



中铝国际工程股份有限公司  
China Aluminum International Engineering Corporation Limited

Make Non-Ferrous Metals Greener  
Make the World Brighter

S&T + Internationalization



2024 Annual  
Environmental, Social and  
Governance Report



***STRIVE FOR INNOVATION  
AND STRENGTH***



**中铝国际工程股份有限公司**

China Aluminum International Engineering Corporation Limited

# Report Introduction

This report aims at responding to the expectations of stakeholders by demonstrating the ideas, management, actions, and achievements of the Company in the aspects of environmental, social and corporate governance, as well as sustainable development.

## Reporting Period

This report covers the period from January 1, 2024 to December 31, 2024. Some contents may appropriately trace historical data.

## Reporting Scope

Unless otherwise specified, this report covers the headquarters, branches, and subsidiaries of China Aluminum International Engineering Corporation Limited.

## Reporting Cycle

This is an annual report.

## Basis of Preparation

- Global Reporting Initiative *Sustainability Reporting Standards (GRI Standards)*
- *Guidelines on Corporate Social Responsibility Reporting for Chinese Enterprises (CASS-ESG 6.0)* of China Enterprise Reform and Development Society
- *Guidelines No. 14 of the Shanghai Stock Exchange (SSE) on the Application of Self-Regulation Rules for Listed Companies – Sustainability Report (Trial)* of the Shanghai Stock Exchange
- *Environmental, Social and Governance Reporting Code (ESG Code)* of the Stock Exchange of Hong Kong
- United Nations 2030 Sustainable Development Goals (SDGs)





**中铝国际工程股份有限公司**  
China Aluminum International Engineering Corporation Limited

## Data Sources

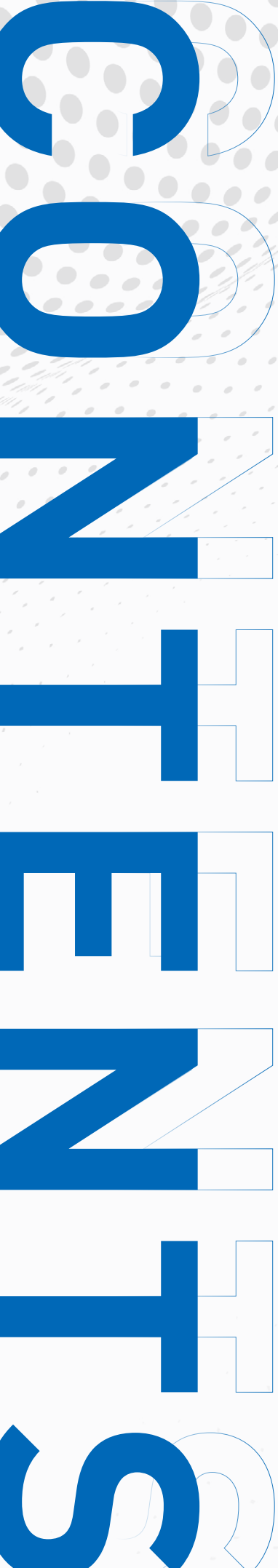
Unless otherwise specified, the information and data cited in this report come from the Company's official documents, statistical reports, and financial reports, as well as the environmental, social and corporate governance information that has been collected, aggregated, and audited by the Company.

## Terms and Description

For the convenience of indication and reading, "CHALIECO", "the Company" and "We" refer to the headquarters, branches, and subsidiaries of China Aluminum International Engineering Corporation Limited. Unless otherwise specified, "yuan" in terms of currency in this report represents "RMB yuan".

## Report Access

The versions in simplified Chinese, traditional Chinese and English are available to view and download at the official websites of CHALIECO, HKEX and SSE.



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# Message from the Chairman

The year 2024 was a pivotal year for realizing the objectives of the 14th Five-Year Plan, and also a critical phase for CHALIECO in its comprehensive reform efforts. CHALIECO, under the guidance of Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era, has always adhered to the development strategy of "S&T + Internationalization", focused on the "Ten Special Actions", and highlighted "implementation + effectiveness". As a result, we have achieved remarkable results in various tasks and continued the good trend of high-quality development.

**This year, we have enhanced the governance and consolidated the foundation of management.** We have continuously strengthened the construction of the Board of Directors and were recognized as an "Outstanding Practice Case of Board of Directors of Listed Companies" for three consecutive years. We have adhered to sound business principles, carried out corporate compliance management in an orderly manner, and established an efficient legal and compliance control system. We have also promoted the development of a unique comprehensive risk management system and operational mechanism, effectively identified risks, and formulated major risk control plans and countermeasures.

**This year, we have focused on innovation and opened a new chapter in development.** We have consistently reinforced the strategic planning of science and technology innovation, intensified collaborative efforts, and cultivated a strong team of scientific and technological professionals. By focusing on the development of green and low-carbon technologies for the nonferrous metals sector and fulfilling national strategic objectives, we have expedited progress in key R&D projects. In 2024, 27 new achievements were evaluated by industry associations, all of which reached or exceeded the international advanced level. Among them, 24 technological achievements, including the "Development of Horizontal Desulfurisation Technology for Ultrafine Droplet Electrolysis Flue Gas", reached the international leading level, representing a 60% increase compared to the total number of internationally leading technological achievements added last year.

**This year, we have protected the environment and advanced low-carbon development.** We have set our sights on building a green and low-carbon "New CHALIECO" of Chinalco, actively addressing climate change and enhancing green management. We have integrated green principles throughout the entire life cycle of construction projects. By focusing on the research and development of energy-saving and environmental protection technologies, we have accelerated the application and transformation of advanced scientific and technological achievements, such as green and low-carbon aluminum electrolysis, to reflect our commitment to the green development philosophy. We have also actively responded to global green development initiatives by vigorously promoting environmental protection concepts, advocating a new trend in green office practices, and conducting ecological protection activities. In 2024, the Company invested a total of RMB 31.7517 million in environmental protection to continuously gather green energy.



**This year, we have worked together with sincere dedication and united efforts to forge ahead.**

By adhering to the concept of open cooperation, we have established extensive cooperative relationships with enterprises, governments and universities. We have continued to strengthen industry exchanges, shared advanced technological experiences, and promoted the overall improvement of industry-wide technical standards. We were also committed to strengthening the construction of a responsible supply chain, enhancing supplier management, and establishing a supplier evaluation system to ensure the stability and reliability of our supply chain. In 2024, we reviewed 2,378 suppliers and conducted 71 sessions of social responsibility and ESG training for suppliers.

**This year, we have cared for our employees and fulfilled our people-oriented commitments.**

By adhering to the concept of "focusing on people-oriented philosophy and caring for all", we have safeguarded the basic rights and interests of our employees, implemented comprehensive compensation assessments and incentive reforms, and fully unleashed their vitality. We have promoted employee development by providing reliable safety and health protections and fostering a positive working environment. We have also enriched employees' lives and extended special care to vulnerable groups, including those in financial difficulty and female employees. In 2024, we allocated a total of RMB 288,500 to assist 207 employees in need.

**This year, we have contributed to society and worked together to build a better world.** We have firmly fulfilled the responsibilities and mission to contribute to rural revitalization and supported the revitalization and development of the helping areas; we have devoted ourselves to public welfare and charity activities, and actively participated in volunteer services to convey love and warmth to the society; we have integrated into the construction of the "Belt and Road", adhered to the strategy of "Going Global", and made concerted efforts with the local society to develop, share the happiness and gain the growth together. In 2024, we allocated RMB 91,000 to support rural revitalization and purchased goods worth RMB 3,311,500 through consumption-driven assistance initiatives. Additionally, our volunteers contributed a total of 5,802.6 hours of service throughout the year.

The year 2025 marks the concluding year of the 14th Five-Year Plan, and it is also a crucial year for CHALIECO to fully build itself into a world-class technology and service company, providing comprehensive solutions in nonferrous metals sector, including advanced technologies, integrated equipment and holistic services. CHALIECO will bravely shoulder the responsibilities of the era. With a sense of duty and action, we will continue to implement the "S&T + Internationalization" development strategy, striving to create a "new CHALIECO" characterized by superior asset quality, robust development capabilities, exceptional management, and a strong sense of employee well-being, thereby composing a triumphant anthem for the new era.





# ESG Governance Statement from the Board of Directors

The Board of Directors of CHALIECO undertakes to strictly comply with the disclosure requirements of *Guidelines No. 14 of the Shanghai Stock Exchange (SSE) on the Application of Self-Regulation Rules for Listed Companies – Sustainability Report (Trial)* of the Shanghai Stock Exchange, the *Environmental, Social and Governance Reporting Code (ESG Code)* of the Stock Exchange of Hong Kong Limited, and is responsible for formulating the ESG guidelines, policies and targets, reviewing the ESG risk assessment results, and supervising the ESG-related issues that may affect corporate business operations or concerned by stakeholders. Under the leadership and supervision of the Board of Directors of CHALIECO, all functional departments and member enterprises perform their own duties and cooperate with each other, and hold meetings in a regular manner to ensure that applicable ESG requirements and policies are followed.

In 2024, the Company refined its issue database, conducted a dual materiality analysis on key issues from both financial and impact perspectives, and clarified the key priorities for the year. In line with the *Administrative Measures of China Aluminum International Engineering Corporation Limited on Social Responsibility Work* and the *Social Responsibility Management Module and Negative List of China Aluminum International Engineering Corporation Limited*, all departments and units of CHALIECO strictly performed their duties. CHALIECO conducted a self-assessment on the completion of social responsibility indicators of each module in 2024, and made a written report to CHINALCO based on the assessment results. Units that had a major negative impact on the environment, safety, stability and other aspects were vetoed by one vote.

Looking ahead, the Board of Directors of CHALIECO will continue to improve its ESG governance, actively respond to the concerns of stakeholders, formulate corresponding action plans, and deliberate the progress towards relevant goals, striving to enhance ESG management.









# About Us

## Company Profile

Established on December 16, 2003, China Aluminum International Engineering Corporation Limited (CHALIECO) is an engineering technology strategic unit and a controlled subsidiary of Aluminum Corporation of China (Chinalco), as well as a leading technology, engineering service and equipment provider in the nonferrous metals industry in China. CHALIECO was listed on the Hong Kong Stock Exchange (stock code: 02068.HK) on July 6, 2012, and on the main board of the Shanghai Stock Exchange (stock code: 601068.SH) on August 31, 2018, becoming the first nonferrous engineering company listed on both Hong Kong and Shanghai stock exchanges. There were no major changes in the Company's organizational scale, ownership and supply chain this year. In line with the strategic development considerations of the Company, CHALIECO has implemented the integration reform and enhancement of CINF and CKY. CKY has transitioned from a wholly-owned subsidiary of CHALIECO to a wholly-owned subsidiary of CINF. The Company's wholly-owned subsidiaries, SAMI, CINF and KPDI, have conducted a capital increase through public listing at the Property Rights Trading Center. By expanding shares and introducing strategic investors, they have secured equity funds totaling RMB 2.29 billion.

CHALIECO, now with 10,853 employees, 5 national grade-A design and research institutes, 2 national grade-A survey institutes and 3 large integrated construction and installation companies, is a new high-tech enterprise integrating research and development, surveying and mapping, design consultation, engineering construction, equipment manufacturing, operation and maintenance services. The Company has a total of 350 qualifications, including Class A Engineering Design Integrated Qualification, Class A Integrated Survey Qualification and Special Class Qualification for General Contracting of Construction.

Since its establishment over two decades ago, CHALIECO has won over 1,000 science and technology awards at the provincial/ministerial level or above cumulatively, including 2 first prizes and over 20 second prizes of the State Scientific and Technological Progress Award. CHALIECO has taken the lead in formulating or participating in the formulation of more than 140 national and industrial standards and codes, and held more than 3,300 valid domestic and foreign patents, including 200 valid foreign patents, of which more than 40% are invention patents. CHALIECO has also set over more than 100 "China No.1" records among Chinese enterprises, and received more than 500 awards (e.g. Luban Prize for Construction Project and the National Quality Project Award), promoting the rapid development of the nonferrous industry in China. CHALIECO has been ranked, for successive years, among *Engineering News-Record (ENR)* Top 150 Global Design Firms, ENR Top 225 International Design Firms, ENR Top 250 International Contractors and ENR Top 250 Global Contractors.

**10,853**

employees

**5**

national grade-A design  
and research institutes

**2**

national grade-A survey  
institutes

**3**

large integrated  
construction and  
installation companies



**2**

first prizes of the State Scientific  
and Technological Progress Award



over **20**

second prizes of the State Scientific  
and Technological Progress Award



has taken the lead in formulating or  
participating in the formulation of  
more than

**140**

national and industrial standards and codes



held more than

**3,300**

valid domestic and foreign patents

CHALIECO specializes in nonferrous and preponderant industries and is committed to building itself into a world-class modern and new industrial service enterprise providing advanced technologies, package equipment and integrated service solutions in the nonferrous metal field. Leveraging its absolute advantages in technology, qualification, talent, and the whole industry chain, CHALIECO provides advanced technologies, package equipment and integrated service solutions for all kinds of businesses in the whole nonferrous metals industry chain.



# Corporate Culture



## Vision

To develop world-class integrated capabilities in nonferrous metal process technologies, engineering design and project construction, and become a world-class modern and new industrial service enterprise providing advanced technologies, package equipment and integrated service solutions in the nonferrous metal field.



## Strategy Planning

S&T + Internationalization



## Development Strategy

Implementing the "123+N" development strategy

"1": Focusing on one main business: specializing in nonferrous and preponderant industries.

"2": Expanding two major projects: existing invested technical transformation, operation and maintenance projects and increased new investment projects.

"3": Deeply developing three markets: the market within the Chinalco, the domestic market outside the Chinalco and the overseas market.

"N": Key realization path: taking technology as the core, and implementing a new form of "technology +" business model.



## Value Philosophy

### Core Values

Responsibility, integrity, openness, excellence

### Corporate Spirit

Strive for innovation and strength

### Cultural Atmosphere

Positiveness, honesty, simplicity, inclusiveness

### Business Philosophy

Value creation and return first

### Management philosophy

Grasping four "one" in business

One orientation, one basis, one key, one "hard constraint"

Implementing four "fine" in management

Fine operation, fine management, fine organization, fine implementation

Emphasizing four "-ization" in project management

Enterprization, marketization, specialization, legalization

### Project Concepts

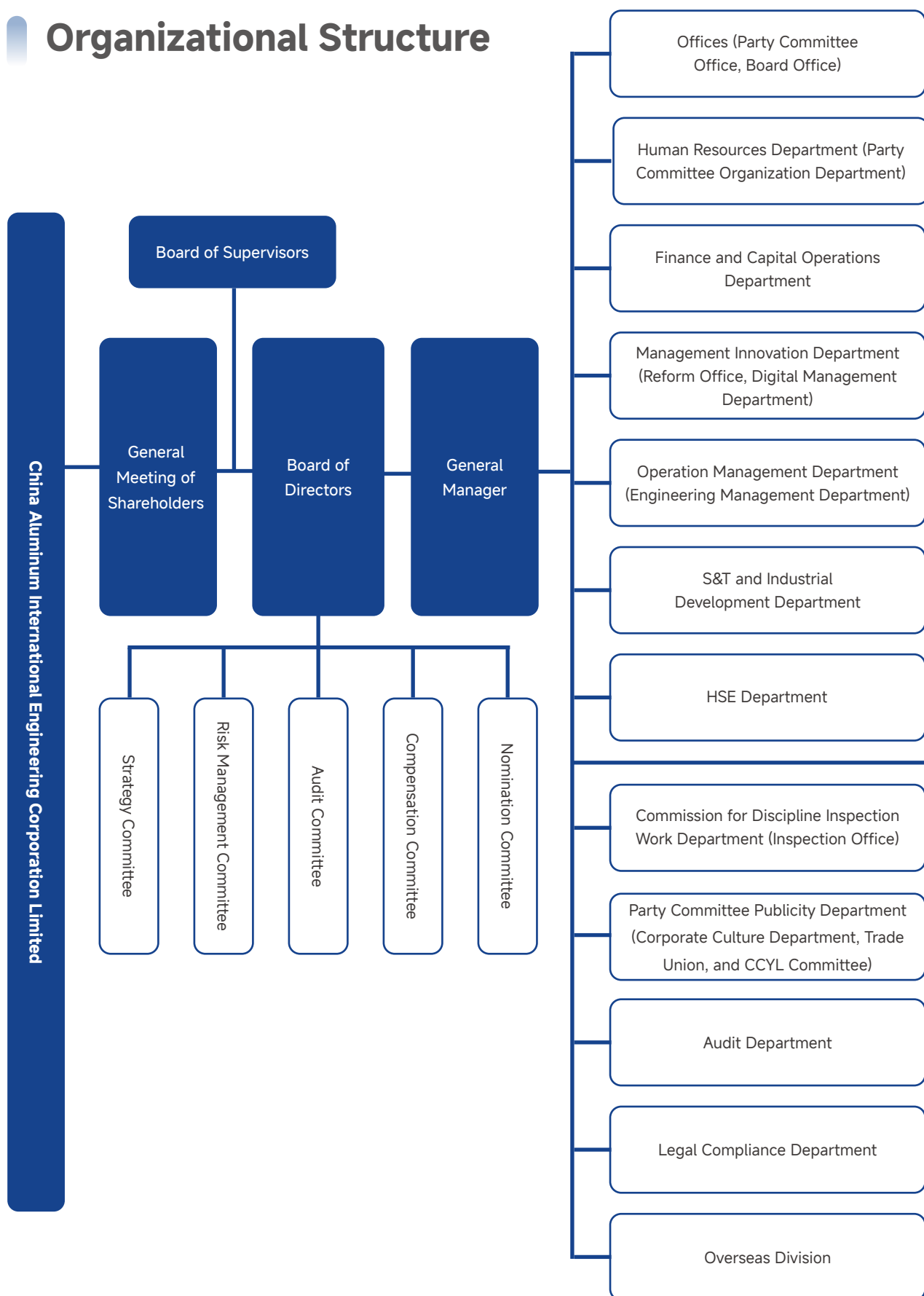
Develop a project, build a monument, make new friends, and get a wonderful memory

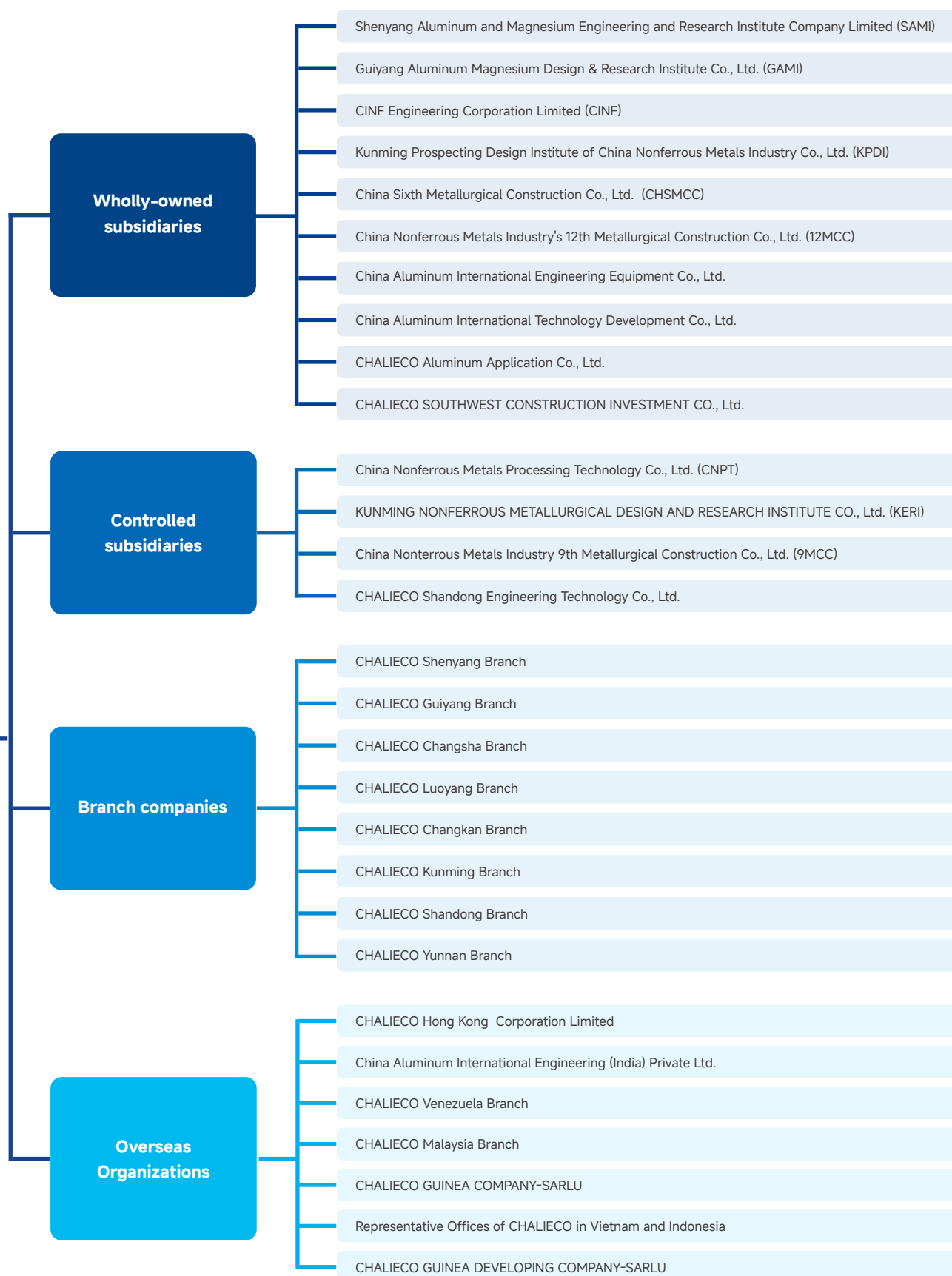
### View of social responsibility

Science and technology lead to the construction of a dream home



## Organizational Structure





# Sustainable Development Management

CHALIECO has continuously strengthened its management of sustainable development, deepened its awareness of social responsibility, and refined its sustainability management system. The Company has enhanced communication and engagement with stakeholders, effectively identified material issues, and driven comprehensive, coordinated, and sustainable development, thereby creating greater value for society.

