International Seabed Authority

Driving industry leadership

China Minmetals focuses on industry hotspots, actively participates in the work conferences arranged by central government, industry conferences, high-end forums and exihibitons, and involves in the drafting of multiple group, industry, and national standards, fully leveraging its leading position in the sector.

Participating in China Mining 2024 and related activities

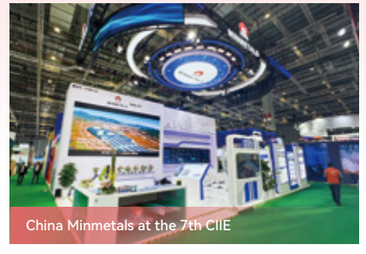
In October 2024, China Minmetals took part in the 26th China Mining Conference and Exhibition, where it highlighted its full industrial chain integration in metal mineral resources, showcased world-class cutting-edge products, and presented breakthroughs in critical core technologies. These innovations demonstrated the Company's leading role in technological innovation, industrial control, and safety assurance.



China Minmetals at China Mining 2024

Participating in the 7th CIIE

At the 7th China International Import Expo (CIIE), China Minmetals coordinated the participation of its subsidiaries and engaged in procurement and signing activities to strengthen global industrial cooperation. Longteng Yunchuang under Minmetals Development presented its full logistics service solutions in the Services Trade Zone. Utilizing digital technologies to enhance traditional business models and integrating Minmetals Development's complete resource network in the industrial and supply chains, this solution has formed a unified service ecosystem offering one-stop metal mineral circulation services for industry clients. It demonstrates the full logistics operation system and service capabilities of "Channel + Hub + Network" currently being built.



China Minmetals at the 7th CIIE

Participating in ANKIROS 2024 in Turkey

From September 19 to 21, 2024, MCC participated in the 16th International Iron-Steel, Foundry, Non-Ferrous Metallurgy Technologies, Machinery, and Products Trade Fair (ANKIROS 2024) in Turkey. MCC showcased significant achievements in tackling key core technologies, optimizing process research, and advancing green development and intelligent manufacturing. The event significantly enhanced China Minmetals' brand image and influence, contributing to the implementation of the Belt and Road Initiative. It also strengthened China Minmetals' international engagement, promoted localized overseas operations, and expanded the Company's presence in global markets.

MCC at ANKIROS 2024 in Turkey

Improving People's Livelihood

Creating livable community

China Minmetals is firmly committed to implementing the national policy of "housing is for living in, not for speculation". While strengthening and optimizing our real estate development business, we have leveraged urban space to innovate business models, expand into new areas, and enhance our integrated development and operational capabilities. These efforts support the strategic upgrade from a traditional real estate developer to a comprehensive urban operator.

Integrated industrial and urban development unlocks new growth potential in Beijing's core district

To address the challenges of limited space in old urban areas and the cultivation of emerging industries, Minmetals Land has pioneered a model of "Minmetals + Industry" for integrated industrial and urban development. In May 2024, Minmetals Land launched the "Sci-tech Innovation Golden Triangle" project in strategic partnership with Beijing's Dongcheng District. In December, the company officially signed its first sub-project, Minmetals Sci-tech Innovation Industry Complex, and established a sustainable development mechanism driven by "policy support + industry operations + Minmetals empowerment."

Leveraging China Minmetals' strengths in advanced materials and new energy sectors, the project adopts an industry-oriented approach to integrate platforms from academic institutions such as Southwest Jiaotong University, collaborative innovation hubs, and flagship incubators. Through a "three-platform, one-system" service structure, it enables efficient alignment between Minmetals Land and Dongcheng District's industrial funds to foster new quality productive forces.

Moving forward, Minmetals Sci-tech Innovation Industry Complex will work closely with other units of China Minmetals and integrate resources such as luminous glass and smart energy to upgrade 20,000 square meters of underutilized space. These efforts aim to establish a virtuous cycle of "industry–city–people" integration by promoting energy-efficient construction, reducing carbon emissions, cultivating talent through industry-university-research collaborative base, and enhancing jobs-housing balance.