## Sustainability Management System

CHALIECO has effectively integrated social responsibility management into the business management system, and established a leading group for social responsibility work, with chairman as the leader, the General Manager as the executive deputy leader, and other members of the management and competent personnel as deputy leaders. The leading group is responsible for reporting the progress of the social responsibility work of the Company to the higher level, and conveying the guiding and management opinions and suggestions of CHINALCO on social responsibility work, as well as conducting overall planning for the implementation of the Company's social responsibility work. The office of the leading group is responsible for the daily work of social responsibility.



Social Responsibility Organizational System of CHALIECO

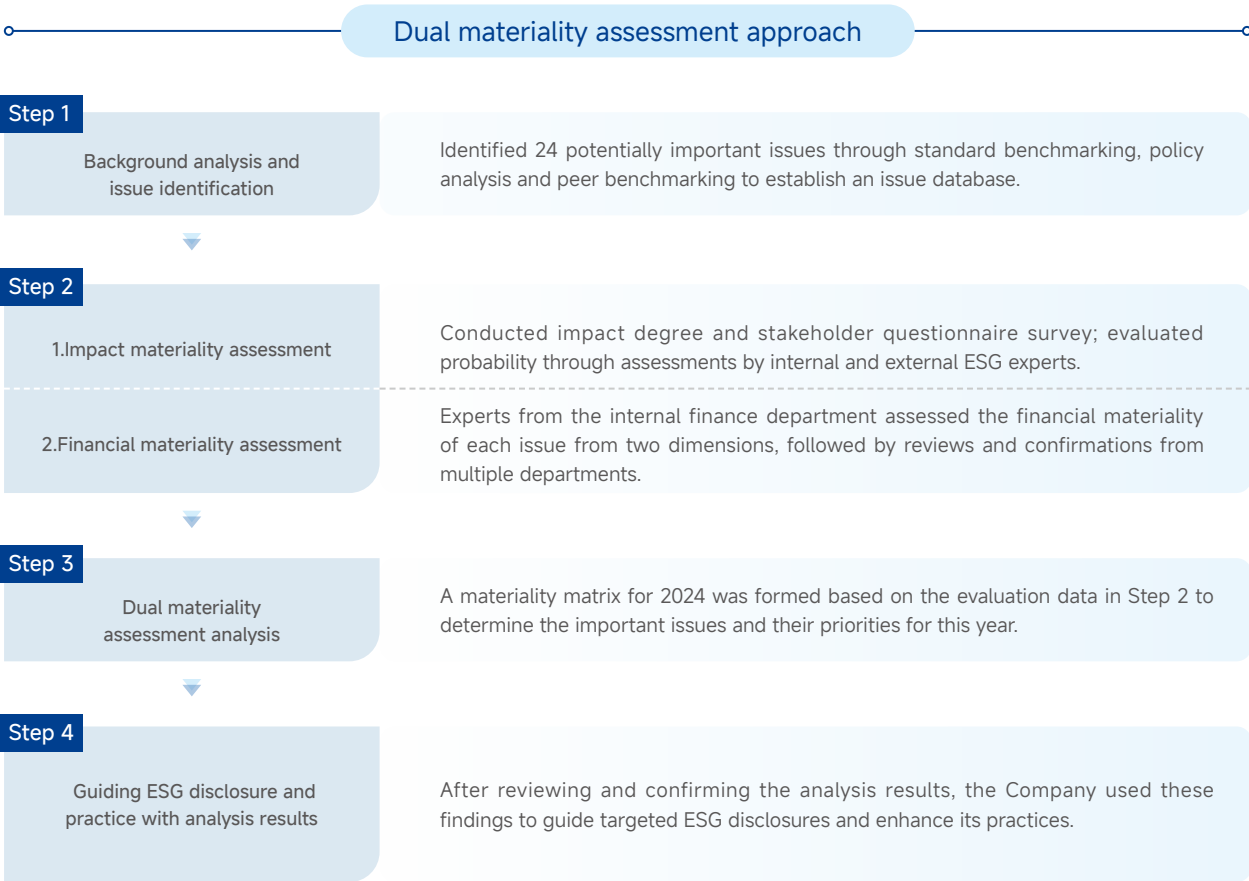


# Sustainable Development Actions

CHALIECO has fully implemented the "112" social responsibility indicator system of Chinalco. We have continued to enhance its performance across the "five modules" of corporate governance, employee rights and interests, environmental protection, fair operation, and community support. We have also deepened its management and practice of the social responsibility negative list, continuously strengthened information disclosure, and published social responsibility (ESG) reports for eight consecutive years, achieving a five-star excellence rating in the 2024 ESG assessment of central enterprise-controlled listed companies. With outstanding performance in environmental, social and governance (ESG) practices, CHALIECO has been listed on the "Pioneer 100 Index of ESG for Central Enterprises Listed Companies" for two consecutive years. We have also been honored with the "ESG Whale Award · Innovation Pioneer Award" and were also selected as one of the "Top 20 Enterprises in Corporate Governance Granted ESG Golden Bull Award in the Second National New Cup".

# Identification of Dual Materiality Issues

CHALIECO takes the identification, assessment and disclosure of materiality issues as the core work of ESG management, and conducts regular analysis every year to improve the sustainable development working system and mechanism process. In 2024, the Company adhered to the latest requirements of HKEX and SSE to conduct impact and financial materiality assessments. Building on previous assessments, CHALIECO integrated a financial perspective, gathered input from multiple departments and stakeholders, and thoroughly analyzed the effects of sustainability issues on the Company's financial, economic, environmental, and social aspects. This helped identify 24 ESG issues to focus on and address this year.



Materiality dimension	Ranking	Materiality issue	Category
Issues of both financial and impact materiality	1	Work safety	Society
	2	Safety and quality of products and services	Society
	3	Supply chain security	Society
	4	Innovation motivation	Society
	5	Circular economy	Environment
	6	Combating climate changes	Environment
	7	Employees	Society
	8	Energy use	Environment
Issues of financial materiality but of no impact materiality	1	Green construction	Environment
	2	Environmental compliance management	Environment
Issues of impact material but of no financial materiality	1	Overseas responsibility fulfillment	Society
	2	Pollutant emission	Environment
	3	Anti-commercial bribery and anti-corruption	Sustainable development-related governance
	4	Social contributions	Society
	5	Rural revitalization	Society
	6	Waste disposal	Environment
	7	Due diligence	Sustainable development-related governance
	8	Communication with Stakeholders	Sustainable development-related governance
	9	Ecosystem and biodiversity conservation	Environment
	10	Water resource use	Environment
Issues of neither financial materiality nor impact materiality <sup>1</sup>	1	Anti-unfair competition	Sustainable development-related governance
	2	Data security and customer privacy protection	Society
	3	Equal treatment of small- and medium-sized enterprises	Society
	4	Scientific and technological ethics	Society

<sup>1</sup> We follow the *Guidelines No. 14 of the Shanghai Stock Exchange (SSE) on the Application of Self-Regulation Rules for Listed Companies – Sustainability Report (Trial)* of the Shanghai Stock Exchange, and explain issues of neither financial materiality nor impact materiality in accordance with the provisions of Article VII of the Guidelines:

① The Company mainly engages in project contracting, with market competition characterized by standardized and transparent practices.

② In the Company's business scenarios, the volume of data processing is relatively low, primarily involving engineering technical documents and project management information, with no involvement in the collection of customers' privacy data.







③ At the end of 2024, the Company's accounts payable balance (including notes payable) did not exceed RMB 30 billion and accounted for no more than 50% of the total assets, not reaching the mandatory disclosure threshold.

④ The Company was not involved in research or technological development in ethically sensitive fields such as life sciences and artificial intelligence. As a result, there were no direct financial gains or losses arising from such activities in the Company's daily operations, nor were there any associated behaviors related to these fields.

## Communication with Stakeholders

CHALIECO has forwardly communicated with stakeholders and established efficient and convenient communication mechanisms and channels to actively listen to the opinions and suggestions of stakeholders. The issues raised by stakeholders have been handled in a timely manner, so as to further improve the transparency of corporate operations and enhance the corporate management and operations capabilities.

CHALIECO has actively maintained investor relations, and constantly innovated and expanded investor communication channels. In the form of general meeting of shareholders, regular announcements and others, we have responded to investor demands in a timely manner, promoting information transparency. In 2024, the Company strengthened information disclosure management in strict accordance with relevant systems, avoiding violations in information disclosure.

Stakeholders	Expectations and demands	Communication and feedback approaches
 Government and regulators	<ul style="list-style-type: none"> <li>• Implementing national policies, laws and regulations</li> <li>• Promoting local economic development</li> <li>• Boosting industrial development</li> </ul>	<ul style="list-style-type: none"> <li>• Paper reporting</li> <li>• Advice and suggestions</li> <li>• Special topic reporting</li> <li>• Discussion on cooperation</li> </ul>
 Shareholders	<ul style="list-style-type: none"> <li>• Returns and benefits</li> <li>• Compliance operations</li> <li>• Work safety</li> </ul>	<ul style="list-style-type: none"> <li>• Corporate bulletins</li> <li>• Special topic reporting</li> <li>• Field investigation</li> </ul>
 Employees	<ul style="list-style-type: none"> <li>• Protection of rights and interests</li> <li>• Occupational health</li> <li>• Compensation and benefits</li> <li>• Career development</li> </ul>	<ul style="list-style-type: none"> <li>• Employees' congress</li> <li>• Collective negotiation</li> <li>• Democratic communication platform</li> </ul>
 Suppliers and customers	<ul style="list-style-type: none"> <li>• Contract fulfillment according to the law</li> <li>• Integrity operations</li> <li>• High-quality products and services</li> </ul>	<ul style="list-style-type: none"> <li>• Business communication</li> <li>• Customer feedback</li> <li>• Exchanges and discussion</li> </ul>
 Environment	<ul style="list-style-type: none"> <li>• Combating climate changes</li> <li>• Compliance with pollutant discharge standards</li> <li>• Energy-saving and emission reduction</li> <li>• Ecological protection</li> </ul>	<ul style="list-style-type: none"> <li>• Work reporting</li> <li>• Statements reporting</li> <li>• Investigation and inspection</li> </ul>
 Community and the public	<ul style="list-style-type: none"> <li>• Improving community environment</li> <li>• Participating in public welfare activities</li> <li>• Disclosing information in an open and transparent manner</li> </ul>	<ul style="list-style-type: none"> <li>• Official website</li> <li>• Corporate bulletins</li> <li>• Interviews and exchanges</li> </ul>

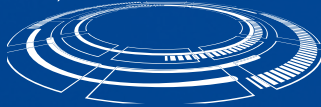


# ESG Figures of CHALIECO

## 01 Economic responsibility

Investments in R&D

96,103.15 (RMB 10,000)



Number of people receiving training on legal compliance

1,862 (person-time)



Legal review rate of important corporate business decisions

100 %



## 02 Social responsibility

Coverage of safety training

100 %



Number of hours for employee training

542,529 (hour)



Investment in supporting workers in need

28.85 (RMB 10,000)



Coverage of labor contracts

100 %



Number of newly recruited employees during the reporting period

127 (person)





## 03 Environmental responsibility

Investments in environmental protection

**3,175.17** (RMB 10,000)



Number of participants in environmental protection training

**14,854** (person-time)



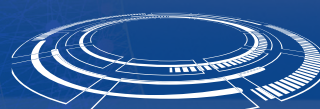
Amount of water saved

**68,131** (ton)



Energy consumption per RMB 10,000 output value

**0.0152** (tce/RMB 10,000 output value)



## CSR Topic

### Collaboratively Deepening Institutional Reform and Making Every Effort to Build a Community of Value Creation

Deepening institutional reform is a crucial step in promoting a more scientific institutional structure, more optimized functional allocation, more enhanced systems and mechanisms, and more efficient operations and management. Guided by the principle of "implementation + effectiveness", CHALIECO has comprehensively advanced in-depth reforms. Focusing on practical issues such as the company's organizational management model, we have deeply promoted market-oriented reforms of functional departments and institutions at both the headquarters and subsidiary levels. Centered around enhancing three key aspects, i.e., benefit, effect, and efficiency, these efforts aim to build a value-creation ecosystem with efficient resource integration and complementary strengths.

### Transformation and Empowerment of Headquarters to Reshape the Core of Value Creation

Focusing on existing management challenges, CHALIECO has advanced the market-oriented reform of functional departments and institutions at headquarters. These efforts have optimized the operational mechanisms, refined organizational structures and business processes, and enhanced management efficiency and synergy. We have also promoted flat management by integrating and restructuring functional departments, re-evaluating job values, and building support systems to achieve a "slim and fit" headquarters. Additionally, CHALIECO has implemented competitive hiring practices, streamlined personnel mobility, and introduced equity incentives and compensation performance reforms. These measures have fully unleashed employee vitality, successfully reshaped the headquarters as a core hub for value creation, and laid a solid foundation for the ongoing development of the Company.

#### Deepening the institutional reform of functional departments at the headquarters



#### Optimizing the management and control mode of the headquarters

- ▶ **Clarifying the headquarters orientation of the operating units:** In line with the reform requirements of CHINALCO, CHALIECO has leveraged the role of the asset operation layer, and focused on the operating chain; driven the transformation of the headquarters into an operation-oriented and value-creating entity; strengthened control and management construction, and reposition the headquarters' functions in strategic planning, transformation and upgrading.
- ▶ **Optimizing the operation mechanism of headquarters:** Guided by strategy and objectives, CHALIECO has strengthened the four major functions of business unit headquarters, optimized organizations, posts and processes, clarified control standards and strengthened supervision, improved management efficiency, and promoted collaborative benefit creation and service efficiency improvement.
- ▶ **Clarifying the boundaries of authority and responsibility between the headquarters and affiliated enterprises:** CHALIECO has redefined its management relationship with its subsidiaries. It exercises its rights as a shareholder, while the affiliated enterprises are subject to comprehensive control. Delegation of authority is precisely optimized based on actual needs.

### Promoting flat management

- ▶▶ **Integration and restructuring of functional departments:** CHALIECO has promoted flat management, broken down internal barriers to reshape functional management, clarified departmental responsibilities, optimized interfaces with affiliated enterprises, and enhanced synergy and work efficiency.
- ▶▶ **Re-evaluation of job value:** Following the reorganization of departmental structures, CHALIECO has implemented measures to "streamline personnel and simplify administration". We have combined relevant positions to cultivate multi-skilled talents capable of handling multiple roles within a single position. We have established a job value evaluation system to provide a basis for compensation adjustments and performance assessments.
- ▶▶ **Reconstruction of supporting systems:** CHALIECO has revised job administrative measures, redesigned the compensation assessment and incentive system, emphasized value creation, and established an effective assessment and incentive mechanism.

### Innovating talent selection and appointment mechanisms

- ▶▶ **Implementing a competitive employment mechanism:** All positions in the headquarters' functional departments are openly recruited through a competitive selection process. Two rounds of competition allow personnel from affiliated enterprises to be selected into the headquarters. This approach innovated the employment mechanism, promoted personnel exchanges, and established an employment philosophy focused on value creation.
- ▶▶ **Smoothing internal personnel flow:** CHALIECO has enhanced its internal communication mechanisms and established a human resources exchange and training center platform at the headquarters. This initiative promoted the transfer of personnel to under-staffed units, optimized the personnel structure, achieved better person-job matching, and improved the efficiency of human resource allocation.
- ▶▶ **Establishing a market-oriented employment mechanism:** CHALIECO has standardized management through labor contracts, prioritizing the transfer or training of underperforming employees first, and terminating the contract according to law if they were still not competent, the Human Resources Exchange and Training Center has been set up to invigorate employee performance by implementing measures such as demotions and the withdrawal of those who are still underperforming.
- ▶▶ **Strengthening employee capacity building:** CHALIECO has established a career development system for "four types" of talents and a comprehensive training framework. The Company has developed relevant measures and courses tailored for both its headquarters and affiliated enterprises to enhance market competitiveness and reinforce talent team building.

### Promoting the construction of incentive mechanism

- ▶▶ **Implementing medium- and long-term incentives:** CHALIECO has introduced equity-based incentives to establish a benefit-sharing and restraint mechanism among shareholders, the company, and employees and to build a partnership between employees and the enterprise, focusing on value creation and supporting the company's science and technology innovation as well as performance improvement.
- ▶▶ **Promoting the reform of compensation performance:** CHALIECO has established a job value evaluation system, determined compensations based on job positions, clarified the components of remuneration, classified and benchmarked salaries against market standards to set job-specific pay rates, and thereby stimulated employee vitality.



Reform projects	Before the reform	After the reform	Change (%)
Number of functional departments in the headquarters (including internal organizations)	16 (including 7 internal organizations)	14 (including 3 internal organizations)	Decrease by 12.5%
Number of management personnel in functional departments (including Overseas Divisions)	145 persons	135 persons	Decreased by 6.9%
Number of department-level positions in the Chinalco	37	26	Decreased by 29.73%



Increased by **17%**

Proportion of "post-1980s" individuals among the primary leaders of CHALIECO's headquarters departments and divisions



Increased by **8%**

Proportion of individuals with a master's degree or higher among the primary leaders of CHALIECO's headquarters departments and divisions

## Subsidiaries and Branches Work in Concert to Unlock the Potential for Business Growth

CHALIECO has focused on strengthening the coordination and cooperation between its headquarters and subsidiaries/branches. The headquarters accurately authorized and delegated powers according to the actual management capabilities of each subsidiary/branch by clearly defining the rights and responsibilities boundary with the subsidiary/branch, so as to fully mobilize the enthusiasm and creativity of the subsidiary/branch. We have actively promoted the contractual improvement and expansion of term systems in affiliated enterprises, reduced the number of functional departments and managers at all levels of affiliated enterprises, further optimized the management structure, and strived to build a new efficient operation and management organization.

In 2024, CHALIECO and its affiliated "science and technology reform enterprises" signed post contracts and performance responsibility statements with all non-management staff and management personnel. All affiliated enterprises at all levels have established systems for managers to compete for positions, make final adjustments, and exit if deemed incompetent.



## Case

## SAMI | Conducts Excellent Performance in Deepening Reforms

Since the implementation of the "science and technology reform action", SAMI has consistently advanced organizational reform and enhanced its organizational capabilities. Guided by the principles of "intensification, flattening, specialization and high quality", SAMI has strategically streamlined its operations. Taking into account factors such as business scale, operational characteristics and management scope, we have optimized and standardized the structure of its functional departments. Additionally, SAMI has vigorously promoted competitive selection among middle-level managers. The market-oriented employment system, centered on labor contract management and grounded in position and performance evaluation, has been progressively refined. This has facilitated smoother career progression for employees, including promotions, demotions, transfers and exits. As a result, the employment structure and compensation mechanisms have become more rational, leading to simpler and more efficient management. Compared to the previous year, the labor productivity of SAMI has increased by 12%.

Following the implementation of the reform measures, CHALIECO has established a headquarters structure for listed companies that is operationally-focused, with clear functional positioning, well-defined responsibility boundaries, efficient business processes and streamlined management organizations. Gradually, it has transitioned from the roles of managers and service providers to those of value creators, building a business unit headquarters oriented toward value creation and providing top-level support for the construction of a new business responsibility system. These efforts have promoted the modernization of the governance system and capacity, better aligning with the new requirements of the reform and development stage for state-owned enterprises. They also make CHALIECO more suited to driving its high-quality development and to meeting the new needs of its ambition to build a world-class modern and new industrial service enterprise providing advanced technologies, package equipment and integrated service solutions in the nonferrous metal field.





# Economic Responsibility

## Building a World-class Enterprise by Enhancing Governance

CHALIECO continuously refined its corporate governance framework, significantly enhancing the governance standards expected of a listed entity. By strengthening its capacity for lawful and regulatory-compliant enterprise management, CHALIECO has developed and improved its risk management systems. These measures have effectively heightened risk awareness and prevention capabilities, safeguarding the Company's journey toward building a "New CHALIECO".

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Environmental Responsibility  
Creating a Zero Carbon Future by  
Adhering to Green Development

Responsibility for Partners  
Achieving Win-Win Results by Gathering  
Strengths

Responsibility for Employees  
Achieving Talents Growth by Working  
Together

Responsibility for Community  
Striving for a Better Future by  
Contributing to Society





# Corporate Governance

CHALIECO has attached great importance to corporate governance, continuously strengthening the construction of the Board of Directors, strictly regulating information disclosure, and effectively protecting investors' rights and interests. We have also smoothed communication channels and actively responded to stakeholder concerns. CHALIECO has carried out in-depth reform actions to promote the improvement and standardized operation of governance in listed companies, stimulate corporate vitality and continuously enhance the modernization level of corporate governance.

## Construction of the Board of Directors

CHALIECO has conscientiously implemented the requirements of new regulatory regulations, continuously optimized and improved its board system, and formulated the work list for the Board of Directors in 2024, ensuring the standardized operation of the Board. We have also adopted a policy to diversify the membership of the Board of Directors and introduced independent directors through multiple channels. The boundaries of power and responsibility among all governance entities have been further clarified to continuously promote the efficient and coordinated operation of corporate governance. In 2024, the Company held 8 meetings of the Board of Directors and two general meetings of shareholders and was listed as "Outstanding Practice Case of Board of Directors of Listed Companies" for three consecutive years.



### Improving institutional systems

CHALIECO formulated and reversed the *Articles of Association of China Aluminum International Engineering Corporation Limited* (ZLGJFZ [2024] No. 4) and the *Management System for Proposals of the Board of Directors of China Aluminum International Engineering Corporation Limited* (ZLGJBZ [2024] No. 384), etc., and completed the "abolition and establishment" of the board system. There are 15 relevant systems and measures for the Board of Directors.



### Strengthening the role of independent directors

CHALIECO organized surveys of independent directors, invited them to attend important meetings as non-voting delegates, and promoted communication and coordination among the "General Meeting of Shareholders, Board of Directors, Board of Supervisors, and Management". The Company also provided comprehensive support services for independent directors to fulfill their duties through the Office of the Board of Directors. CHALIECO organized independent directors to participate in training sessions held by regulatory and self-regulatory organizations to enhance their performance. The Board of Directors consists of 9 members, including 3 independent directors with relevant experience in metallurgy, finance and law, respectively. These independent directors provide effective and feasible suggestions for the operations and development of the Company.



In November 2024, CHALIECO was successfully selected as one of the "Outstanding Practice Cases of the Board of Directors of Listed Companies in 2024" by the China Association for Public Companies



## Standardizing information disclosure



Improving the disclosure system



Providing valid information



Establishing an audit mechanism

CHALIECO has continuously refined its information disclosure system, and established and perfected relevant systems and processes. We have actively provided effective information and proactively disclosed the Company's operating conditions, major decisions, and other investor-oriented information. To ensure the quality of information disclosure, CHALIECO has implemented a rigorous dual internal and external audit mechanism, guaranteeing compliance and alignment with business realities. These efforts have significantly improved the Company's transparency and credibility, reinforcing trust among stakeholders.

CHALIECO has strengthened the top-level design of information disclosure, sorted out the disclosure standards and processes, and established a closed-loop management mechanism covering the entire chain from reporting, review, and decision-making to the external disclosure of major information. We have adopted a combination of internal and external training, organized the study of regulatory rules for information disclosure and the Company's internal control system, and enhanced the compliance awareness and capability of all employees in information disclosure.

CHALIECO has placed great emphasis on gathering opinions and suggestions from investors and analysts regarding information disclosure. We have actively addressed hot topics and proactively disclosed information that is useful for investment decisions. The Company has ensured synchronized information disclosure in both markets to mitigate the risk of non-compliant announcements. CHALIECO has established a coordination mechanism between its information disclosure and publicity departments, strictly reviews external announcements, and prevents the disclosure of sensitive stock price information through non-legal channels.

CHALIECO has established a dual internal and external audit mechanism. The Business Department ensured quality from an operational perspective, while legal teams both domestically and internationally reviewed announcements based on regulatory requirements. The information disclosure department reviewed from the standpoint of compliance for listed companies, thereby ensuring the quality of announcements.

## Protecting the rights and interests of investors

CHALIECO has actively engaged in investor relations management and established an investor exchange team. We have organized and conducted investor exchange activities and held regular performance briefings, with participation from key position holders such as the chairman, general manager, and independent directors. We have also promptly responded to investors' hotline calls, answered their questions, and continuously deepened investors' value recognition of the Company.

In 2024, the Company organized 13 investor exchange activities, responded to 20 investors' questions through the SSE E-interactive platform, and held three performance briefings for the annual, semi-annual, and third-quarter results.

## Continuously deepening reform

CHALIECO thoroughly implemented the "Special Campaign for In-depth Reform" and comprehensively carried out the construction of a large-scale marketing system and the reconstruction of the project management system. It strengthened the reform guarantee of the human resources system, comprehensively completed the reform of headquarters institutions, and further improved labor efficiency in affiliated enterprises. Focusing on key fields and enterprises, the Company completed the integration and upgrading reform of CINF and CKY. The Company also built a systematic organizational capability and comprehensively launched six management system reform projects. In 2024, the "Two 80%" goals were achieved by deepening and upgrading reforms. The Company's six science and technology reform enterprises further promoted science and technology innovation and market-oriented reforms, achieved "Three Excellences and Three Good Results" in the special assessment of science and technology reform by SASAC.

# Compliant Operation

Guided by Xi Jinping Thought on the Rule of Law, CHALIECO has thoroughly implemented the *Opinions on Further Deepening the Construction of Law-based Central Enterprises* issued by SASAC of the State Council and the arrangements made at the annual meeting on legal compliance work of Chinalco. Focusing on the "1+4+1+n" key tasks, the Company has comprehensively and deeply promoted the construction of the rule of law and compliance, and continuously improved its management level in accordance with laws and regulations. In 2024, there were 1,862 participants in the law-abiding and compliance training and 6,021 examinees, with a pass rate of 99.5%.

**"1"**

## Legal compliance management and control system

CHALIECO formulated and issued the *Optimization Plan for Legal Compliance Management and Control System of China Aluminum International Engineering Corporation Limited*, aiming to establish a two-tier legal compliance structure at both the headquarters and affiliated enterprises. The Company also developed a unified assessment and evaluation system, optimized its business teams, and focused on contracts and cases to achieve centralized and standardized management of legal compliance.

**"4"**

## Four special actions

- **Contract quality enhancement initiative:** We developed optimization plans and advanced the establishment of a dual-level contract management structure;
- **Comprehensive case management:** We reduced the number of cases, resolved major legal disputes, and recovered or avoided financial losses;
- **Undertaking compliance management enhancement:** We conducted 7 sessions of legal practice seminars, refining compliance system documentation, and establishing a dynamic inspection mechanism;
- **Institutional and process restructuring:** We fully reviewed and clarified the Company's rules and regulations, issued work guidelines, and organized 16 centralized system review meetings.

**"1"**

## Improving the level of digital rule of law

We established a legal affairs management module within its integrated business and finance system, activating seven major modules including a litigation blacklist and contract management. We have also fully supported the ERP special construction project, resulting in the formation of a standardized work manual.

**"n"**

## Adequate legal supports

We promoted the reduction of "two funds" and dealt with key and difficult projects; deepened legal risk demonstration and prevention for capital operation projects; strengthened legal compliance management in the whole process of key overseas projects.



In March 2024, CHALIECO Conducted Special Training Activities on Overseas Legal and Compliant Operation

# Risk Prevention and Control

CHALIECO has attached great importance to the various risks associated with its development. By continuously improving and optimizing its risk management and internal control systems, we have effectively enhanced its risk resilience, thereby providing strong support for its high-quality development of CHALIECO.

## Internal control management

CHALIECO has formulated and issued the annual internal control system construction and evaluation work plan for the Company. This plan involves a comprehensive update of internal control manual, covering corporate governance, development planning, and other aspects. It also includes business process-level elements such as human resources, compliance management, comprehensive risk management, financing activities, investment management, capital operations, engineering projects, sci-tech innovation and budget management. Additionally, the plan evaluates the effectiveness of the internal control system at the information system level, including digital projects and information management. To further strengthen internal controls, CHALIECO directed its affiliated enterprises to conduct self-assessments across five dimensions: internal environment, risk assessment, control activities, information and communication, and internal supervision. These efforts were part of the Company's ongoing commitment to enhancing its internal control framework and ensuring robust governance and risk management practices.

## Risk prevention and control

CHALIECO has always adhered to a prudent attitude and comprehensively controlled the drafting, review, signing and performance of contracts to effectively identify and resolve potential contract risks. We attached great importance to audit rectification work, established an Audit Department, built a centralized control audit system, and continuously improved corporate governance efficiency.

### Contract risk prevention and control

CHALIECO conducted regular contract reviews to comprehensively assess the risks associated with our existing contracts, and provided timely warnings through management recommendations, risk alert letters, and case-based explanations, and offered targeted solutions to address these risks. In 2024, the Company reviewed a total of 17,740 contracts at all levels.

### Strengthening audit management

CHALIECO formulated the *Implementation Plan for Audit Management Reform of China Aluminum International Engineering Corporation Limited*, set up a leading group for audit work of the Committee of China Aluminum International Engineering Corporation Limited, issued four systems including the *Administrative Measures for Internal Audit of China Aluminum International Engineering Corporation Limited*, put forward 58 opinions and suggestions throughout the year, and revealed problems with an amount of RMB 1.665 billion.



### Case

## CHALIECO Held the First Special Training on Legal Practice Risk Prevention and Control in 2024

On March 1, 2024, CHALIECO carried out the first "Special Training on Legal Practice Risk Prevention and Control" in 2024. Through the centralized learning method, it promoted management teams at all levels, safety management personnel, business personnel, project personnel and other key positions to enhance compliance awareness and risk awareness, improve risk prevention, control and disposal capabilities, and effectively escort the creation of "New CHALIECO".



CHALIECO Held the First Special Training on Legal Practice Risk Prevention and Control in 2024





## Responsibility for Customers

### Consolidating the Foundation of Development by Promoting Main Business

CHALIECO has deeply fulfilled its responsibilities for customers by adhering to the principle of prioritizing quality and focusing on benefits. We have continuously improved its quality management system and comprehensively enhanced the Company's project quality management level. The Company firmly safeguards the legitimate rights and interests of its customers, and through high-quality services throughout the project life cycle, we have improved customer satisfaction. Innovation was placed at the core of overall development, with continued increases in R&D investment intensity and a focus on enhancing science and technology innovation capabilities.

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# Quality Management

CHALIECO has always adhered to the development philosophy of "quality first". We have actively refined its quality management framework and established a comprehensive quality control system that covers the entire process. The Company precisely identified risks such as construction quality issues, deviations in production processes, and oversights in quality inspections, and formulated targeted, scientific, and effective measures in response. By strengthening quality management and enhancing customer service level, CHALIECO accelerated the application of new technologies and processes in quality management, created a number of high-quality projects, and solidified a robust foundation for sustainable development.

## (\*Issues of financial materiality: safety and quality of products and services)

### Governance

CHALIECO has rigorously implemented the "three-level management and control" model for project quality control, dividing responsibilities among the company, affiliated enterprise, and project department levels. Each level performs its designated project management functions with clearly defined scopes of authority and an efficient information reporting system. The quality management system covers the whole cycle of project construction and is empowered by BIM technology to realize informatization and fine management. Service standards and specifications must be clear and consistent. Upon project completion, warranty work organization, management, and responsibility allocation shall be strictly defined in accordance with the warranty contract or agreement signed with the Employer. At the same time, we have established and improved supervision procedures, cooperated with key projects to strengthen supervision, and relied on the model of "two systems" responsibility statement for strict assessment to continuously improve the quality of project operation.

### Strategy

CHALIECO formulated the *List of Project Performance Risk Management and Control*, conducted an in-depth analysis of engineering quality and service areas, identified potential impacts, risks and opportunities, and ranked them by priority after evaluation with professional methods. The Company established a normalized monitoring system, dynamically tracked the situation, formulated preventive measures and took timely disposal actions to ensure project quality and service level.

Risk	Risk description	Timeframe <sup>1</sup>	Impact degree <sup>2</sup>	Countermeasures
<b>Construction quality risk</b>	Insufficient material quality control or construction scheme defects in high-risk projects (such as complex geological projects) may lead to engineering accidents, safety liability disputes and project delays.	Short term	Prefecture-level	<ul style="list-style-type: none"> <li>Strengthen the review of construction drawings and on-site geological verification;</li> <li>Formulate special construction schemes and strictly demonstrate the approval process.</li> </ul>
<b>Quality inspection and testing</b>	The update of quality inspection and testing standards, aging of testing equipment and insufficient professional ability of testing personnel may lead to inaccurate test results of some items, affecting the acceptance and delivery of the Project.	Medium term	Provincial level	<ul style="list-style-type: none"> <li>Test and inspect various factors affecting quality according to the national standards and take corrective measures in time for differences;</li> <li>Build a quality management system, normalize and standardize operations, and create building products that meet the design requirements and construction acceptance specifications.</li> </ul>
<b>Technology application risk</b>	Insufficient technical stability or lagging employee training during the promotion of new technologies may affect engineering efficiency and quality.	Medium term	Group level	<ul style="list-style-type: none"> <li>Pilot the application of new technologies in stages;</li> <li>Carry out cross-departmental technical training and emergency plan drills.</li> </ul>

<sup>1</sup>Short-term means within 1 year after the end of the sustainability information reporting period, including 1 year; Medium-term means 1 to 5 years after the end of the sustainability information reporting period, including 5 years; Long-term means more than 5 years after the end of the sustainability information reporting period.

<sup>2</sup>Group level refers to having a significant impact on overall group operations; Provincial level refers to having a greater impact on regional or provincial business; Prefecture-level refers to having a certain impact on local business.

## Impact, risk and opportunity management

### Strengthening quality management

CHALIECO has attached great importance to quality management, and strictly adhered to the *Construction Law of the People's Republic of China* and other relevant national laws and regulations. The Company has formulated documents such as the *Administrative Measures for Quality of China Aluminum International Engineering Corporation Limited* and the *Implementation Opinions on Intrinsic Safety in Construction Projects of China Aluminum International Engineering Corporation Limited*, and has effectively advanced the construction of its project management system. CHALIECO has clearly defined its quality control plans, measures, and inspection schedules, and strictly controls quality at every stage from design to construction. It strives to create high-quality projects and set an example for industry quality management. In 2024, the QHSE management system of CHALIECO successfully passed re-certification.

### Quality risk prevention and control

CHALIECO has attached great importance to quality risks and has implemented special governance actions to effectively enhance the operational quality of its projects. We have deepened the project patrol supervision mechanism, strengthened the performance capabilities of key projects, and inspected 31 projects, completing problem rectifications throughout the year. The Company has also actively conducted employee training and assessment activities, fostering a positive atmosphere where all employees prioritize quality. We have taken multiple measures to ensure project construction quality and reduce quality risks.



In August 2024, CHALIECO held the 2024 Internal Auditor Training Course for Quality, Environment, and Occupational Health and Safety



## Building high-quality projects

Adhering to the spirit of ingenuity, CHALIECO spared no effort to build quality projects and insisted on polishing its brand with quality honor.

### CHALIECO's Achievements in 2024 Quality Brand Building



#### Prize of National Quality Engineering Award

- Boffa Bauxite Mine Project in Guinea (Overseas Project) undertaken by 12MCC Construction Company
- Aluminum Alloy Sheet and Strip Production Line Project for Automotive Lightweighting undertaken by 12MCC Housing Construction Company

#### Gold prizes of China Construction Engineering Steel Structure Award

- Waterway Regulation Project in Liyang Urban Section of Wushen Line Undertaken by Jiuye Construction
- Rapid Transformation Project of Zhuhong Road (North Second Ring-Ring Expressway) in Xi'an City Undertaken by Jiuye Construction
- The 100 kt/a New Energy Power Battery Anode Integrated Project of Hubei Sino New Materials Technology Co., Ltd. designed by SAMI

#### Nonferrous Metals Industry Quality Engineering Award

- Phase I Construction Works of Highly Refined Aluminum Plate and Strip Product Project of Inner Mongolia Xilingol Baiyinhua Coal and Electricity LLC, which was generally contracted by CHALIECO, designed by CHALIECO Shenyang Branch, and constructed by Shenyang Boyu, CHSMCC and Tianjin Construction
- The 1,200 kt/a Oxide Aluminum Pipeline Upgrade and Transformation Project of Guangxi Huayin Aluminum Co., Ltd. surveyed by CKY
- Gallium Recovery and Capacity Expansion Project of CHINALCO Guangxi Branch surveyed by CKY
- Phase I of 100 kt/a Low Sodium Microcrystal New Material Project of CHALIECO Shandong Engineering Technology Co., Ltd. designed by Shandong Engineering, and constructed by Shandong Engineering, CHALIECO Wancheng and South Engineering Construction
- The 2,000 kt/a Alumina Raw Ore Storage Yard Project of Guangxi Huasheng New Materials Co., Ltd. Surveyed by CKY and designed by CHALIECO Guiyang Branch
- The 100 kt/a Lithium-ion Battery Anode Material Project (Phase I) of Jereh New Energy Technology Co., Ltd. designed by GAMI
- Northwest Headquarters, R&D and Logistics Center Project of Deppon Logistics Co., Ltd. constructed by Jiuye Construction
- Jingdong Conghua Intelligent E-commerce Operation Center Project constructed by Jiuye Construction
- JD Asia No.1 Guangzhou Huadu Project Phase III constructed by Jiuye Construction
- Building 19#, Phase I of Hanzhong Dongguan Shantytown Renovation Project contracted and constructed by Jiuye Construction

#### Highest Quality Level Evaluation Award

- Expansion and Reconstruction Project of Wuling Mountain Avenue Scenic Section in Zhangjiajie surveyed by CKY
- General Construction Contracting of Interchange Project between Yongjiu Expressway and Zhongtai Expressway surveyed by CKY





Waterway Regulation Project in Liyang Urban Section of Wushen Line of Jiuye Construction



CHSMCC Shanxi North Copper Project



Beihai Green Ecological Aluminum Project of Guangxi Investment Group



Yunnan Aluminium Yangzonghai Tank Furnace Project

## Indicators and targets

- ★ The qualification rate for engineering design products was **100%**, and the excellent rate was more than **90%**;
- ★ The one-time acceptance rate of divisional and subdivisional works was more than **90%**;
- ★ **2** quality awards at or above the provincial and ministerial levels, **15** QC achievements at or above the provincial and ministerial level;
- ★ Both the participation rate and average score of the national enterprise employees' total quality management knowledge competition reached **90**. A replicable quality management model for enterprises was established, and the **5** stories about the quality of CHALIECO were publicized in media at the provincial, ministerial, and higher levels.
- ★ **Zero** Class A quality incidents.



## Customer Service

### Impact, risk and opportunity management

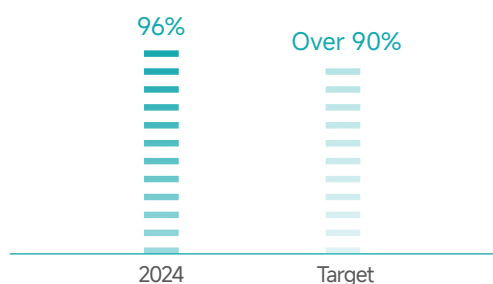
Focusing on optimizing customer services, CHALIECO has implemented marketing management systems, including the *Administrative Measures for Customer and Project Access Evaluation of CHALIECO Engineering Projects* and the *Administrative Measure of China Aluminum International Engineering Corporation Limited on Key Account Marketing*. The Company has established a customer maintenance mechanism and conducted regular visits and surveys. We also set up a customer complaint handling mechanism, designating specialized personnel to efficiently address customer complaints. This ensured customer privacy and security while fully protecting their legitimate rights and interests. Regular customer satisfaction surveys were conducted, and service processes were improved based on feedback.

### Indicators and targets

Complaint resolution rate



Customer satisfaction



## Science and Technology Innovation

CHALIECO has consistently implemented its "S&T + Internationalization" development strategic, actively improved its governance structure, and formed a two-level management mode of science and technology innovation. We have precisely identified risks related to technological change, R&D failure, and intellectual property protection, and has developed targeted strategies to address these challenges. By strengthening the headquarters' coordinating and management functions and deepening the "industry-university-research" collaboration, CHALIECO has accelerated the transformation of scientific research achievements and the digital and intelligent transition. These efforts have solidified a robust technological foundation to enhance core competitiveness and achieve sustainable development.

(\*Issues of financial materiality: innovation motivation)

### Governance

CHALIECO is committed to establishing a rigorous and efficient governance structure and comprehensive system, closely aligning with the "Four Special Strengths" objectives of the Chinalco. We have firmly implemented the "S&T + Internationalization" strategy, built a two-level management system, and established the Technology and Industrial Development Department to oversee the construction of the science and technology innovation system and R&D management. Leveraging the "planning + scheduling + implementation supervision + examination and evaluation" control system, CHALIECO has enhanced innovation capabilities. Through the "project + talent + platform + mechanism" R&D system, we have attracted and nurtured talent, improved incentive mechanisms, continuously stimulated innovation, and driven the steady progress of S&T innovation.