Setting a benchmark for high-quality living

MCC Real Estate Group Co., Ltd.'s high-end residential project, Dexian Royal Mansion in Dongba at the East Ring Roads of Beijing, continues the Dexian product line. The project enhances resident satisfaction through centralized delivery events, upgraded services for residents, and community-building efforts, resulting in high customer loyalty and referrals. By introducing a "real-scene and ready-to-live-in homes" model, services such as pre-purchase home inspections and personalized viewing videos have been well received by prospective buyers.

Dexian Royal Mansion of MCC Real Estate Group Co., Ltd.

Delivery of the resettlement housing project in Tangjia Alley, Jiading District, Shanghai

In November 2024, Shanghai Baoye Group delivered the first batch of homes under the Baojiang Jiayuan resettlement housing project for land acquisition of Tangjia Alley M3-01A in Jiangqiao, Jiading District, Shanghai, with a total of 1,096 housing units were handed over to new residents. The project helps local households realize their long-held dream of moving into new homes and improving their living standards.

The resettlement housing project in Tangjia Alley, Jiading District, Shanghai

Successful delivery of Chengzhong Village redevelopment project

In November 2024, China MCC 22 Group completed the Ximachi resettlement area in Chengzhong villiage of Jingxiu and Lianchi Districts under Baoding's urban renewal project. With a total of 1,950 units were delivered, the project provides high-quality living conditions for over 2,000 relocated residents from Ximachi, marking a new chapter toward a better life.

Chengzhong Villiage redevelopment project (phase III, section IV) of Jingxiu and Lianchi Districts under Baoding's urban renewal project

Fulfilling corporate responsibility

China Minmetals continues to demonstrate the responsibility of a central SOE through active engagement in disaster relief and philanthropic efforts.

Emergency donation of CNY 10 million to support earthquake relief in Tibet

On January 8, 2025, an earthquake struck the Shigatse of Tibet. In response, China Minmetals swiftly donated CNY 10 million to support disaster relief and post-earthquake reconstruction. China MCC 22 Group promptly assembled a party-member emergency task force, procured urgently needed supplies, and dispatched dedicated personnel and vehicles overnight to deliver relief materials as quickly as possible. China MCC 5 Group urgently supplied 1,000 sets of foldable prefab housing and mobilized excavators, loaders, and other heavy equipment. The emergency rescue team was deployed to the resettlement sites in the affected areas, working around the clock to build safe and secure shelters for displaced residents at the fastest possible pace.

MCC5 deploys foldable modular housing units to support disaster relief efforts

Emergency donation of CNY 6 million to support landslide disaster relief in Zhenxiong County

On January 22, a landslide struck Liangshui Village, Tangfang Town, Zhenxiong County, Zhaotong City, Yunnan Province. The Party Group of China MCC 5 Group provided an emergency donation of CNY 6 million to Zhenxiong County to support its disaster relief and post-disaster reconstruction. The temporary deputy county chief dispatched to be stationed in Zhenxiong County rushed to the scene and participated in logistics support and rescue coordination as a member of the first-line rescue headquarters. The first secretary dispatched to be stationed in Jinzhong Community, Yile Town, Zhenxiong County also joined the rescue volunteer team. The Yile Hardware Industrial Park Project Department of MCC Tiangong Group Corporation Limited affiliated to China Minmetals dispatched 5 excavators, and the Yilian Eco-city Project Department of the 23rd Metallurgical Construction Group Co., Ltd. of China MCC 5 Group sent 10 volunteers to actively participate in the rescue efforts. At the same time, they purchased food, drinking water and other daily necessities to assist the affected areas at any time.