## Strategy

Risk	Risk description	Timeframe <sup>1</sup>	Impact degree <sup>2</sup>	Countermeasures
<b>Risk of technological change</b>	Rapidly evolving technologies may lead to obsolescence of existing core technologies, affecting the Company's market share and technology leadership.	Medium term	Group level	<ul style="list-style-type: none"> <li>Regularly analyze the development trend of industry technology and make arrangements for R&amp;D of emerging technologies in advance.</li> <li>Strengthen the risk management mechanism, regularly carry out risk assessment and internal control self-assessment, identify potential risks in a timely manner, and optimize internal processes to improve decision-making efficiency.</li> <li>Encourage internal innovation, and diligently implemented the <i>2024 Science and Technology Award Scheme of Aluminum Corporation of China</i> to encourage employees to propose new technologies and methods.</li> </ul>
<b>Risk of failures in R&amp;D</b>	The development of new products or the application of new technologies may encounter unforeseen technical obstacles, resulting in delays or failures in scientific research projects and affecting financial performance and market confidence.	Long term	Prefecture-level	<ul style="list-style-type: none"> <li>Diversified investment in science and technology: Gradually increase the research and development of emerging industries such as new energy and diversify their portfolios in addition to the research and development of traditional industrial technologies.</li> <li>Reasonably arrange R&amp;D resources to avoid excessive concentration on high-risk projects and spreading risks.</li> </ul>
<b>Risk of intellectual property protection</b>	In the face of global competition, protecting the intellectual property rights of innovations is challenging, as plagiarism or imitation can erode competitive advantage.	Short term	Group level	<ul style="list-style-type: none"> <li>Deepen industry-university-research cooperation, strengthen cooperative relations with universities and scientific research institutes, and jointly carry out forward-looking research projects.</li> <li>Strengthen intellectual property management and improve the intellectual property protection system.</li> </ul>

<sup>1</sup>Short-term means within 1 year after the end of the sustainability information reporting period, including 1 year; Medium-term means 1 to 5 years after the end of the sustainability information reporting period, including 5 years; Long-term means more than 5 years after the end of the sustainability information reporting period.

<sup>2</sup>Group level refers to having a significant impact on overall group operations; Provincial level refers to having a greater impact on regional or provincial business; Prefecture-level refers to having a certain impact on local business.

Opportunity	Opportunity description	Timeframe <sup>1</sup>	Impact degree <sup>2</sup>	Countermeasures
Policy support	Government support policies can reduce R&D costs and accelerate the transformation and application of scientific and technological achievements.	Short term	Prefecture-level	<ul style="list-style-type: none"> <li>Actively seek policy support and strive for more fiscal subsidies and tax relief.</li> </ul>
Market demand growth	The increasing demand for green and low-carbon, energy saving and consumption reduction, and intelligent manufacturing opens the possibility for companies to capture new market opportunities.	Medium term	Provincial level	<ul style="list-style-type: none"> <li>Strengthen market research, deeply understand the market demand and customer pain points, and develop products and services in a targeted manner.</li> <li>Optimize product marketing strategies, strengthen brand building and increase the market share of products.</li> </ul>
International cooperation	Strengthen cooperation with domestic and foreign scientific research institutions to promote cross-disciplinary technological innovation is conducive to expanding the international market.	Long term	Group level	<ul style="list-style-type: none"> <li>Expand overseas markets, actively engaged in international technical exchanges and cooperation, participated in bidding for international engineering projects, and expanded the overseas market share.</li> </ul>

## Impact, risk and opportunity management

### Science and technology innovation management

CHALIECO has formulated and issued several key regulatory documents to enhance its scientific and technological innovation capabilities, including the *Administrative Measures for Science and Technology Innovation of China Aluminum International Engineering Corporation Limited*, the *Administrative Measures for Scientific and Technological Research and Development Projects of China Aluminum International Engineering Corporation Limited* and the *Detailed Rules for the Implementation of Scientific and Technological Achievements Management of China Aluminum International Engineering Corporation Limited*. These measures are designed to strengthen the headquarters' overall management function in science and technology innovation and to provide robust guidance and supervision to its affiliated enterprises, so as to improve the Company's overall science and technology innovation ability and core competitiveness.



Building science and technology innovation system

The Company has formulated and issued the *14th Five-Year Plan for Science and Technology Development of CHALIECO (Adjusted Edition)* and other related documents, and established a planning system that integrated the science and technology development plan, R&D investment plan and achievement promotion plan. In alignment with the Company's annual production and operation white paper, CHALIECO has systematically organized its annual scientific and technological work. To ensure the successful completion of these tasks, we have formulated the *Action Plan for 2024 Science and Technology Innovation Breakthroughs of CHALIECO (and Key Points of Science and Technology Innovation Work in 2024)*.



Strengthening scientific research project management

CHALIECO has implemented coordinated scheduling for major projects, and held the monthly routine meeting for science and technology work and the scheduling meeting for key projects. We have put in place a mechanism for tackling key challenges to ensure the implementation of national major tasks according to plan. The Company has established a record-keeping system for key research projects, compiled monthly reports on technological innovation, and issued monthly updates. We have set up an early morning adjustment meeting mechanism to promptly address anomalies and support the smooth progress of research projects.

<sup>1</sup>Short-term means within 1 year after the end of the sustainability information reporting period, including 1 year; Medium-term means 1 to 5 years after the end of the sustainability information reporting period, including 5 years; Long-term means more than 5 years after the end of the sustainability information reporting period.

<sup>2</sup>Group level refers to having a significant impact on overall group operations; Provincial level refers to having a greater impact on regional or provincial business; Prefecture-level refers to having a certain impact on local business.



In April, CHALIECO held the 2024 Technology and Digitalization Conference

## Innovative talent cultivation

CHALIECO has attached great importance to the cultivation of innovative talents. Has listened to the opinions and suggestions of front-line scientific and technological talents through talent symposiums and in-depth grassroots investigations. The Company has formulated a work plan to build its core scientific research team of CHALIECO, made every effort to build a high-level scientific and technological talent team, promoted the construction of expert think tanks, established an expert committee, and selected 110 experts into the Chinalco's internal expert database. We have also vigorously cultivated leading talents, with 7 elected as the Chinalco's strategic leading talents, 4 as survey and design masters in the non-ferrous metal industry, 59 selected as scientific and technological leading talents and young scientific and technological talents of the Chinalco, and completed the evaluation and appointment of first-class engineers of the Company.

## "Industry-university-research" collaboration

CHALIECO has vigorously promoted the "industry-university-research" collaboration, comprehensively strengthened platform construction, established a normalized docking mechanism with business units within the Chinalco, and promoted collaborative development among various business units within the Chinalco. The Company has strengthened exchanges and cooperation with industry associations and scientific research institutes, organized and hosted a number of large-scale industry forums, and effectively promoted the "industry-university-research" deep integration.

### Deepen internal collaboration of the Group

The Company held specialized technical exchange meetings with CHALCO, China Copper and China Aluminum Group High End Manufacturing, and established comprehensive and multi-level collaborative partnerships. It also engaged in strategic cooperation with Chalco Assets and Chalco Capital, creating new mechanisms for collaborative development. Additionally, the company jointly tackled key challenges with CHALCO, China Aluminum Group High End Manufacturing and CHINALCO Intelligent, achieving significant results in technical cooperation. CHALIECO has issued and implemented the 2024 Technology Achievement Promotion Plan, provided advanced technology and services to target groups, including entities within the Chinalco and downstream customers.

### Deepening industry academic exchanges

CHALIECO strengthened its collaboration with the China Nonferrous Metals Industry Association and other industry associations, while also establishing regular partnerships with leading universities such as Central South University, Northeast University, and Beijing University of Science and Technology. The Company jointly carried out over 10 scientific research projects with these institutions, supported by a total funding of RMB Over 20 million in 2024.

## Scientific research platforms

1

National Engineering Research Center for Aluminum and Magnesium Electrolysis Equipment

1

National Local Joint Engineering Research Center for Energy-saving and Environmental Protection Technology in Aluminum Industry

7

National Enterprise Technology Centers

1

National Industrial Design Center

4

National Enterprise Postdoctoral Research Stations

3

National Intellectual Property Demonstration Enterprises

1

National Technology Innovation Demonstration Enterprise

2

National Specialized and Sophisticated Small Giant Enterprises

## Research and development of core technologies

Guided by the "14th Five-Year Plan" for scientific and technological development, CHALIECO has dedicated significant efforts to addressing core technological challenges. The Company has prioritized green and low-carbon initiatives in the nonferrous metals sector, as well as major national tasks, undertook 7 national key tasks, 8 major tasks of the Chinalco and implemented 125 key projects of business units throughout the year. Focusing on critical sectors such as mineral resources development, deep energy conservation in aluminum electrolysis, and green carbon reduction in alumina production, CHALIECO is accelerating its scientific and technological research processes.

In 2024, 27 new achievements were evaluated by industry associations, all of which reached or exceeded the international leading level. Among them, 24 technological achievements, including the "Development of Horizontal Desulfurisation Technology for Ultrafine Droplet Electrolysis Flue Gas", reached the international leading level; 2 achievements were successfully selected as green low-carbon advanced applicable technologies in the nonferrous metal industry, and the Company secured 40 new science and technology awards at or above the provincial and ministerial levels.

 2024

27

new achievements were evaluated by industry associations

24

technological achievements reached the international leading level

2

achievements were successfully selected as green low-carbon advanced applicable technologies in the nonferrous metal industry

40

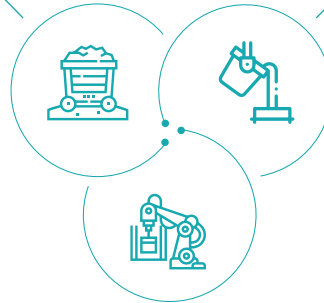
new science and technology awards at or above the provincial and ministerial levels



## CHALIECO Made Every Effort to Overcome Core Technological Challenges and Break Through Technical Barriers

### Mineral resources

CHALIECO completed the prototype development of deep-earth resource exploration equipment; made breakthroughs in addressing high-stress support challenges for ultra-deep wells, and established a comprehensive technical system for supporting 1,500-meter ultra-deep wells through high-stress sinking and drifting engineering. The Company has developed a technical methodology for advanced water exploration in mines and a multi-stage rock burst prevention and control system. The Company has completed the optimization of blasting hole pattern parameters and bench height for an open-pit mine at high altitude.



### Green and low-carbon metallurgy

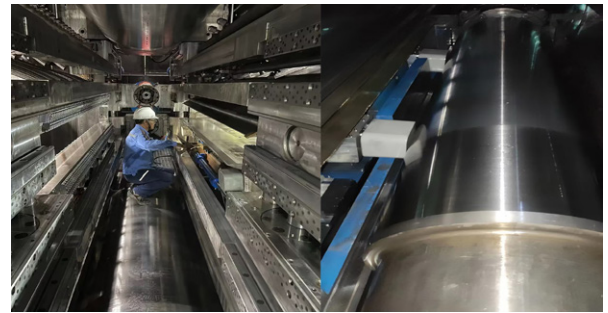
Completed the first phase of the green and energy-saving technology for aluminum electrolysis, with ongoing optimization of performance indicators.. Over half of the test cells have achieved a DC power consumption of less than 12,000 kWh per ton of aluminum during normal operation. Meanwhile, the alumina green roasting project has successfully addressed the technical feasibility of hydrogen combustion and overcome the challenge of electrode "arcing". The application of ultra-fine droplet desulfurisation technology has been accelerated.

### High-end equipment R&D

The Company has achieved the domestic first application of a 120-ton multi-chamber furnace for recycled aluminum, breaking the foreign technological monopoly. We have also completed the compilation of the industry standard *Code for Process Design of Recycled Aluminum Plant* and passed expert review. The 800mm six-high copper foil rolling mill has achieved breakthroughs in key technologies, including thickness and flatness control for ultra-thin and wide copper foil rolling. Equipped with complete independent intellectual property rights, the rolling mill has been recognized as a major technological equipment achievement in Henan Province for 2024, with its overall performance reaching international advanced levels.



GAMI's "Research and Application of Key Technologies for Alumina Quality Improvement and Consumption Reduction in Gibbsite Production" Reached the International Leading Level



An Achievement of CNPT, a subsidiary of CHALIECO, Wins the China Quality Technical Award of China Association for Quality



"Precise Regulation and Intelligent Automation System for Efficient Conversion of Nonferrous Metallurgy" by CINP won the Second Prize of the National Science and Technology Progress Award



"Key Technologies and Applications of Energy Saving and Carbon Reduction in Large High-resistance Graphitization Furnace for Lithium-ion Battery Anode Materials" by SAMI won the First Prize of Science and Technology Award of China Nonferrous Metals Industry Association

## Digital Transformation

CHALIECO has actively promoted digital transformation and artificial intelligence application. In alignment with Chinalco's overall strategy of "Digital and Intelligent New Chinalco", CHALIECO has established a "1+3+1+6" development framework for digital transformation and artificial intelligence implementation. This framework aims to build 1 operation and management platform, 3 professional production platforms (collaborative design platform, digital delivery platform, smart site platform), continue to promote 1 special work of artificial intelligence, and strive to create digital intelligent products or solutions in 6 fields including survey, mining, heavy nonferrous metals, alumina, electrolytic aluminum and processing. In 2024, leveraging its technological achievements, the Company promoted a range of intelligent products and services, including a digital electrolytic cell control system, an online anode current distribution detection system, an intelligent monitoring and early warning system for tailings ponds, and a carbon dioxide-based smart fire suppression system for aluminum processing, significantly contributing to project signings both within and outside the Chinalco. In 2024, the amount of newly signed contracts related to digital intelligence exceeded RMB 420 million, including more than RMB 240 million within the Chinalco.

2024

the amount of newly signed contracts  
related to digital intelligence exceeded RMB

**420** million

including more than RMB

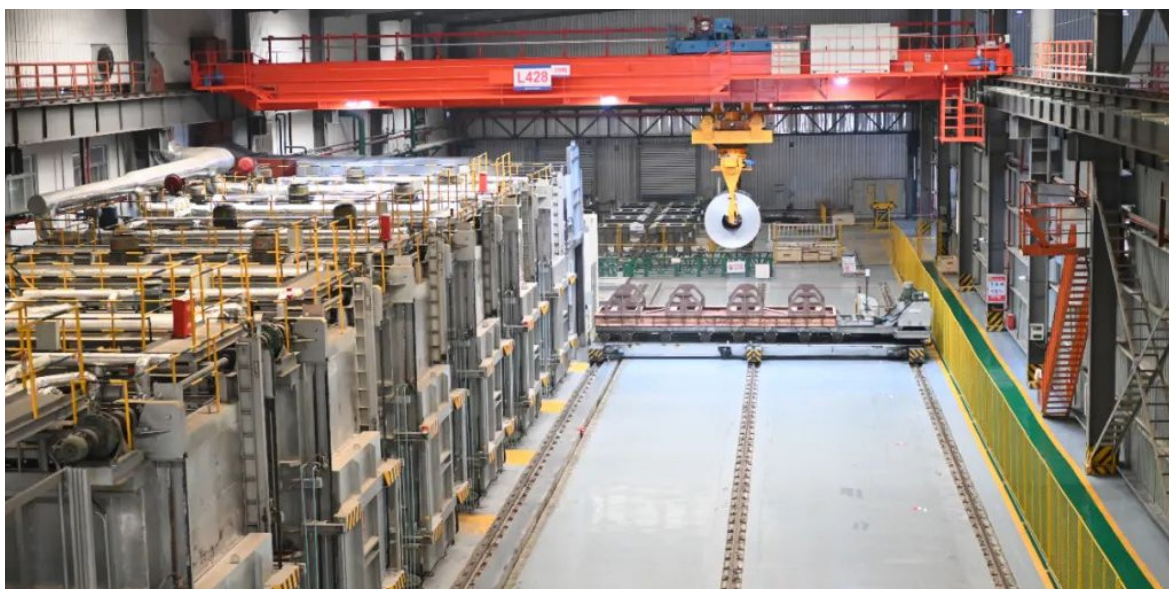
**240** million within the Chinalco



### Case

#### CNPT | Deepening the Development of Digitalization and Intelligence, Promoting the Construction of "New CHALIECO" with "Dark Light Factory"

In January 2024, leveraging the "1+3+1" digital intelligent factory framework for nonferrous metal processing, CNPT fully utilized its industrial internet integration capabilities to assist CHINALCO Ruimin in establishing China's first "dark light factory" for aluminum plate and strip processing. This initiative focused on enhancing production efficiency, optimizing product quality, improving equipment operation reliability, reducing energy consumption, and strengthening workplace safety. It achieved fully automated and unmanned production in the heat treatment workshop, thereby facilitating the digital transformation of non-ferrous metal processing enterprises and empowering the industry with new growth momentum.



"Black Light Factory" Project for Heat Treatment Process of CHINALCO Ruimin



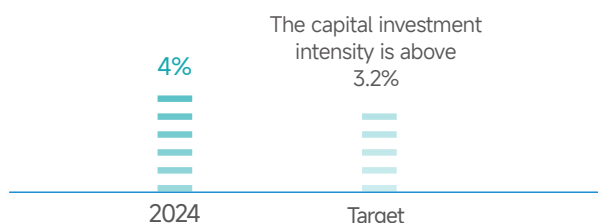
The Shandong Engineering Information Technology Center has developed intelligent material metering systems for entities under the four major business units of Chinaalco, and "intelligently protected" the material metering safety of more than 60 enterprises

## Intellectual property protection

CHALIECO strengthened the protection of intellectual property rights, organized affiliated enterprises at all levels to investigate the authorized franchise operations and formed a comprehensive report. The Company has also updated and maintained its registered trademarks, ensuring that all affiliated enterprises promptly apply for, file, and renew trademarks as needed. Additionally, CHALIECO has systematically analyzed overseas registered trademarks, business development strategies, and market plans, consolidating essential data for informed decision-making. The Company has conducted investigations and compiled statistics on the use of Chinaalco's registered trademarks while establishing a normalized infringement monitoring mechanism.

## Indicators and targets

Investment intensity of R&D funds



Number of R&D employees







## Environmental Responsibility

### Creating a Zero-Carbon Future by Adhering to Green Development

Adhering to the concept of "Lucid waters and lush mountains are invaluable assets", CHALIECO has deeply implemented the "carbon peaking and carbon neutrality" initiatives, firmly committed to green transformation, continuously enhanced green operations, and fully safeguarded natural ecosystems. By supporting high-quality development through high-level green energy construction and ecological environment protection, CHALIECO has established itself as a key participant, contributor, and leader in sustainable development.

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**Environmental Responsibility**  
Creating a Zero-Carbon Future by  
Adhering to Green Development

**Responsibility for Partners**  
Achieving Win-Win Results by Gathering  
Strengths

**Responsibility for Employees**  
Achieving Talents Growth by Working  
Together

**Responsibility for Community**  
Striving for a Better Future by  
Contributing to Society





# Responding to "Dual Carbon"

CHALIECO has firmly fulfilled its responsibility to address climate change by accurately identifying risks such as extreme weather impacts and excessive carbon emissions. The Company has formulated scientific and effective response strategies tailored to local conditions, accelerated the transition of energy structure to a green and low-carbon development, and actively explored cutting-edge technologies like carbon capture, utilization and storage. These efforts are aimed at strengthening the Company's capacity to deal with climate change and consolidating its green safeguards.

## Governance

As the highest decision-making body for the company's climate governance, the Board of Directors of CHALIECO is fully responsible for reviewing and approving climate strategic objectives. The Board coordinate climate-related issues, focusing on key areas such as low-carbon development and low-carbon technology. This agency conducts in-depth research and makes decisions on major climate-related matters, effectively driving the implementation of the carbon peaking plan of the Company.

## Strategy

Risk	Risk description	Timeframe <sup>1</sup>	Countermeasures
<b>Physical risks: extreme weather events (e.g. heavy rain, high temperature)</b>	In 2024, global temperature rise has exceeded the 1.5° C target set by the <i>Paris Agreement</i> , accompanied by a rise in the frequency of extreme weather events. Heavy rainfall at some project sites of CHALIECO may lead to flooding, potentially damaging infrastructure such as workshops and equipment, and disrupting normal production and operations. High temperatures could cause equipment to overheat and malfunction, reducing production efficiency and posing risks to the health and safety of employees.	Short term and medium term (the occurrence of extreme weather events is uncertain, which may affect the Company in both short and medium terms)	<ul style="list-style-type: none"> <li>● Upgrade and renovate flood control and drainage facilities on the project sites to improve the ability to resist flood disasters; optimize equipment heat dissipation system to cope with the impact of high-temperature weather on equipment.</li> <li>● Formulate emergency plans for extreme weather, clarify the emergency response process and division of responsibilities, organize employees to conduct regular drills, and improve their ability to deal with emergencies.</li> </ul>
<b>Physical risk: water shortage</b>	Water shortage may lead to insufficient production water, limit the scale of production, increase production costs and even face the risk of shutdown.	Medium term	<ul style="list-style-type: none"> <li>● Strengthen water resources management, implement water quota management and water-saving measures, promote water-saving technologies and equipment, and improve the utilization efficiency of water resources.</li> <li>● Explore alternatives to water resources, such as rainwater collection and utilization and reuse of reclaimed water, so as to reduce dependence on traditional water resources.</li> </ul>

<sup>1</sup>Short-term means within 1 year after the end of the sustainability information reporting period, including 1 year; Medium-term means 1 to 5 years after the end of the sustainability information reporting period, including 5 years; Long-term means more than 5 years after the end of the sustainability information reporting period.

Risk	Risk description	Timeframe <sup>1</sup>	Countermeasures
<b>Transformation risk: policy and regulatory risks</b>	With the continuous strengthening of global actions to address climate change, countries and regions may introduce stricter policies and regulations such as carbon emission limits and energy efficiency standards, which may face penalties such as fines, production restrictions and shutdown, affecting the Company's production and operation and market image.	Medium term	<ul style="list-style-type: none"> <li>Strengthen internal management, ensure that all production and operation activities of the Company meet the requirements of current policies and regulations, and actively carry out energy conservation and emission reduction, green production and other work.</li> </ul>
<b>Transformation risk: technology substitution risk</b>	New energy grid connection and energy storage technology are developing rapidly. If new energy grid connection technology is not applied in time, it will still rely on traditional energy, which will lead to a rise in cost and will be difficult to meet the requirements of energy conservation and emission reduction.	Long term	<ul style="list-style-type: none"> <li>Increase R&amp;D investment in new energy applications, set up a professional R&amp;D team, and conduct in-depth research on energy solutions suitable for their own production characteristics.</li> </ul>
<b>Transformation risk: market and reputation risks</b>	As consumers and investors increasingly prioritize climate change, CHALIECO may face risks such as declining market demand, customer attrition, and investor withdrawal if its efforts to address climate change are perceived as inadequate. These challenges could also harm the company's reputation and brand image.	Medium term	<ul style="list-style-type: none"> <li>Strengthen the management of corporate social responsibility, actively carry out actions to deal with climate change, such as energy conservation and emission reduction, green production, sustainable development, etc., and improve the Company's social image and reputation.</li> </ul>

## Impact, risk and opportunity management

CHALIECO has actively responded to national climate change policies by deeply integrating "carbon peaking and carbon neutrality" into the core content of the Company's 14th Five-Year Plan, and steadily and orderly promoted the work of "carbon peaking and carbon neutrality" to a new level.



### Case

#### GAMI | National Greenhouse Gas Standards Compiled Rated as the International Leading Level

In August 2024, the national standard *Requirements of the Greenhouse Gas Emissions Accounting and Reporting - Part XX: Carbon Material Production Enterprises*, edited by CHALIECO GAMI, was recognized as internationally leading. This standard addresses the gap in greenhouse gas emission accounting standards for carbon product production within China's national framework, achieving unified carbon emission calculation standards for the carbon industry. It enables enterprises to accurately track greenhouse gas emissions and helps regulators monitor emission trends in the sector. This advancement provides robust technical support and standardization for the green and low-carbon transformation and sustainable development of China's carbon industry, while also contributing to global climate action efforts.



The development of green and low-carbon alumina technology has achieved significant progress. Based on a 1,000 kt production line, the technology reduced fuel consumption by approximately 15 Nm<sup>3</sup> per ton of alumina, equivalent to 0.003 tCO<sub>2</sub>/t-AO in carbon emissions, reducing 3,000 tons of CO<sub>2</sub> emissions annually





## Environmental Management

CHALIECO has actively enhanced its environmental management system and mechanisms, strengthened environmental protection emergency management, developed scientific emergency plans, conducted regular risk and potential risk identifications, and taken concrete actions to protect the ecological environment. In 2024, the Company invested a total of RMB 31.7517 million in environmental protection.

### Improving the system and mechanism

CHALIECO has attached great importance to green management, strictly abided by relevant laws and regulations on ecological environment such as the *Environmental Protection Law of the People's Republic of China* and the *Law of the People's Republic of China on the Prevention and Control of Atmospheric Pollution*, actively improved the environmental protection management system, continuously strengthened the implementation of the system, and newly compiled and revised the *Administrative Measures for Ecological Environment Protection* and other systems. Up to now, 9 current environmental protection management systems have been established to provide solid and strong institutional support for the Company's environmental management work.

### Managing environmental protection emergencies

CHALIECO has made solid progress in environmental protection emergency management, formulated the *Regulations on Reporting and Investigation of Environmental Emergencies*. These regulations clarify the classification of environmental emergencies based on the degree of harm, ensuring timely initiation of emergency response procedures. Measures include controlling pollution sources, promptly notifying and reporting to relevant departments, organizing on-site disposal, and activating emergency plans as needed. The Company prioritized personnel safety. Additionally, CHALIECO regularly conducted emergency drills to enhance its capability and readiness in handling environmental emergencies, effectively building a strong defense line for ecological and environmental protection. In 2024, the Company reported no general or above-level environmental emergencies and no serious violations of environmental laws or regulations.

### Potential risk identification

CHALIECO has effectively implemented potential risk identifications, strictly adhering to the *Accurate Management System for Ecological Environmental Protection* of Chinalco. The Company formulated the *Administrative Measures for Identification and Control of Potential Risks in Ecological Environment*, identifying environmental factors through methods such as multi-factor evaluation and developing control measures for critical factors. We have also enhanced the normalized supervision and assessment accountability mechanism. Additionally, CHALIECO established a working mechanism for identifying potential ecological and environmental hazards, combining comprehensive investigations with special investigations to promptly address and eliminate risks. In 2024, the Company completed supervision of 46 projects, 4 production workshops, and 15 key areas, with all identified hazards successfully rectified.

## Green Operation

CHALIECO has firmly embraced the concept of green development and enhanced its green operation management framework. The Company has accurately identified risks such as excessive pollution emissions and formulated targeted, highly operable countermeasures to address them. By promoting the research, development, and application of green technologies, CHALIECO has improved its resource recycling efficiency and accelerated the green transformation of its production and operations.

**(\*Issues of financial materiality: circular economy, energy utilization, green construction, environmental compliance management)**

### Governance

CHALIECO has established a robust organizational structure for environmental management, established the Occupational Health, Safety and Environment Committee, and implemented a dual-director system. The Secretary of Chairman, and General Manager serve as the directors of the Safety Committee. The Company has also implemented the *Work Rules of the Occupational Health, Safety and Environmental Committee*. Both the Company and its affiliated enterprises have established HSE Departments, with dedicated personnel responsible for environmental management. Affiliated enterprises have also appointed full-time environmental management personnel, established a regular supervision and assessment accountability mechanism for ecological and environmental protection, and consistently reported information in accordance with regulatory requirements.

## Strategy

Risk	Risk description	Timeframe <sup>1</sup>	Impact degree <sup>2</sup>	Countermeasures
<b>Dust pollution</b>	During the construction process, activities such as earth excavation, material transportation, and stockpiling are prone to generating dust. If dust prevention measures are not properly implemented, it can result in dust pollution at and around the construction site, negatively impacting air quality and the lives of nearby residents. Such negligence may lead to penalties from environmental protection departments.	Short term	Prefecture-level	<ul style="list-style-type: none"> <li>Strengthen the construction site management, cover and store materials that are prone to raise dust in an airtight manner, and regularly sprinkle water on the construction site to reduce dust.</li> <li>Adopt advanced construction technology and equipment to reduce the generation of dust, such as using closed loading and unloading equipment and equipping dust monitoring equipment.</li> </ul>
<b>Noise pollution</b>	Noise will be generated from the operation of production equipment in CHALIECO's factory and the operation of mechanical equipment during engineering construction. Excessive noise will disturb the living environment of surrounding residents and cause dissatisfaction and complaints from them. At the same time, employees who have been in a high-noise environment for a long time may suffer from physical health damage, such as hearing loss, which will affect work efficiency and the employee's job satisfaction.	Short term	Prefecture-level	<ul style="list-style-type: none"> <li>Select low-noise equipment and processes to reduce noise generation from the source.</li> <li>Take sound insulation and muffling measures for high-noise equipment, such as installing noise enclosures and silencers.</li> <li>Reasonably arrange the construction time to avoid high-noise operations during residents' rest hours.</li> <li>Equip employees with necessary protective equipment, such as earplugs and earmuffs, and carry out occupational health examinations regularly.</li> </ul>
<b>Environmental compliance of overseas divisions</b>	Indonesia and other overseas markets have tightened their carbon tariffs and pollutant emission standards (e.g. alumina projects shall comply with local ESG regulations). Inadequate compliance management may lead to project delays or legal disputes.	Medium term	Provincial level	<ul style="list-style-type: none"> <li>Set up a localized compliance team to regularly review the ESG process; cooperate with local communities to strengthen environmental information disclosure.</li> <li>Conduct training on local environmental regulations and culture for management personnel and employees of overseas projects to improve their compliance awareness and communication skills.</li> </ul>
<b>Compliance discharge of waste</b>	Hidden dangers caused by non-compliant collection, storage and disposal of solid wastes, exhaust gas, wastewater, noise, etc. These risks may cause evacuation and transfer of personnel, direct economic losses, etc., and will bring a certain extent of negative public opinion impact.	Short term	Prefecture-level	<ul style="list-style-type: none"> <li>Establish a sound waste management system, clarify the classification, collection, treatment and discharge processes of wastes, and ensure that wastes are disposed in compliance with regulations.</li> <li>Actively explore ways to recycle waste, reduce the amount of waste generated and realize the recycling of resources.</li> </ul>

The Company strictly adheres to the relevant requirements of ecological and environmental laws and regulations. Environmental protection expenditures follow the principle of "prevention first, combining prevention with control, and comprehensive management". Resources are allocated fully and appropriately to meet the needs of continuous environmental improvement, with priority given to projects that ensure the prevention of ecological and environmental accidents and enhance the intrinsic environmental performance of equipment and processes.

The improvement of environmental compliance management ability can improve the Company's image and market competitiveness, reduce costs and increase profits; the improvement of environmental management is conducive to the sustainable development of the Company, enhances its brand value, and can bring expected benefits to the Company.

<sup>1</sup>Short-term means within 1 year after the end of the sustainability information reporting period, including 1 year; Medium-term means 1 to 5 years after the end of the sustainability information reporting period, including 5 years; Long-term means more than 5 years after the end of the sustainability information reporting period.

<sup>2</sup>Group level refers to having a significant impact on overall group operations; Provincial level refers to having a greater impact on regional or provincial business; Prefecture-level refers to having a certain impact on local business.



## Impact, risk and opportunity management

Guided by the concept of green development, CHALIECO is committed to green operations, enhancing its resource management system, and improving resource utilization efficiency. The Company has intensified efforts to control pollution emissions, reducing the generation of waste gas, wastewater, and solid waste. It actively promotes green technology research and development, leveraging innovative technologies to create a cleaner, greener environment. CHALIECO is expanding the promotion and application of environmental protection technologies, making "green" a defining feature of its high-quality development strategy.

## Energy resource utilization

CHALIECO continues to explore the in-depth application of new energy across all aspects of production and operations, steadily increasing the proportion of clean energy use. The Company has established control procedures for environmental and occupational health and safety operations at all levels, selecting water-saving equipment for construction to effectively improve the efficiency of production and domestic water use. CHALIECO has strengthened the monitoring and maintenance of water supply networks and water-using equipment, eliminating issues such as "escaping, spilling, dripping, and leaking" to achieve efficient conservation and rational utilization of water resources. These efforts promote the coordinated development of the economy, resources, and environment. In 2024, CHALIECO's energy consumption included 42,000 tons of standard coal equivalent and 274,847 m<sup>3</sup> of natural gas.



Baotou Aluminum New Energy Project of Jiuye Construction



B3 Workshop Project of LONGi New Energy Technology R&D Center, Jiuye Construction



Baotou Aluminum 220 kV Grid Connection Project of 12MCC Successfully Completed



Hubei Sino Battery Negative Electrode Project of SAMI



## Reducing pollutant emission

CHALIECO has attached great importance to pollution emission reduction, upgrades purification equipment and processes, and strictly controls the concentration and total amount of waste gas emissions. The Company has built and improved the wastewater treatment system to ensure up-to-standard discharge. The Company has established comprehensive systems for managing "solid waste" and "hazardous waste" at all levels. The construction of solid waste warehouses and temporary hazardous waste storage facilities has been standardized and clearly marked to ensure compliance across all processes. These measures enable the Company to promote green development through practical actions and minimize its negative environmental impacts. In 2024, CHALIECO reported an exhaust emission volume of 31,798,800 m<sup>3</sup> and an industrial wastewater discharge of 32,859 tons. Throughout the year, no general emergency environmental accidents and major environmental pollution or ecological damage events occurred.

2024

an exhaust emission volume of

**31,798,800** m<sup>3</sup>

an industrial wastewater discharge of

**32,859** tons



### Case

### CHSMCC | Deepening Sewage Treatment to Facilitate Urban Green Development

The Phase II Project of the Sewage Treatment Plant in Zhengzhou New District, undertaken by CHALIECO CHSMCC, is a key project in Henan Province. The project adds sewage treatment facilities with a daily processing capacity of 350,000 tons and upgrades the existing Phase I facilities with a daily capacity of 650,000 tons. It also includes supporting projects such as sludge treatment facilities with a daily processing capacity of 1,000 tons. Utilizing the advanced process of "improved A/A/O + secondary sedimentation tank + high-efficiency sedimentation tank + V-filter + disinfection", the plant can treat 350,000 tons of sewage daily, with water quality indicator meeting the Class III surface water standard. This significantly alleviates urban sewage treatment pressure. It is the first million-ton sewage treatment plant in Henan Province and a rare one in China.



Lot 2 of Civil Works in Phase II Project of the Sewage Treatment Plant in Zhengzhou New District



Focusing on flue gas desulfurisation, CHALIECO has developed ultra-fine droplet horizontal wet desulfurization technology. This innovation achieved deep energy conservation and emission reduction, with pollutant emission indicators far exceeding the limits for Grade A enterprises. The technology enabled zero wastewater discharge and reduced energy consumption by 35%



The Company has developed a water-saving and zero-discharge treatment process for copper processing wastewater. This includes integrated wastewater pretreatment, high-salinity liquid treatment, and an MVR evaporation system. The process achieved a 70-fold concentration of wastewater, zero discharge of production wastewater, annual savings of 1.008 million m<sup>3</sup> of tap water, and reuse of 576,000 m<sup>3</sup> of deionized water per year

## Research and development of green technologies

CHALIECO has attached great importance to the research and development of green technologies, focused on key areas of green development such as energy conservation, emission reduction, and resource recycling. We have conducted specialized technical research and developed advanced treatment processes and equipment, driving innovation and sustainable practices across its operations.

Award winner	Award Name
SAMI	"Deep Purification and Waste Recycling Technology of Carbon Anode Baking Flue Gas" won the Second Prize of 2023 Science and Technology Progress Award by All-China Environment Federation
	"Deep Treatment Technology and Equipment Development for Pollution Reduction and Carbon Reduction of Fluorine-containing and Organic Flue Gas in Aluminum Industry" won the First Prize of Science and Technology Award of China Nonferrous Metals Industry Association in 2024
CINF	"Research and Application of New Green Intelligent Paste Filling Technology for Mine Tailings" won the Second Prize of 2023 Science and Technology Progress Award by All-China Environment Federation
	"Green Combined Smelting and Efficient Resource Recovery Technology of Complex Lead-zinc Materials" won the Second Prize of Jiangxi Provincial Science and Technology Progress Award in 2023
CNPT	"The Water-saving and Zero Discharge Technology Project of Copper Processing Production Wastewater" won the Second Prize in the 2nd "Zero Carbon Central Plains Cup" Henan Green Manufacturing Technology Application Innovation Competition
	"Development and Application of Integrated Control Technology and Key Equipment for Shape and Property of High-performance Copper Strip Used in New Energy" won the First Prize of Science and Technology Award of China Nonferrous Metals Industry Association in 2024
Kunming Nonferrous Metallurgy Design and Research Institute	"Key Technologies and Applications for Safety Control and Ecological Restoration of Plateau High-Steep Mine Slopes" won the Second Prize of Science and Technology Award of China Nonferrous Metals Industry Association in 2024

## Green buildings and engineering

CHALIECO has adhered to the green concept throughout the whole life cycle of project construction, continuously optimized architectural design and engineering schemes, strictly controlled pollution emissions during construction, and is committed to creating a high-quality model for green buildings and low-carbon projects.

### Green Building

In accordance with the latest national development requirements, the Company has promoted green design from multiple dimensions such as technology and raw material procurement to ensure that products have both environmental protection attributes and use value. The Company has continued to strengthen the development and application of green building construction technology, and provided customers with more efficient, environmentally friendly and economical building solutions in combination with advanced construction technologies.



#### Case

### CHSMCC | First Application of New Structure in Xiong'an Sports Center Project

CHALIECO CHSMCC achieved an innovative breakthrough in the Xiong'an Sports Center Project. The roof of the project featured a combined system of an outer-ring space steel grid and an inner-ring tension string aluminum alloy reticulated shell, marking its first application in domestic stadiums. Aluminum structure buildings, known for their high plasticity, corrosion resistance and recyclability, represent green and energy-efficient new materials. Building on its experience of constructing over 50 aluminum alloy pedestrian overpasses across China, CHSMCC continues to expand the market for aluminum structure buildings, promoting urban green and low-carbon development.



## Green Construction

The Company has run the green construction concept through the whole process of project construction, reasonably determined the land for temporary facilities according to factors such as construction scale, scientifically arranged various functional areas, and timely repaired the land problems caused by construction. We have strictly implemented the dust control management system, required each project construction site to achieve the "six 100%" objectives, and effectively strengthened the environmental management of the construction site. The Company has implemented an expert review system for project construction schemes at all levels to reduce the amount of construction waste from the source. We have prioritized energy-saving and low-noise construction equipment, processes, machines, and tools. At the same time, the construction period was reasonably arranged to minimize the impact of construction noise on the surrounding environment and people's lives.

### Six 100% Targets for CHALIECO Project Construction



100% of enclosure at the project site



100% hardening of roads in the site area



100% coverage of muck materials



100% of sweeping and cleaning with water sprinkling



100% closed transportation of materials



100% cleaning of vehicles entering and leaving

## Indicators and targets

The Company formulated the *Work Plan for Occupational Health, Safety and Environmental Protection*. The goal of ecological environmental protection was to avoid general and above environmental emergencies. In 2024, the Company reported no general or above-level environmental emergencies and no serious violations of environmental laws or regulations, and completed the ecological environment protection objectives formulated at the beginning of the year.

## Green Culture

CHALIECO has deeply practiced the concept that "Lucid waters and lush mountains are invaluable assets", fostering a green culture and vigorously promoting environmental protection principles. The Company has advocated for a new trend of green office practices and encourages all employees to participate in green and low-carbon initiatives. CHALIECO has organized ecological protection activities, actively avoided ecological red lines, held environmental safety bottom lines, and worked collectively to protect the planet's green and beautiful home.

## Green office

CHALIECO has actively promoted green office and lifestyle practices, and strengthened property supervision by installing thermometers at air conditioning outlets in office buildings to monitor temperatures. The Company has replaced traditional lighting with LED energy-saving lamps and arranged security guards to conduct nightly patrols, eliminating unnecessary lighting. CHALIECO has vigorously advocated for paperless office practices, equipping affiliated enterprises at all levels with sufficient video conference rooms to reduce unnecessary travel. Centering on the themes of the 2024 "June 5 World Environment Day" and "National Ecology Day", it conducted a series of activities such as environmental protection warning education and training to support green development through concrete actions.



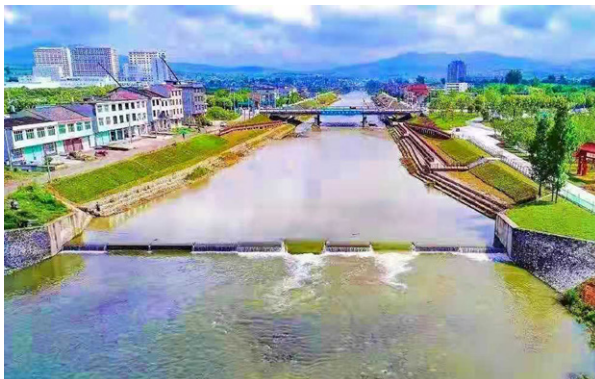
Jiuye Construction actively carried out the publicity activities of "June 5th World Environment Day", advocating all employees to sign on the banner for commitments, to express their willingness to support "building a beautiful China in an all-round way" and their determination to actively implement green environmental protection actions



CINF made the theme slogan for "June 5th World Environment Day" in 2024 and *Ten Rules of Code of Conduct for Ecological Environment of Citizens* into a roll-up poster to promote the dissemination of green ecological culture

## Ecological protection

CHALIECO adheres to the principle of prioritizing protection and ecological restoration, balancing economic benefits with ecological benefits in its operations and construction projects. The Company actively avoids nature reserves and wildlife migration channels, minimizing negative impacts on wildlife. The Company is committed to maintaining and improving the surrounding environment of its affiliated enterprises and engineering projects, ensuring ecological balance and biodiversity in the areas where its enterprises and projects are located.



Fujia River Comprehensive Treatment Project of Jiuye Construction in Ankang



Small Watershed "Two Cleanings and One Protection" Comprehensive Treatment Project of Jiuye Construction in Luanchuan County, Luoyang City, Henan Province



## Responsibility for Partners

### Achieving Win-Win Results by Gathering Strengths

CHALIECO has actively fulfilled its responsibilities as a trusted partner, collaborating closely with multiple stakeholders to engage in strategic cooperation and build a robust industrial collaboration network. The Company has participated in the formulation of industry standards, strengthened industry exchanges, and actively promoted the development of the sector. Additionally, CHALIECO has meticulously constructed a responsible supply chain, enforcing environmental, safety, and ethical standards from the source, and setting a benchmark for the sustainable development of the industry.