The 23rd Metallurgical Construction Group of Minmetals procures daily supplies for residents in the disaster area

Emergency donation of CNY 5.7 million for flood relief in Chenzhou, Hunan

In August 2024, Chenzhou, Hunan Province, was severely impacted by extreme rainfall caused by Typhoon Gaemi, leading to flash floods, landslides, and collapsed structures that caused extensive damage to infrastructure including roads, power grids, and communications. The Party Group of China MCC 5 Group promptly convened a special meeting on disaster response, mobilized resources, and rapidly deployed rescue efforts, donating over CNY 5.7 million to support local flood relief and post-disaster recovery.

Yaogangxian Mining swiftly assembled a rescue team to carry out flood relief and provide on-site support to affected villages. Multiple excavators were dispatched to Changhuo and Linquan villages in severely impacted Chukou Town to assist in emergency response operations. As one of the first rescue teams to arrive in the area, the team played a crucial role in reopening over 30 kilometers of damaged roads and dredging 15 kilometers of river channels, making every effort to restore transportation access and ensure smooth traffic flow.

Yaogangxian Mining urgently dredges damaged river channels

Driving Overseas Community Development

Following the principle of "extensive consultation, joint contribution, and shared benefits", we have deepened practical cooperation with partner countries in infrastructure, trade connectivity, and people-to-people connectivity. While promoting local economic and social development, we remain committed to improving people's livelihoods and contributing to the building of a community with a shared future for mankind.

Promoting cultural exchange

We fully respect the cultures and customs of partner countries and promote intercultural exchanges, allowing employees to experience the charm of local history, art, and traditions. Dedicated to fostering an inclusive and open working environment, we encourage collaboration and mutual understanding among employees of different nationalities, thereby enhancing team cohesion and employee well-being.

We actively organize and participate in local traditional festivals and cultural events, host lectures on local customs, and facilitate cross-cultural exchange activities. Employees and community members are invited to share their cultural traditions. Moreover, we foster deeper mutual respect and engagement between the Company and local communities and promote integration of people, cultures, and development, helping shape a positive corporate image.


Dragon Boat Festival wind chime-making activity by Las Bambas in Peru


Chinese New Year celebration by MMG employees in Peru

New Year celebration by Ramu NiCo employees in Papua New Guinea


Las Bambas supports traditional festivals in local communities


MCC SteelZinc organizes Eid al-Adha activities in Pakistan

Contributing to local community

By promoting community responsibility initiatives, China Minmetals works closely with local communities on projects involving infrastructure development, healthcare and education support, and agricultural training. These efforts aim to foster sustainable community development, improve local well-being, and support socio-economic growth in the regions where we operate.

About CNY 1 million raised at a cycling race hosted by the Khoemacau Mine

In November 2024, the Khoemacau Mine hosted the third Lake Ngami Cycling Race, raising BWP 2 million (approximately CNY 1 million) for the Ngami Community Junior Secondary School in Botswana. The funds will support the construction of a digital library and the upgrade of the school's water supply system to improve the learning environment and living conditions for both students and teachers.

Khoemacau raises CNY 1 million for a community school

The Ramu NiCo provides emergency relief to flood-affected villages in Papua New Guinea

On March 14, 2024, unprecedented flooding hit the area surrounding the Ramu NiCo project in Madang Province, Papua New Guinea. The mine was cut off, and nearby community suffered severe damage, affecting around 2,000 people.

The Ramu NiCo urgently leased three speedboats to rescue stranded residents, set up temporary shelters, and transported some victims to the company's old construction camps left from the development phase. The company delivered rice, drinking water, canned fish, and biscuits to 534 villagers from three affected villages, and distributed emergency supplies such as plastic sheeting and tents to those whose homes were destroyed. In addition, the company dispatched clinic doctors to conduct free medical consultations for more than 100 affected residents and supplied them with various free medicines.


Ramu NiCo delivers relief supplies and rescues stranded villagers

Carrying out free medical consultation services

On March 15, 2024, DRC Kinsevere Mine, together with the Lubumbashi branch of the Chinese medical aid team for the DRC, visited Kifita Community Primary School in Kipushi, DRC. They provided free medical consultations and health education, and donated school supplies and books, offering tangible medical support to the local community.