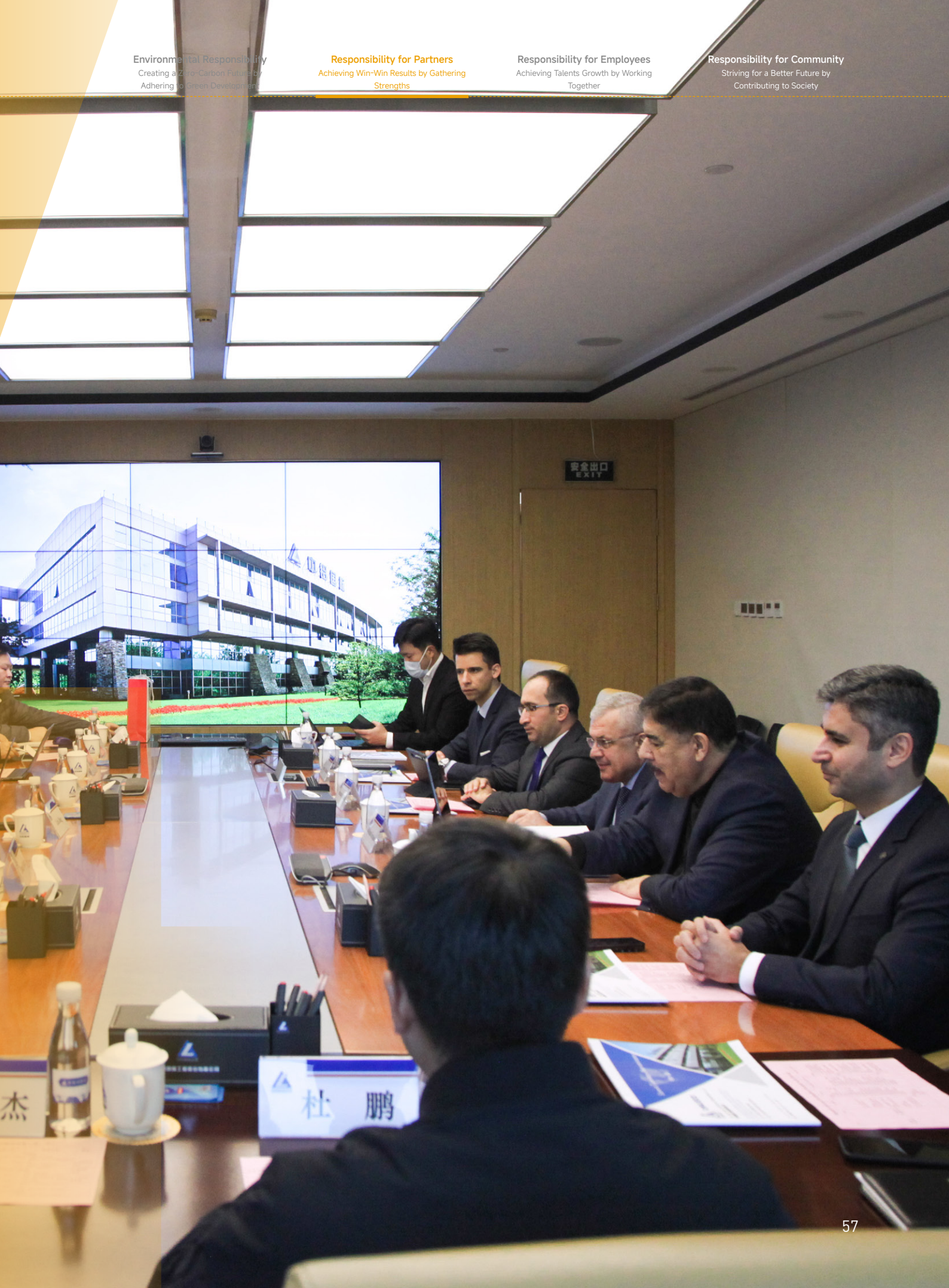
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# Strategic Cooperation

Adhering to the concept of open cooperation, CHALIECO actively seeks strategic cooperation opportunities with all parties and establishes extensive cooperative relations with enterprises, governments and universities in different fields and levels, covering technological innovation, market expansion, industrial collaboration and other aspects. Through resource sharing and complementary advantages, it achieves common development.

## Enterprise- enterprise cooperation

CHALIECO has actively expanded its cooperation landscape, vigorously strengthening enterprise-enterprise partnerships. By sharing technologies, engaging in joint R&D, and collaborating on co-construction projects, the Company has enhanced the competitiveness of its partners while solidifying its own position in the industry. These efforts have collectively created a new pattern of mutually beneficial and win-win industrial development.



In January 2024, Southwest Company held working talks with Shanghai Electronic Engineering Design & Research Institute Co., Ltd. and signed a strategic cooperation agreement



In July 2024, CHALIECO and Chalco Assets signed a framework agreement for collaborative cooperation in Beijing



In July 2024, GAMI Signed a Strategic Cooperation Agreement with Zhongda Design Institute Co., Ltd. of Central South University



In October 2024, CHALIECO and Shaanxi Nonferrous Metals Holding Group held a symposium to jointly promote the implementation of cooperation projects

## University- enterprise cooperation

CHALIECO has continued to deepen university-enterprise cooperation, engaging in extensive collaboration in areas such as talent training, technical exchanges, and project cooperation to broaden channels for talent development and recruitment. In 2024, CHALIECO conducted over 10 ongoing research cooperation projects with target universities and research institutions, including University of Science and Technology Beijing, Northeastern University, Central South University, Kunming University of Science and Technology, and the Chinese Academy of Sciences, with a total cooperation fund of more than RMB 20 million.



In June 2024, CINF signed a cooperation framework agreement with the Institute of Mineral Comprehensive Utilization, Chinese Geological Survey, Chinese Academy of Geological Sciences



In August 2024, Central South University and SAMI held a symposium on talent education, scientific research in universities, and university-enterprise cooperation models

## Government- enterprise cooperation

CHALIECO has always regarded government-enterprise cooperation as an important driving force for development. It continues to deepen the field of cooperation, continuously innovates cooperation modes, and works closely with governments at all levels to build a development pattern of deep integration and coordinated progress, so as to achieve mutual benefit and win-win results.



In April 2024, a delegation from Guinea visited CINF of CHALIECO to gain insights into its advanced technologies in mining, management, environmental protection and other fields, to strengthen exchanges between governments and enterprises in the mineral industries of both countries and support Guinea's mining sector in achieving sustainable development



## Industry Development

CHALIECO has deeply integrated into the development process of the industry, actively participated in the formulation of industry standards, and played a key leading role in standardizing market order and improving the overall level of the industry. The Company has held industry forums, technical seminars and other activities to gather the wisdom of all parties and promoted the industry to move towards higher quality and more innovative direction.

### Standard formulation

CHALIECO has continued to strengthen industry exchanges and actively participated in the formulation of industry standards. The industrial standards developed under its leadership, including the *Code for Construction and Acceptance of Activated Carbon Dry Desulfurisation and Denitration Installation Engineering*, as well as the national standards *Technical Standards for Red Mud Stockpile* and *Technical Standards for Tailings Facilities (Revised Draft for Review)*, successfully passed the expert group review. In 2024, the Company led the establishment of 15 new standards above the team level, including 9 national standards and 6 group standards, representing a 25% increase compared to 2023.



led the establishment of

15

new standards  
above the team level

9

national standards

6

group standards

representing a

25 %

increase compared  
to 2023

### Industry exchanges

CHALIECO has built a bridge for exchanges and cooperation, hosted industry forums and technical seminars to explore industry trends and challenges and point out the direction for industrial development. In 2024, CHALIECO hosted and co-organized several major industry association conferences, including the 2024 (Fourth) High-end Forum on Nonferrous Metal Intelligent Manufacturing and Intelligent Processing Session, the 2024 National Carbon Material Science and Technology Innovation Conference, the 8th Academic Conference on China Nonferrous Metallurgy, and the 2024 Forum on Updating Aluminum Smelting Equipment to Empower Industrial Chain Integration and High-quality Development.



In August 2024, Li Yihua, Chairman of CHALIECO, attended the China—Laos Forum on Sustainable Development and Comprehensive Utilization of Mineral Resources & China Nonferrous Metals International Cooperation Alliance Annual Conference



In October 2024, CHALIECO GAMI successfully held the 2024 Forum on Updating Aluminum Smelting Equipment to Empower Industrial Chain Integration and High-quality Development

# Responsible Supply Chain

CHALIECO has built a responsible supply chain, optimized its procurement management system and standardized procurement processes. The Company has established and improved its risk prevention and control mechanisms, introduced a supply chain financial model to alleviate funding pressures for upstream and downstream partners. By strengthening intensive management, CHALIECO has provided high-quality services to suppliers, significantly enhancing the cooperation experience. Additionally, the Company has optimized supplier management, ensuring quality control from the source and stabilizing supply. These efforts promoted the green, coordinated and sustainable development of the supply chain.

## (\*Issues of financial materiality: supply chain security)

### Governance

CHALIECO has established a Bidding Supervision Committee as the first-level management decision-making body for the Company's tendering management. This Committee is responsible for overseeing the bidding and procurement management of the entire business unit within its purview. The Bidding Supervision Committee has an office that serves as the daily administrative body for bidding management. The Company has also established and improved an integrated bidding supervision management system that combines internal management supervision, external agency supervision, employee and public supervision, and social public opinion supervision. This system aims to achieve comprehensive, full-process, and full-coverage supervision of bidding activities before, during, and after the event.

#### Three-level Management System for Procurement and Supply Chain Management of CHALIECO

##### Company level

Issue the *Detailed Implementation Rules for Bidding Management of China Aluminum International Engineering Corporation Limited*, *Procurement Administrative Measures of China Aluminum International Engineering Corporation Limited (Trial)*, *Guidelines for Dynamic Management of Construction Contractors of China Aluminum International Engineering Corporation Limited (Trial)* and *Standardized Project Management Manual of China Aluminum International Engineering Corporation Limited*.

##### Enterprise level

Formulate material administrative measures, detailed rules for the implementation of bidding and tendering management, material procurement administrative measures, supplier/subcontractor administrative measures, etc.

##### Project level

Improve the management system compilation, project implementation planning and management plan of the Project according to the actual situation.

## Strategy

CHALIECO has established and improved a multi-department linkage material procurement risk and internal control management system to realize the collection, integration, analysis, early warning and monitoring of risk information, timely identify and systematically analyze various risks in procurement activities, reasonably determine risk response strategies and do a good job in risk prevention.

Risk	Description	Timeframe <sup>1</sup>	Impact degree <sup>2</sup>	Countermeasures
<b>Supply interruption risk</b>	The supply of raw materials is interrupted due to natural disasters, epidemics and other emergencies, affecting the production plan.	Short term	Group level	<ul style="list-style-type: none"> <li>Establish a diversified supplier system to reduce dependence on single suppliers.</li> <li>Establish a risk early warning mechanism to monitor the operation status of suppliers in real time.</li> </ul>
<b>Capital liquidity risk</b>	The tight capital chain of suppliers may delay the delivery of raw materials, affecting regional production and operation.	Short term	Provincial level	<ul style="list-style-type: none"> <li>Innovate supply chain financial tools (such as supply chain factoring and bills) to relieve suppliers' financial pressure.</li> <li>Cooperate with financial institutions to provide multi-channel financial support.</li> </ul>
<b>Partnership risk</b>	Cooperation issues with key suppliers or customers can have a significant impact on overall supply chain stability.	Medium term	Group level	<ul style="list-style-type: none"> <li>Establish a risk sharing mechanism with suppliers and customers to form close cooperation.</li> <li>Strengthen communication and collaboration to enhance the transparency of cooperation.</li> </ul>
<b>Operational efficiency risk</b>	Poor coordination may lead to reduced operational efficiency and affect regional business development.	Medium term	Provincial level	<ul style="list-style-type: none"> <li>Promote digital supply chain management to improve operational efficiency.</li> <li>Optimize logistics and inventory management to reduce operating costs.</li> <li>Strengthen employee training and improve the implementation efficiency of all links in the supply chain.</li> </ul>

## Impact, risk and opportunity management

CHALIECO has strictly implemented the *Supply Chain Management System of Aluminum Corporation of China* and the *Procurement Administrative Measures of China Aluminum International Engineering Corporation Limited* to build a multi-department linkage risk internal control system. The Company has accurately identified and analyzed procurement risks, formulated scientific response strategies, and strengthened the supply chain management and control. We have promoted centralized procurement to improve procurement efficiency, cultivated high-quality suppliers, and strengthened sustainable development management of suppliers to promote green supply chain management.

Number of suppliers in 2024

**2,378**

**100**

in Northeast China

**311**

in North China

**166**

in South China

**737**

in Central China

**442**

in East China

**444**

in Southwest China

**147**

in the northwest

**31**

overseas

<sup>1</sup>Short-term means within 1 year after the end of the sustainability information reporting period, including 1 year; Medium-term means 1 to 5 years after the end of the sustainability information reporting period, including 5 years; Long-term means more than 5 years after the end of the sustainability information reporting period.

<sup>2</sup>Group level refers to having a significant impact on overall group operations; Provincial level refers to having a greater impact on regional or provincial business; Prefecture-level refers to having a certain impact on local business.





#### Strengthening the intensive management of procurement

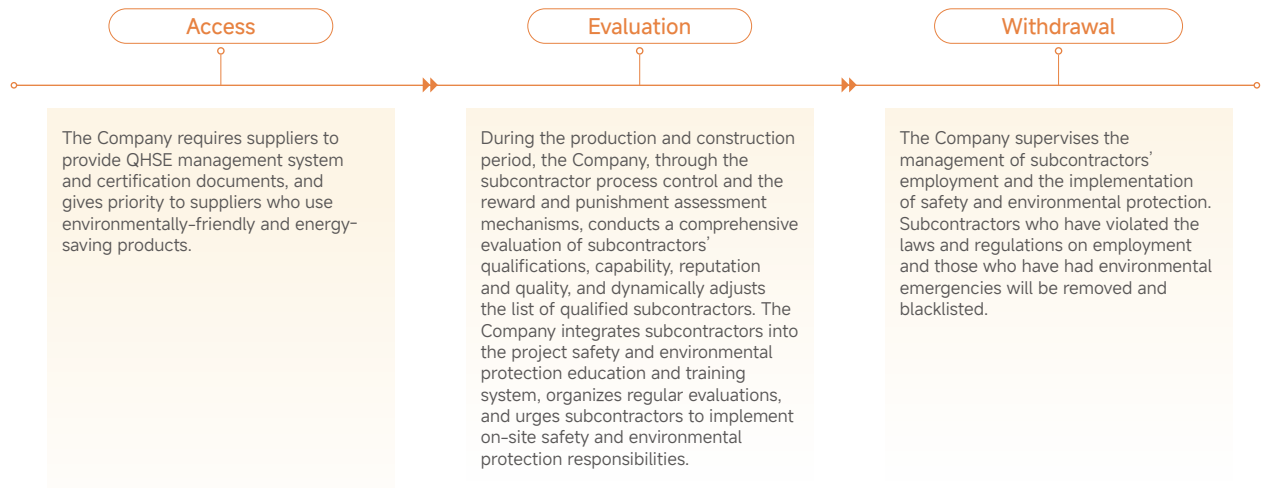
- ▶ Unified management of supplier access upgrading for affiliated enterprises and unified management by CHALIECO.
- ▶ Strengthen the management of bidding procurement, and shorten the bidding period from 45-50 days to about 15 days.
- ▶ The centralized procurement rate has reached 75% since it was managed by Chinalco in May 2024.



#### Sustainable supply chain management

- ▶ Conduct joint R&D activities with scientific research institutes, universities and suppliers to promote technological innovation and product upgrading.
- ▶ Promote green supply chain management, optimize procurement strategies, promote coordinated development of the supply chain, help the application of environmentally friendly materials, and reduce resource consumption and environmental pollution.
- ▶ Establish a supplier evaluation system, evaluate suppliers from the dimensions of quality, delivery, cost and service, and select high-quality suppliers for long-term cooperation.

### Supplier management system



## Indicators and targets

Indicator	Unit	2024	Target
Total number of suppliers	Nos	2,378	Continuously streamline the number of suppliers and increase the proportion of high-quality suppliers
Number of potential suppliers rejected for non-compliance with social responsibility	Nos	0	
Number of suppliers reviewed during the reporting period	Nos	2,378	Strengthen the social responsibility and ESG concept of suppliers, communicate and share regularly to shape a responsible supply chain
Number of suppliers suspended for non-compliance of social responsibility	Nos	23	
Number of CSR/ESG training for suppliers	Each	71	Build a comprehensive training system, add diversified training contents and formulate personalized solutions to help suppliers achieve sustainable development



## Responsibility for Employees

### Achieving Talents Growth by Working Together

By adhering to the "people-oriented" human resources management philosophy, CHALIECO staunchly defends the rights and interests of its employees, and strengthens the protection of their legitimate rights and interests. The Company strengthens staff training and strives to cultivate a high-quality, professional talent pool. It strictly implements safety and health measures to ensure the safety of the production environment and the occupational health of employees. Focusing on employee care, CHALIECO takes a multi-pronged approach to build harmonious labor relations.

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# Safeguarding Employees' Rights and Interests

CHALIECO has attached great importance to safeguarding employees' rights and interests, setting indicators and targets for assessment and evaluation. This ensures that employees' rights and interests are fully protected, while also fostering a sense of belonging and identity among employees.

(\*Issues of financial materiality: employee)

## Governance

The overall employee management strategy of CHALIECO is determined by the Board of Directors and implemented by the management team led by the General Manager. The Company has established a Compensation Committee and a Social Responsibility Working Committee. As the main department responsible for human resources, the Human Resources Department oversees a range of affairs, including compensation and benefits, labor rights and interests, employee training, and career advancement, progressively covering all employees.

## Strategy

Risk	Risk description	Timeframe <sup>1</sup>	Countermeasures
<b>Corporate culture integration</b>	The low degree of cultural integration between new and old employees and employees in different regions may cause low efficiency of teamwork and hinder the development of the Company.	Short term	<ul style="list-style-type: none"> <li>Conduct cultural exchange activities, establish inter-departmental mutual aid groups, promote cultural integration and create a positive corporate culture atmosphere.</li> </ul>
<b>Career transformation</b>	Due to business adjustment or industry change of the enterprise, some employees are incompetent for new positions and idle or lost, which affects the business transformation and development of the enterprise.	Medium term	<ul style="list-style-type: none"> <li>Engage in forward-looking talent planning, provide employees with career transformation training and guidance, and establish an internal talent mobility mechanism.</li> </ul>
<b>Channels for democratic participation</b>	Poor communication may lead to strikes and slack work of employees, affecting the normal production and operation of the Company.	Long term	<ul style="list-style-type: none"> <li>Build a multi-level communication platform, introduce professional consultation consultants, improve the negotiation mechanism and promote effective communication and cooperation between both parties.</li> </ul>
<b>Talent reserve</b>	The lack of talent reserve in key positions limits the development of enterprises, faces a crisis of talent shortage and affects the sustainable development of enterprises.	Long term	<ul style="list-style-type: none"> <li>Formulate talent reserve planning, establish a cooperation mechanism for talent training with universities and colleges, and build an enterprise talent pool.</li> </ul>

<sup>1</sup>Short term (within 1 year after the end of sustainability information reporting period, including 1 year), medium term (1 to 5 years after the end of sustainability information reporting period, including 5 years) and long term (more than 5 years after the end of sustainability information reporting period);

## Impact, risk and opportunity management

CHALIECO strictly complies with relevant laws and regulations, including the *Labor Law of the People's Republic of China* and the *Labor Contract Law of the People's Republic of China*. We have issued the *Notice on Standardizing Labor Employment of China Aluminum International Engineering Corporation Limited* and revised the *Administrative Measures on Employee Recruitment of China Aluminum International Engineering Corporation Limited*. The Company resolutely eliminates illegal employment practices, effectively implements compensation incentives, advocates open and democratic management, and is committed to creating a diverse, equal, and inclusive workplace environment.

## Safeguarding rights and interests

CHALIECO upholds the corporate principle of equality, prohibits the employment of underage workers, and respects differences in nationality, race, gender, age, and religious belief. It treats all employees equally and strictly forbids any form of discrimination. During the reporting period, the Company had no violations such as the use of child labor or forced labor. Should any breach of labor laws and regulations be detected, such as the utilization of fraudulent identity details, the employment contract shall be forthwith nullified in compliance with the pertinent legal statutes.

Employees at CHALIECO in 2024 (Unit: person)




Number of Total Employees (persons) **10,853**

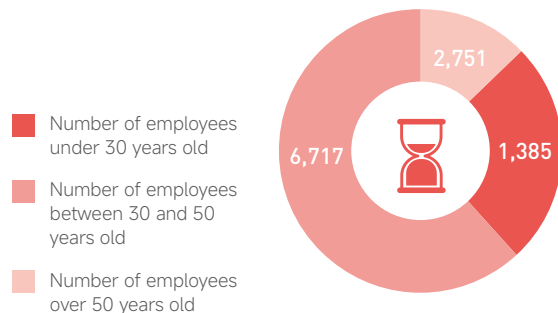
 Number of employees by gender



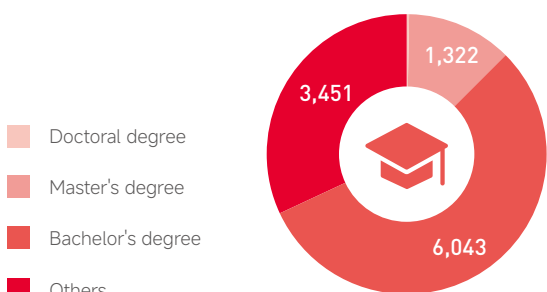
 Number of employees by type of employment



 Number of employees by age



 Number of employees by education background





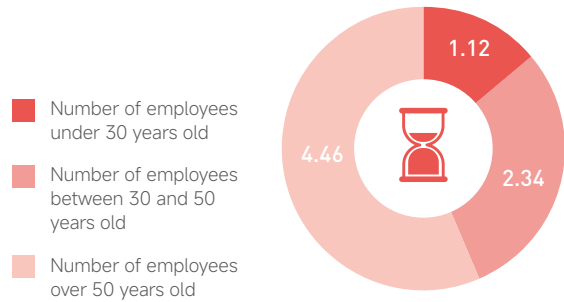
Employee turnover rate in 2024 (%) **7.92**



Employee turnover by gender (%)



Employee turnover by age (%)



## Compensation and benefits

CHALIECO is dedicated to the development of a comprehensive employee compensation and benefits system, ensuring full payment of the "insurance and housing fund" for its workforce, alongside offering premium subsidies and holiday perks. The Company coordinates the execution of an overarching compensation assessment and incentive restructuring, drafting guiding opinions for compensation assessment and the administrative measures for the 1+6 incentive framework. It steers construction enterprises in establishing diverse systems for remuneration, evaluation, and motivation, thereby fully invigorating employee dynamism.

## Democratic management

CHALIECO actively streamlined democratic communication channels, enhanced the democratic management and oversight mechanism, and strictly implemented the system of the Workers' Congress. The company paid attention to the representativeness and progressiveness of the delegates and standardized the implementation of various functions and powers of the employees' congress. In the year 2024, trade unions across all levels conducted 82 staff forums, ensuring the effective implementation of the proposals put forth.



Fourth Session of the 3rd Employees' Congress held by CHALIECO



## 指标与目标

Indicator	Unit	2024	Target
Number of employees	Person	10,853	Reasonably control the scale of employees and maintain a stable personnel structure.
Number of people employed during reporting period	Person	127	Actively absorb employment and help the social employment situation to stabilize and improve.
Coverage rate of physical examination	%	100	100
Coverage of health records	%	100	100
Signing rate of labor contracts	%	100	100
Coverage of labor contracts	%	100	100
Coverage of social insurance	%	100	100
YOY growth of employee compensation	%	3.35	Achieve a reasonable increase in compensation and enhance employees' sense of gain.

## Promoting Employee Development

CHALIECO is committed to high-quality development by implementing the strategy of strengthening the enterprise with talents. We have established a comprehensive talent development system, providing employees with ample growth opportunities, and building a high-caliber, professional team capable of tackling tough challenges and achieving success.

### Impact, risk and opportunity management

#### Conducting employee training

CHALIECO has continuously strengthened talent development by vigorously recruiting new talent. We have introduced a comprehensive training implementation plan for 2024, covering projects such as "Panshi", "Zhulu" and "Zhaxing", to build a robust training system. The Company has organized training activities such as the CHALIECO lecture series and seminars on digital transformation and AI applications, enabling employees to become a core force in value creation. In the year 2024, the Company has augmented its ranks with the addition of four masters in survey and design within the nonferrous industry.

## Data column



41,526

person-times of affiliated enterprises at all levels of the Company



RMB  
14.6143

million invested in training



542,529

hours of employee training

## Ratio of employee training by gender



58

hours of training per capita



81.12 %

male



18.88 %

female



Opening Ceremony of 2024 Comprehensive Quality Improvement Training Camp for Marketing Personnel



General Contracting Project Management Ability Improvement Training Course

## Optimizing promotion channels

CHALIECO has persistently expanded the career development horizons for its employees, clearing the pathway for their advancement and growth. The Company has continuously deepened the reform of its three systems, enhanced the quality and scope of contractual agreements within the tenure system, and reinforced the construction of its cadre teams. In 2024, CHALIECO has nominated 119 outstanding young cadres. All affiliated enterprises at all levels have established systems for managers to compete for positions, make final adjustments, and exit if deemed incompetent.

## Indicators and targets

Indicator	2024	Target
Investments in employee training (RMB 10,000)	1,461.43	Increase the investment in training funds to help employees improve their skills.
Number of participants of employee training (person-time)	41,526	Increase the number of participants and expand the coverage of training.
Number of hours for employee training (hour)	542,529	Keep the training duration stable and ensure that the training is fully carried out.

## Caring for Employees

CHALIECO has consistently prioritized the welfare of its employees, and offered comprehensive care to special groups such as those facing hardships and female staff members. The Company has provided thoughtful assistance to employees in need and meticulously protected the rights and health of its female workforce. We have endeavored to harmonize the work-life balance of its employees by organizing a variety of activities, thereby enhancing their sense of happiness and belonging.

### Impact, risk and opportunity management

#### Assistance for employees in difficulty

CHALIECO carefully cares for employees in difficulty, and actively solves the urgent and worrying problems of employees. The Company earnestly implements the "Serving the People in Practice" campaign to alleviate the practical hardships faced by employees stationed overseas, in challenging roles, and in remote regions. It offers aid and solace, celebrates weddings and childbirths, extends sympathy during illnesses, and provides condolence payments and supplies to its staff. In 2024, CHALIECO extended its support to 207 employees in need.

#### Caring for female employees

CHALIECO has created an equal and supportive professional platform for female employees. We have organized lectures and training activities on laws and regulations related to women's rights, like the *Law of the People's Republic of China on the Protection of Women's Rights and Interests*, to ensure that female employees are well-informed about their legal rights. The Company also shows special care for female employees during pregnancy, maternity and lactation, ensuring they enjoy the corresponding leave and benefits. Additionally, regular health check-ups and lectures on women's physiological health are organized to promote the well-being of female employees. In 2024, the number of female employees who underwent health check-ups at all levels of CHALIECO reached 2,646.

#### Enriching cultural life

CHALIECO carefully organized activities such as the National Reading · World Reading Day, and the "Cultural Power · Joyful Life" events. These activities further enriched the spiritual and cultural lives of employees, fostered a healthy, civilized and uplifting cultural atmosphere that encourages full participation, and gathered strong synergy for the high-quality development of the enterprise.



Employees visit Sanxingdui and Jinsha Special Exhibitions



Employees and Their Families Visit the Museum



"Building Dreams for 'New CHALIECO' and Celebrating Women's Achievements" - A Commemorative "March 8th" International Women's Day Craft Workshop

### Indicators and targets

Indicator	Unit	2024	Target
Investment in supporting workers in need	RMB 10,000	28.85	Increase funding for assistance programs to effectively help employees in need.





## Attaching Importance to Health and Safety

CHALIECO rigorously adheres to the *Law of the People's Republic of China on Prevention and Control of Occupational Diseases*, the *Law of the People's Republic of China on Work Safety*, and other pertinent laws and regulations. The Company intensifies risk prevention in workplace safety, bolsters safety emergency management, and endeavors to enhance its emergency response capabilities. It places a strong emphasis on safety education and training, elevating employees' awareness of work safety, and fostering a culture of safety. CHALIECO is committed to providing reliable safety protections and health guarantee conditions for its employees.

(\*Issues of financial materiality: work safety)

### Governance

CHALIECO has established the Occupational Health, Safety and Environment Committee, implemented the double-director system, with the Chairman and the General Manager as the director of the HSE Committee to implement the *Work Rules of the Occupational Health, Safety and Environmental Committee*. Full-time work safety directors are set up in the company headquarters and 5 B1 enterprises of the Chinalco. The Company and its affiliated enterprises have set up the HSE Department, which is responsible for safety supervision and management. There are 10 employees in the HSE Department of the headquarters, 4 registered safety engineers, 5 first-class constructors, and 621 full-time safety managers assigned by their affiliated enterprises, including 282 registered safety engineers.

10

employees in the HSE  
Department of the  
headquarters

4

registered  
safety engineers

5

first-class  
constructors

621

full-time safety managers  
assigned by their  
affiliated enterprises

### Strategy

The work safety risks of CHALIECO mainly exist in the construction business, including falling from heights, object strike, collapse, lifting injury and mechanical injury, which may cause casualties and shutdown losses, and will bring a certain range of negative public opinion impacts. Generally, the impact is medium-long term and the impact degree is prefecture-level.

CHALIECO formulated and implemented the *Control Procedure for Hazard Source Identification, Risk Assessment and Determination of Risk Control Measures, Risk Assessment and Determination of Risk Control Measures and Regulations on Safety Risk Hierarchical Control and Accident Hidden Danger Investigation and Treatment*. The Company has adopted the direct judgment method, LEC method, SEP method and job safety analysis (JSA method) to carry out hazard source identification. The identified significant hazard sources shall be subjected to hierarchical control, with strict adherence to the "source accountability system" for systematic management.

## Impact, risk and opportunity management

### Strengthening safety management

CHALIECO has vigorously advanced the three-year action plan aimed at addressing the foundational causes of work safety, formulated and executed the *Three-Year Action Plan for Addressing the Foundational Causes of Work Safety (2024-2026)*. The Company has established and refined a HSE responsibility system that mandates all employees to fulfill their duties. We have also reinforced the construction of its safety and environmental protection management systems. In 2024, CHALIECO has newly compiled and revised 10 safety management systems, including the *Regulations on Safety Risk Hierarchical Control and Accident Hidden Danger Investigation and Treatment*. The Company has persisted in strengthening safety control and the investigation and management of hidden dangers in key areas, critical links, and major risks, conducting regular supervision and inspection on safety and environmental protection to bolster work safety and preempt potential issues.

Improving the safety,  
environmental protection and  
health responsibility system

The Company, along with its affiliated enterprises and Project Departments, has progressively enhanced and perfected 341 HSE responsibility systems. A reverse inspection mechanism for safety and environmental protection responsibilities has been established to reinforce positive incentives for key minority personnel.

The Company and its affiliated enterprises independently set up safety and environmental protection management departments to improve the personnel access conditions and the proportion of registered safety engineers.

Standardizing the establishment of  
safety and environmental protection  
management organizations

Strengthening the construction  
of safety and environmental  
protection management system

Prepared and revised 11 management systems and 1 comprehensive emergency plan, and organized all affiliated enterprises to complete the preparation of fixed operation SOPs.

Carried out special rectification of safety in key areas, strengthened the management and control of major risks, including hazardous and ultra-hazardous projects. Implement hierarchical and categorized control responsibilities and preventive measures, while strengthening the investigation and management of major accident hazards.

Establishing and improving the dual  
prevention mechanism of safety risk  
hierarchical control and potential risk  
identification and management

Optimizing and improving the  
operation effectiveness of HSE  
system and CAHS, CAHS-CS and  
CAE systems of the Chinalco

Strengthen the deep integration of HSE system and basic management; strengthen the implementation of CAHS, CAHS-CS and CAE system requirements of the Chinalco in combination with supervision and inspection.

Regularly conduct safety and environmental protection supervision and inspection, establish a regular meeting notification working mechanism; formulate and implement the *Administrative Measures for Accountability and Assessment of Safety and Environmental Protection Supervision and Inspection*, and strengthen the accountability of safety and environmental protection supervision, inspection and assessment.

Establishing a safety and  
environmental protection  
supervision, inspection, assessment  
and accountability mechanism



Different Snowscapes: Employees Conduct Safety Inspection and Maintain the Bottom Line of Safety

## Shaping safety culture

CHALIECO has reinforced the development of a safety and environmental protection culture, initiating work safety month activities that included organizing 244 "re-learning and re-implementation" actions discussions, 304 evacuation drills, 115 safety consultation activities, and 47 local government events. The Company has conducted monthly safety and environmental protection assessments of its affiliated enterprises to deepen the awareness of safety responsibilities, fostering a culture where safety becomes a habitual practice, thereby enhancing overall safety.

244

"re-learning and re-implementation" actions discussions

304

evacuation drills

115

safety consultation activities

47

local government events



Training on Performance Ability Improvement for Safety Management Personnel in 2024 (Second Session)



2024 "Work Safety Month" Activity Kick-off Meeting and Monthly Work Safety Regular Meeting



## Safeguarding occupational health

CHALIECO has paid close attention to the occupational, physical and mental health of employees, enhances their awareness of occupational health and contributes to their physical health. The Company always pays attention to their psychological health and safeguards their rights and interests. In 2024, CHALIECO conducted three lectures on employee health services, reaching over 8,000 employees and maintaining a record of zero new occupational disease cases.

 2024

conducted

**3**

lectures on employee health services

reaching over

**8,000**

employees

maintaining a record of

**0**

new occupational disease cases

## Indicators and targets

In 2024, the Company reported no general or above-level work safety liability accidents, and successfully met the work safety objectives set at the beginning of the year. In 2025, the Company will formulate the *Work Plan for Occupational Health, Safety and Environmental Protection*, and organize affiliated enterprises to regularly report on work safety by establishing a working mechanism for monthly flash reports on work safety. The Company will continuously strengthen the monitoring and statistical analysis of work safety accidents and incidents, with the goal of no general or above-level work safety liability accidents.

Indicator	2024	Target
Number of work safety accidents (time)	2	0
Working days lost due to work-related injuries (day)	176	Reduce the number of lost days due to work-related injuries and protect employees' health.
Number of work-related deaths (person)	0	Achieve zero work-related fatalities and safeguard life safety.
Safety Training Coverage Rate (%)	100	100





## Responsibility for Community

### Striving for a Better Future by Contributing to Society

CHALIECO has actively participated in rural revitalization, provided caring consumption assistance to help rural industries revitalize and promoted the improvement of rural economy. The Company has actively participated in public welfare and charity activities and organized employees to participate in voluntary activities to send warm hope to vulnerable groups. We have deeply explored overseas markets, cared for local employees and interpreted the responsibility of international enterprises with practical actions.

Rural Revitalization	78
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Overseas Duty Performance	80





Environmental Responsibility  
Creating a Zero-Carbon Future by  
Adhering to Green Development

Responsibility for Partners  
Achieving Win-Win Results by Gathering  
Strengths

Responsibility for Employees  
Achieving Talents Growth by Working  
Together

Responsibility for Community  
Striving for a Better Future by  
Contributing to Society





# Rural Revitalization

CHALIECO has conscientiously implemented the important instructions of General Secretary Xi Jinping on "agriculture, rural areas and farmers" to promote rural revitalization in an orderly manner. We have attached great importance to consumption assistance and support, carried out industrial revitalization in assisted areas, helped farmers increase income and become rich, and practiced the rural revitalization strategy with practical actions.

## Promoting industrial revitalization

CHALIECO has regarded industrial revitalization as the core of rural revitalization, driven the comprehensive development of "five revitalizations" of rural industry, talent, culture, ecology and organization, and promoted the overall rural revitalization of counterpart assistance villages. In 2024, an investment of RMB 91,000 in assistance funds facilitated the introduction of RMB 628,000, benefiting 5,452 local villagers.



### Case

### GAMI | Takes Multiple Measures to Help the Industrial Revitalization of Jinkeng Village

In May 2024, GAMI, aiming to boost the development of Jinkeng Village, adopted a multifaceted strategy by distributing cereal seeds and fertilizers to villagers at no cost to guide them in scientific cultivation. The Company signed guaranteed purchase contracts, actively expanded sales channels to ensure the sale of agricultural products, and addressed the diverse industrial needs of Jinkeng Village. It assisted in the construction of flue-cured tobacco sheds, promoted distinctive planting practices, and fostered the growth of the village's collective economy, thereby achieving sustainable development.



A Delegation of GAMI Investigates the Characteristic Planting in Jinkeng Village

## Promoting consumption assistance

CHALIECO has actively carried out consumption assistance and empowerment activities, helping agricultural products to enter canteens, supermarkets and staff dining tables through employee welfare, purchasing instead of donation and other forms. We have also actively participated in the special activity of central enterprises' consumption assistance activities. In 2024, CHALIECO purchased RMB 3,311,500 for consumption assistance.



2024



purchased RMB

**3,311,500**

for consumption assistance



In December 2024, the Trade Union of CHSMCC purchased rice, flour, oil and other materials from Jingyuan County, Gansu Province, a poverty alleviation county supported by Chinalco to the front line of the project

## Infrastructure construction

All units of CHALIECO have utilized rural revitalization linkage funds and external support funds to assist villagers in continuously enhancing infrastructure construction. The subordinate work team of CINF in Tianmashan Village has undertaken canal construction, pond dredging and maintenance, and land leveling works in the Shaping Area. Concurrently, the work team of GAMI in Jinkeng Village has coordinated construction personnel to renovate the drinking water project, thereby progressively elevating the standard of rural construction.



### Case

### CHSMCC | Helps realize the dream of rural revitalization in Yunnan with Thoroughfare Avenue

In recent years, CHSMCC has successively undertaken the construction of expressways such as Mile-Yuxi Expressway, Ninglang-Yongsheng Expressway, Yunxian-Lincang Expressway and Yunxian-Lincang Expressway in Yunnan Province to promote the "simultaneous resonance" between transportation development and rural revitalization. After 4 years of hard work, the Ninglang-Yongsheng Expressway, Yunxian-Lincang Expressway and Mile-Yuxi Expressway constructed by CHSMCC have been completed and opened to traffic one after another. Regions along the expressway have embarked on the fast track for economic development and rural revitalization. The expressway served as a rapid conduit for rural revitalization and increased income for farmers in Yunnan, contributing to the region's pursuit of common prosperity.



Turnaround Lane of Linxiang-Shuangjiang Expressway

## Public Welfare and Charity

We have always adhered to the volunteer spirit of "dedication, friendship, mutual assistance and progress", guided volunteers to actively participate in social welfare activities, organized a series of public welfare voluntary activities such as charitable donations and learning from Lei Feng, carried out fraud prevention and fire inspection activities with communities, and communicated and publicized relevant knowledge.

### 2024 Performance of Volunteer Services



Hours of volunteer services

**5,802.6** (Hour)



Number of youth voluntary organizations

**1,008** (Nos)



Volunteer Service Activity for Student Assistance of Huagou Primary School in Hongtudi Town



"Caring for Autistic Children" Volunteer Activity of 12MCC



The "Learning from Lei Feng: Civilization Practices in Action" Thematic Activity



"Youth Volunteering · Love for Xiangshan" Volunteer Service Activity





## Overseas Duty Performance

CHALIECO continues to deepen its overseas responsibilities, abide by the laws and regulations of the host country, strengthen overseas project management, expand overseas business, help local economic development, integrate into the "Belt and Road" construction, adhere to the "going global" strategy, and work together with the local society to develop, share happiness and grow.

### Strengthening business management

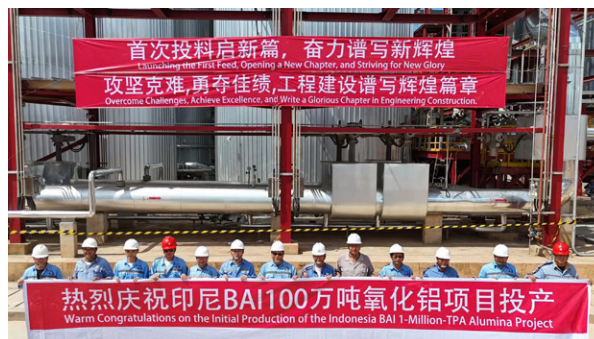
CHALIECO has continued to improve the relevant systems and administrative measures for overseas business, issued management systems such as *Administrative Measures for Overseas Market Operation*, and *Administrative Measures for Overseas Projects* and *Administrative Measures for Overseas Institutions*. The Company has straightened out the organization and implementation mode of overseas development and project implementation, the structure and division of responsibilities of overseas institution management, and effectively ensured the compliance and stable operation of overseas businesses.

### Expanding overseas business

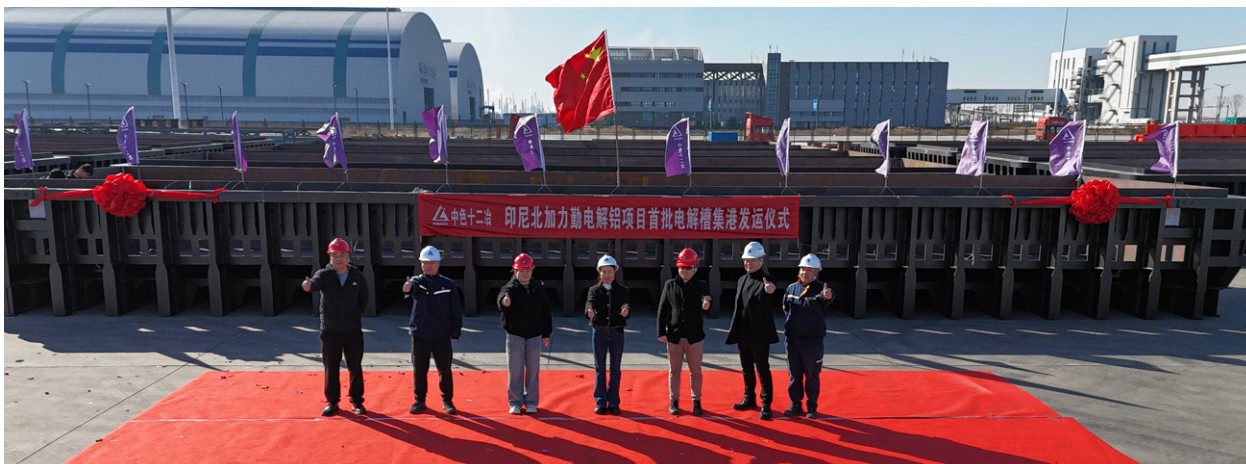
CHALIECO has formulated a "regional operation" strategy for overseas territories, segmenting into six regions and establishing working groups to finalize research reports on six pivotal countries and regions. The Company has strengthened internal coordination to support more cutting-edge overseas investment projects. In 2024, the Company's diesel power generation bid section, C3 bid section, and mine operation bid section of the Simandou Project were promoted as scheduled. The progress of the Mampawa Project in Indonesia exceeded 90%, and the commissioning of key systems of self-provided thermal power plants was successful, which was highly recognized by the President of Indonesia.