DRC Kinsevere Mine conducts free medical consultations

Outlook 2025

The world is undergoing profound changes unseen in a century, bringing both opportunities and challenges. Despite this backdrop, China's economy remains on a solid foundation, with multiple advantages, strong resilience, vast potential, and a long-term positive trajectory. The year 2025 marks the 75th anniversary of China Minmetals. It is also a crucial juncture for achieving the tasks and goals set out in the 14th Five-Year Plan and laying the groundwork for a good start to the 15th Five-Year Plan. While pressures intensify and difficulties converge, all stakeholders of China Minmetals will forge ahead with wisdom and resolve, writing a new chapter of bold progress and new heights.

No dream is too distant when pursued with resolve; no goal too hard when held with persistence. Guided by our ambition to become a world-class enterprise known for outstanding products, a remarkable brand, cutting-edge innovation, and modern governance, we will continue to fulfill our mission as a central SOE in sci-tech advancement, industrial control, and security support. China Minmetals will contribute to advancing sci-tech self-reliance and self-strengthening at higher levels, building a modern industrial system, and fostering new quality productive forces.

Appendix

Sustainability Performance

Economic performance	2021	2022	2023	2024
Operating income (CNY 100 million)	8,502	8,983	9,346	8,332
Total taxes (CNY 100 million)	248	254	232	226
R&D investment (CNY 100 million)	187	218	227	191
Number of new patents	8,477	9,598	7,203	7,844

Environmental performance	2021	2022	2023	2024
Year-on-year decline in energy consumption (%)	5.9	13	4.1	0.38
Year-on-year decline in COD emissions (%)	10	17.1	-6.6	10.2
Year-on-year decline in SO_2 emissions (%)	35	22.9	-4.5	13.5
Number of environmental training sessions	6,001	5,328	4,429	4,143
Number of environmental training participants	232,594	276,321	310,501	306,801

Social performance	2021	2022	2023	2024
Number of employees	193,965	174,336	170,779	166,811
Number of female employees	>30,000	36,000	35,863	35,363
Work safety investment (CNY 10,000)	902,585	1,106,627	1,185,300	1,175,700
Number of employee training participants	1,234,518	1,196,793	1,161,446	1,240,533
Proportion of contracts executed (%)	100	100	100	100

Assurance Statement

TÜVNORD

Assurance statement No.CN-202506-CSR-01

Assurance Statement of Sustainability Report

TÜV NORD (Hangzhou) Co., Ltd. (hereinafter "TNHZ") ,a subsidiary of TÜV NORD Group, has been commissioned by China Minmetals Corporation ("China Minmetals") to conduct an independent, third-party assurance of its 2024 Sustainability Report ("the Report").

China Minmetals is solely responsible for the identification, collection, analysis, aggregation and disclosure of all information presented in the Report. Hangzhou HanDe performed the assurance engagement within the scope defined in the contract with China Minmetals. China Minmetals is the intended user of this Assurance Statement.

This Assurance Statement is based on the 2024 Sustainability Report prepared by China Minmetals, which retains full responsibility for the completeness and accuracy of the information and data therein.

User of Assurance Statement

This assurance statement is provided to all interested parties of China Minmetals.

Assurance Scope

- Key sustainability performance data and related disclosures for calendar year 2024.
- Evaluation of the management processes used to collect, analyse and review the data and information reported.
- Financial data have been audited by a third party and are therefore excluded from the assurance scope.

The on-site assurance has been conducted from May 8th to May 9th, 2025.

Assurance Method

The assurance process includes the following activities:

- Review of documents provided by China Minmetals.
- Interviews with personnel responsible for sustainability-reporting data collection.
- Examination of publicly available information on websites and in the media, and sample-based verification of selected data and statements.
- Assessment of the Report against the principles of balance, comparability, accuracy, timeliness, clarity and reliability of the GRI Standards 2021.
- The validation activities are carried out in accordance with the requirements of TÜV NORD (Hangzhou) Co., Ltd. Report Assurance Implementation Rules (SC - P - A015 Rev.00).

Assurance Standard and Level

AA1000 AS (V3): Type 2, Moderate Assurance.

Assurance Conclusion

The 2024 Sustainability Report prepared by China Minmetals presents, in all material respects, an objective picture of the company's sustainability activities and performance during 2024. The data disclosed are reliable and objective; TÜV NORD (Hangzhou) Co., Ltd. has not found any systematic or material errors.

- **Balance:** The Report objectively discloses that 315 major accident hazards were identified across all levels of the enterprise in 2024.
- **Comparability:** A "Sustainability Performance Table" presents multi-year trends for taxes paid, new patents granted, year-on-year COD emission reductions, female employees, and other economic, environmental and social indicators.
- **Accuracy:** Sample testing indicates that the cases and data disclosed are substantially accurate and objective.

TÜVNORD

Assurance statement No.CN-202506-CSR-01

- **Timeliness:** The Report covers 2024 performance and is released in the 18th consecutive year of annual reporting.
- **Clarity:** Pictures, charts and explanatory notes enhance the readability and understanding of the information.
- **Reliability:** China Minmetals' CSR management team is responsible for collecting, recording, compiling and analysing the information used in the Report; sampled data were traceable, supporting the quality and substance of the information.

Suggestions for Improvement

Based on the assurance engagement, we offer the following suggestions to China Minmetals:

- Expand future disclosures to include sustainability performance of additional subsidiaries and overseas operations, enabling stakeholders to obtain a more comprehensive view.
- Enhance internal data-collection systems through digitalisation and apply big-data analytics and benchmarking across subsidiaries to strengthen CSR management.
- Broaden and deepen stakeholder-engagement channels, for example by deploying diversified and multi-channel mechanisms to collect stakeholder feedback.

Special Statement

Excluded in this assurance statement:

- Activities outside the scope of information disclosed in the Report.
- Statements regarding China Minmetals' positions, opinions, beliefs, objectives, future strategic direction or commitments.

Statement of Independence and Competence

TÜV NORD Group is a world-leading certification body with branches in more than 100 countries around the world. It provides inspection, testing and verification services, including management system and product certification; audits and training in the aspects of quality, environment, society and compliance; assurance of environmental, social responsibility and sustainability reports.

As one of the global branches of TÜV NORD Group, TÜV NORD(Hangzhou) Co.,Ltd. is independent, ensuring that there is no conflict of interest with China Minmetals' branches or stakeholders during the report assurance process. All the information in this report is provided by China Minmetals' and TÜV NORD(Hangzhou) Co.,Ltd. has not been involved in the report preparation process.

TÜV NORD (Hangzhou) Co., Ltd.

The authorized person: Mr. Wang Peng

Date: June 19th, 2025

Note: In case of conflict between the Chinese and English versions of this statement, please refer to the Chinese version.

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Feedback Sheet

Dear readers:

Thank you for reading the report. Any constructive suggestions to improve our CSR program and the quality of our sustainability reports are welcomed. Thank you for your support.

1. To China Minmetals, you are a/an:

☐customer ☐government agency ☐employee ☐supplier (in its broad sense, including contractor)

☐environmental protection organization/NGO ☐charity ☐media ☐the public ☐others

2. Your overall impression of the sustainability report:

☐Very good ☐Good ☐Fair ☐Poor ☐Very poor

3. What do you think of this report?

	Very good	Good	Fair	Poor	Very poor
Information quality	☐	☐	☐	☐	☐
Structure	☐	☐	☐	☐	☐
Layout and design	☐	☐	☐	☐	☐
Layout and design	☐	☐	☐	☐	☐

4. What are the most important issues to you?

5. If you have any comments or suggestions on our CSR program and sustainability report, please specify.