On September 2024, the captive power plant of Indonesia Mampawa 1,000 kt/a Alumina EPC Project of CHALIECO successfully generated electricity



In December 2024, the BAI 1,000 kt/a Alumina EPC Project of CHALIECO Indonesia was successfully put into operation



In December 2024, the first batch of electrolytic cells for the Lygend Project in Kalimantan Utara, Indonesia, undertaken by 12MCC, was successfully assembled and shipped from the port, and was praised by the Employer

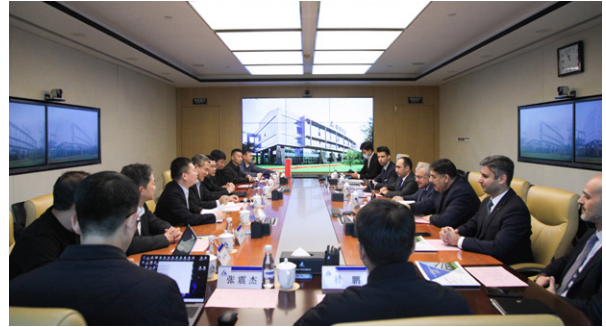


## Deepening international exchanges

CHALIECO has deepened cooperation and exchanges with countries along the Belt and Road, and deepened strategic and business cooperation. The Company has actively explored new modes and approaches of cooperation, and given full play to its advanced technical and management advantages to achieve mutual benefit and win-win results.



In April 2024, a delegation from Guinea visited CINF of CHALIECO



In December 2024, General Manager Liu Jing met with Maksim Javadov, President of Azerbaijan Aluminum Co., Ltd., and his delegation at the headquarters

## Promoting community development

CHALIECO has actively fulfilled its social responsibilities and participated in the construction of local community infrastructure to help community development and become a responsible global corporate citizen.



### Case

### KPDI | Congo (Kinshasa) Company Successfully Solved the Drinking Water Problem for Villagers around the Project

The Luvua River tributary, the source of drinking water for villagers in Manono region, Congo (Kinshasa), has caused dozens of serious illnesses and outbreaks every year, due to pollution. In 2024, the Project Department of Congo (Kinshasa) Company of KPDI conducted detailed hydrogeological surveys and simulation analyses. They achieved a single-well water yield of 120m<sup>3</sup>/d. Proactively, the team established water supply points outside the camp to provide free drinking water for local villagers, helping to address the water safety and supply issues for the surrounding villagers.



Congo (Kinshasa) Company of KPDI Successfully Solved Drinking Water Problem for Local Residents









# Future Prospect

**Seizing timely opportunities, our journey sets sail, propelled by strong momentum to overcome all challenges.** The year 2025 marks a pivotal year for both concluding the 14th Five-Year Plan and planning the 15th Five-Year Plan. It also serves as a key year to assess the effectiveness of the profound reforms undertaken by CHALIECO. Guided by Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era, we will continue to implement the spirit of the construction goal of "New CHALIECO", and actively pursue the strategy of "S&T + Internationalization". By focusing on our core businesses and strengthening key areas such as technological innovation, market expansion, management, and talent development, we are committed to building an outstanding "New CHALIECO"!



# Appendixes

## Key Performance Indicators

Indicator	2022		2023	2024
Economic responsibility				
	Before adjustment	After adjustment		
Total assets (RMB 10,000)	4,739,128.86	4,739,221.82	4,094,380.30	4,115,652.82
Net assets (RMB 10,000)	1,045,505.73	1,045,598.68	725,450.00	884,506.61
Operating revenue (RMB 10,000)	2,369,732.89	2,369,732.89	2,233,717.10	2,400,325.45
Total tax payment (RMB 10,000)	86,603.77		79,277.64	62,871.86
Investments in R&D (RMB 10,000)	91,206.62		94,330.90	96,103.15
Number of R&D employees (persons)	2,479		2,164	2,352
Cumulative number of valid patents (nos.)	2,832		3,214	3,324
Including: Patents for inventions (nos.)	1,120		1,385	1,473
Number of patent applications accepted (nos.)	381		647	716
Including: Patents for inventions (nos.)	176		369	361
Number of newly added authorized patents (nos.)	312		368	360
Including: Patents for inventions (nos.)	80		109	134
Legal review rate of corporate rules and regulations (%)	100		100	100
Legal review rate of corporate business contracts (%)	100		100	100
Legal review rate of important corporate business decisions (%)	100		100	100
Number of legal compliance training sessions (time)	18		20	25
Number of hours for legal compliance training (hour)	36		38	42

Indicator	2022	2023	2024
Number of people receiving training on legal compliance (person-time)	1,032	1,404	1,862
Number of board meetings held (time)	12	9	8
Number of general shareholders' meetings held (time)	3	3	2
Number of suppliers (nos.)	5,267	2,488	2,378
Number of potential suppliers rejected for non-compliance of social responsibility (nos.)	8	6	0
Number of suppliers reviewed during the reporting period (nos.)	5,267	2,488	2,378
Number of suppliers suspended for non-compliance of social responsibility (nos.)	0	0	23
Number of CSR/ESG training courses for suppliers (nos.)	0	0	71
Complaint resolution rate (%)	100	100	100
<b>Social responsibility</b>			
Number of employees (person)	12,219	11,456	10,853
Number of newly recruited employees during the reporting period (person)	76	137	127
Coverage rate of physical examination (%)	100	100	100
Coverage of health records (%)	100	100	100
Signing rate of labor contracts (%)	100	100	100
Coverage of labor contracts (%)	100	100	100
Coverage of social insurance (%)	100	100	100
Number of employee complaints filed, handled and solved through complaint mechanism (nos.)	0	0	0
Number of female managers (person)	1,441	1,260	1,192
Proportion of female managers in middle management (%)	31.66	6.12	6.15
Proportion of ethnic minority employees (%)	4.56	4.48	4.72
Localized employment rate (%)	88	85.43	85
Days of paid leaves per capita (day)	10.49	11	11



Indicator	2022	2023	2024
Investments in employee training (RMB 10,000)	738.19	1,222.60	1,461.43
Number of participants of employee training (person-time)	28,686	52,349	41,526
Number of hours for employee training (hour)	283,428.00	377,686.45	542,529.00
YOY growth of employee compensation (%)	3	12	3.35
Number of people with disabilities employed (person)	78	61	60
Investment in supporting workers in need (RMB 10,000)	537.53	40.87	28.85
Number of work safety accidents (time)	1	1	2
Working days lost due to work-related injuries (day)	6,106	42,000	176
Number of work-related deaths (person)	1	7	0
Proportion of work-related deaths (%)	0.008	0.061	0
Total investment in safety (RMB 10,000)	-	-	28,201.61
Number of participants in safety education and training (person-time)	55,301	122,276	124,940
Number of hours for safety education and training (hour)	99,285	427,966	499,760
Coverage of safety training (%)	-	100	100
Reception rate of visits of employees and other stakeholders (%)	100	100	100
Handing rate of letters and mails (%)	100	100	100
Total charitable donations (RMB 10,000)	8.7	3.9563	1.62
Environmental responsibility			
Investments in environmental protection (RMB 10,000)	3,423.10	3,532.17	3,175.17
Total energy consumption (tce)	11,362.05	80,794	42,099
Energy consumption intensity per RMB10,000 of operating revenue (tce/RMB10,000)	0.0462	0.0378	0.0192



Indicator	2022	2023	2024
Fuel oil consumption (liter)	38,462.46	61,043,063.32	29,625,891.30
Gasoline consumption (liter)	1,882,071.76	38,885,310.92	12,327,323.56
Diesel consumption (liter)	2,044,766.46	22,157,752.40	17,298,567.74
Natural gas consumption (m <sup>3</sup> )	223,793.16	195,928	274,847
Electricity consumption (10,000 kWh)	5,418.74	11,515.03	9,400.65
Total water consumption (ton)	199,459.76	766,595	589,761
Water consumption intensity (ton/RMB10,000)	0.68	0.34	0.25
Discharge of non-hazardous waste (ton) (kitchen waste, construction waste, etc.)	730.50	11,598.60	6,323
Non-hazardous waste discharge intensity per RMB10,000 of operating revenue (ton/RMB10,000)	0.0003	0.0052	0.0026
Discharge of hazardous waste (ton) (toner cartridges, damaged light tubes, etc.)	0.17	29.32	12.10
Hazardous waste discharge intensity per RMB10,000 of operating revenue (ton/RMB10,000)	$7.17 \times 10^{-8}$	$1.31 \times 10^{-5}$	$5.04 \times 10^{-6}$
Number of participants in environmental protection training (person-time)	13,999	10,890	14,854
Coverage of environmental protection training (%)	33	34	39
Energy consumption per RMB 10,000 output value (tce/RMB 10,000 output value)	0.0288	0.0362	0.0152
Annual fresh water consumption (ton)	142,463	755,194	589,761
Amount of reclaimed water used (ton)	4,406	11,401	0
Industrial solid waste reuse rate (%)	100	100	100
Compliance rate of pollutant emissions (%)	-	100	100
Compliance rate of solid waste disposal (%)	100	100	100
Compliance rate of major pollutant emissions (%)	100	100	100
Electricity used in office buildings (10,000 kWh)	7,230.48	7,330.60	6,365.15
Water used in office buildings (10,000 tons)	70.23	45.84	32.66

## Index of Indicators

Contents		HKEX ESG Code <sup>1</sup>	SSE Guidelines <sup>2</sup>	CASS-ESG 6.0
Report Introduction		Reporting scope	-	P1.1、 P1.2
Message from the Chairman		-	-	P2.1
ESG Governance Statement from Board of Directors		Governance Structure	-	G1.1.1、 G1.1.2、 G1.1.4、 G1.1.5、 G1.1.6、 G1.1.7、 G1.1.9
About Us		-	-	P3.1、 P3.2、 P3.3、 P3.4
Sustainability Management	Sustainable Development Management System	Governance Structure	Article 52, Article 53	G1.1.1、 G1.1.2、 G1.1.4
	Sustainable Development Actions	-		-
	Identification of Double Material Issues	Reporting Principles - Materiality		G1.1.9
	Communication with Stakeholders			G1.3.1、 G1.3.2
ESG Figures of CHALIECO		A2.2、 B8.2	-	-
CSR Topic	Collaboratively Deepening Institutional Reform and Making Every Effort to Build a Community of Value Creation	-	-	-
Economic Responsibility Building a World-class Enterprise by Enhancing Governance	Corporate Governance	B7、 B7.1-7.3	Article 55	G2.2.1、 G2.2.2、 G2.2.8
	Compliant Operation			
	Risk Prevention and Control			
Responsibility for Customers Consolidating the Foundation of Development by Promoting Main Business	Quality Management	B6、 B6.4	Article 47	S3.3.1、 S3.3.2、 S3.3.3
	Customer Services	B6、 B6.2、 B6.5	Article 47	S3.3.1、 S3.3.3、 S3.3.6
	Science and Technology Innovation	B6、 B6.3	Article 42	S2.2.1、 S2.2.2、 S2.2.3、 S2.2.4、 S2.2.6、 S2.2.9、 S2.2.10、 S2.2.11、 S2.2.12、 S2.2.13

<sup>1</sup>We abide by the provisions of "comply or explain" under Part C — "Code on Environmental, Social and Governance Reporting" – of the *Environmental, Social and Governance (ESG) Reporting Guide* of the Stock Exchange of Hong Kong Limited. The undisclosed indicators in A2.5 and B6.1 are explained as follows:

① Clause A2.5 and Clause B6.1 do not apply to the business of the Company, as the Company is a design and construction company.

<sup>2</sup>Guidelines No. 14 of the Shanghai Stock Exchange (SSE) on the Application of Self-Regulation Rules for Listed Companies – Sustainability Report (Trial) of the Shanghai Stock Exchange.

Contents		HKEX ESG Code <sup>1</sup>	SSE Guidelines <sup>2</sup>	CASS-ESG 6.0
Environmental Responsibility Creating a Zero-Carbon Future by Adhering to Green Development	Responding to "Dual Carbon"	Part D: Climate-related Disclosures	Article 21 to Article 28	E1.1.1、E1.1.2、E1.1.3
	Environmental Management	A1	Article 33	E2.4.1、E2.4.2、E2.4.3、E2.4.4
	Green Operation	A1.1、A1.3-1.6、A2.1-2.4	Article 30, Article 31, Article 33, Article 35, Article 36 and Article 37	E2.1.1、E2.1.2、E2.1.5、E2.1.6、E2.2.1、E2.2.3、E2.2.5、E2.2.6、E3.1.1、E3.1.5
	Green Culture	A3、A3.1	Article 32	E2.3.2、E2.3.3
Responsibility for Partners Achieving Win-Win Results by Gathering Strengths	Strategic Cooperation	-	-	S3.1.1、S3.1.2、S3.1.3、S3.1.4
	Industry Development	-	-	
	Responsible Supply Chain	B5、B5.1-5.4	Article 45	
Responsibility for Employees Achieving Talents Growth by Working Together	Safeguarding Employees' Rights and Interests	B1、B1.1、B1.2、B4、B4.1	Article 50	S4.1.1、S4.1.3、S4.1.4、S4.1.6、S4.1.7、S4.1.9、S4.1.11、S4.1.12
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	Caring for Employees	-		-
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Responsibility for Community Striving for a Better Future by Contributing to Society	Rural Revitalization	B8、B8.1、B8.2	Article 39	S1.1.2、S1.1.3、S1.1.4
	Public Welfare and Charity	B8、B8.1、B8.2	Article 40	S1.2.1、S1.2.2、S1.2.4
	Overseas Duty Performance	B8、B8.1、B8.2	Article 40	S1.2.1
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	Interpretation	-	-	-
	Rating Report	-	-	A5
	Suggestion and Feedback	-	-	A6



## Interpretations

Full Name	Short name
Aluminum Corporation of China	Chinalco
Shenyang Aluminum and Magnesium Engineering and Research Institute Company Limited	SAMI
Guiyang Aluminum Magnesium Design & Research Institute Co., Ltd.	GAMI
CINF Engineering Corporation Limited	CINF
China Nonferrous Metals Processing Technology Co., Ltd.	CNPT
China Nonferrous Metal Changsha Survey and Design Institute Co., Ltd.	CKY
Kunming Prospecting Design Institute of China Nonferrous Metals Industry Co., Ltd.	KPDI
Kunming Nonferrous Metallurgy Design and Research Institute Co., Ltd.	KERI
China Nonferrous Metal Industrial No. 6 Metallurgy Construction Company	CHSMCC
Jiuye Construction Co., Ltd.	Jiuye Construction
China Nonferrous Metals Industry's 12th Metallurgical Construction Co., Ltd.	12MCC
CHALIECO Shandong Engineering Technology Co., Ltd.	Shandong Engineering
CHALIECO (Tianjin) Construction Co., Ltd.	Tianjin Construction

# Rating Report

## Rating Report for 2024 Annual Environmental, Social, and Governance Report of China Aluminum International Engineering Corporation Limited

Upon the request of China Aluminum International Engineering Corporation Limited, the Chinese Expert Committee on CSR Report Rating invited experts to form a rating panel to rate the 2024 Annual Environmental, Social, and Governance Report of China Aluminum International Engineering Corporation Limited (hereinafter referred to as the "Report").

### I. Rating Basis

*Guidelines on Sustainability Reporting for Chinese Enterprises (CASS-ESG 6.0)*  
- Civil Engineering Construction by China Enterprise Reform and Development Society and Institute of Cloud Responsibility Research, and *Rating Standards on Sustainability Reporting for Chinese Enterprises (2025)* by the Chinese Expert Committee on CSR Report Rating.

### II. Rating Process

1. The rating panel reviews and confirms the *Confirmation Letter on Process and Accessibility Rating Materials of Sustainability Report* and associated materials submitted by the compilation team of the Report;
2. The rating panel assesses the compilation process and contents of the Report and prepares the Rating Report;
3. The vice chairman of the Chinese Expert Committee on CSR Report Rating, the leader of the rating panel, and the experts of the rating panel jointly review and sign the Rating Report.

### III. Rating Conclusion Process (★★★★★)

CHALIECO established a leading group for corporate social responsibility work, with the chairman of the Company as the head. The leading group was responsible for reporting the progress of social responsibility work to superiors, conveying the guidance and management opinions of Aluminum Corporation of China on social responsibility work to subordinates, and coordinating and planning the implementation of the Company's social responsibility work. It also introduced relevant management systems to meet compliance disclosure requirements, enhanced the level of sustainable development management, promoted the company's sustainable development brand image, and strengthened communication with stakeholders. The report will be presented in different languages, including Simplified Chinese, Traditional Chinese, and English, achieving excellent performance in the aspect of process.

### Materiality (★★★★★)

The Report disclosed key industry issues, including addressing climate change, managing pollutant emissions ("three wastes", noise, light pollution, etc.), construction waste management, advancing the circular economy (land and resource protection and efficient development), promoting green buildings, conserving ecosystems and biodiversity, driving product and technological innovation (smart construction), sustainable supply chains, product and service safety and quality, safeguarding employee rights (migrant workers, temporary workers, and contract workers), occupational health and safety, timely project delivery, sustainable governance mechanisms, and combating commercial bribery and corruption. It provides a comprehensive and substantive narrative, achieving excellent performance in the aspect of materiality.

### Completeness (★★★★☆)

The main content of the Report systematically disclosed 81% of the core indicators of the industry from the perspectives of "Economic Responsibility | Building a World-class Enterprise by Enhancing Governance", "Responsibility for Customers | Consolidating the Foundation of Development by Promoting Main Business", "Environmental Responsibility | Creating a Zero-Carbon Future by Adhering to Green Development", "Responsibility for Partners | Achieving Win-Win Results by Gathering Strengths", "Responsibility for Employees | Achieving Talents Growth by Working Together" and "Responsibility for Community | Striving for a Better Future by Contributing to Society", achieving a good performance in the aspect of completeness.

### Balance (★★★★☆)

The Report disclosed negative data information such as "Class A quality incidents", "general and above environmental emergencies, serious environmental violations and violations", "general environmental emergencies and major environmental pollution and ecological damage incidents", "number of deaths due to work" and "employee turnover rate", which has leading balanced performance.

### Comparability (★★★★★)

The Report disclosed the comparative data of 78 key indicators such as "operating revenue", "investments in R&D", "number of newly added authorized patents", "number of employees", "total investment in environmental protection", "number of environmental protection training" and "safety training coverage rate" for three consecutive years, and made horizontal comparison through "Top 20 Enterprises in Corporate Governance Granted ESG Golden Bull Award in the Second National New Cup" and "Pioneer 100 Index of ESG for Central Enterprises

Listed Companies" for two consecutive years, achieving an excellent performance in the aspect of comparability.

### Readability (★★★★★)

The Report adopted an issue-based framework structure to comprehensively display CHALIECO's responsibility fulfillment concept, practice, and achievements in creating first-class, strengthening main business, seeking green development, caring for employees, achieving win-win cooperation, and giving back to society, fully responding to the expectations and demands of stakeholders. The cover of the Report adopted an illustration style, continuing the design style of previous reports and enhancing the enterprise identification. Each chapter had a real-life large picture fitting the theme on the cross-page and started with a highly general sentence. The overall style is simple and refreshing, which not only highlights the industry characteristics but also enhances the report's recognizability and readability, achieving excellent performance in the aspect of readability.

### Innovation (★★★★★)

The Report started with the topic of "Collaboratively Deepening Institutional Reform and Making Every Effort to Build a Community of Value Creation", which focuses on CHALIECO's vivid practice of thoroughly promoting the market-oriented reform of headquarters functional departments and subsidiaries and making every effort to build a community of value creation with efficient integration of resources and complementary advantages as its core. The Report was in a novel form, which met the requirements of displaying sustainable development concepts, practices, and achievements as well as facilitating dissemination. It was beautifully arranged with both pictures and texts, full of creativity and excellent innovative performance.

### Overall Rating (★★★★★)

According to the assessment of the rating panel, the 2024 Annual Environmental, Social, and Governance Report of China Aluminum International Engineering Corporation Limited is awarded a five-star rating, which means that it is an excellent Sustainability Report.



**中国企业社会责任报告  
评级专家委员会**  
Chinese Expert Committee on CSR Report Rating

The Environmental, Social, and Governance Report of China Aluminum International Engineering Corporation Limited has been awarded a five-star rating for the second consecutive year

### IV. Improvement Suggestions

1. Increase the disclosure of core indicators relating to the industry to further improve the completeness of the Report;
2. Increase the disclosure of negative data and negative event analysis to improve the balance of reporting.

Vice Chairman of the Rating  
Expert Committee

Leader of the Rating  
Panel

Expert of the Rating  
Panel



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## Suggestions and Feedback

Dear readers,

Thank you very much for reading this report. In order to improve the quality and level of the ESG Report of CHALIECO, we look forward to your valuable opinions and suggestions on this report. We will carefully consider your opinions and suggestions and ensure your feedback remains confidential, protected from third party access.

1. What is your overall assessment of this report?

☐ Very Good      ☐ Good      ☐ Fair      ☐ Poor      ☐ Very Poor

2. Do you think this report reflects the significant economic, social and environmental impact of CHALIECO?

☐ Yes      ☐ No

3. What do you think of the information, data and indicators disclosed in this report in terms of clarity, accuracy and completeness?

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

4. What do you think of the structure of this report?

☐ Very reasonable      ☐ Reasonable      ☐ Fair      ☐ Poor      ☐ Very poor

5. Do you think the layout and presentation design of this report is easy to read?

☐ Yes      ☐ No

Open-ended questions:

1. Which issues in this report do you think are the most concerned?

2. What other information do you think needs to be disclosed in this report?

3. What are your comments and suggestions on the ESG work of CHALIECO?

Please leave your personal information if available:

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