

2020 | 中 铝 国 际

# 社 会 责 任 报 告

CORPORATE SOCIAL RESPONSIBILITY REPORT

用心营造美好未来

To Create a Better Future with Heart



中铝国际工程股份有限公司

China Aluminum International Engineering Corporation Limited

# 2020





## 报告导读

本报告旨在响应利益相关方期望，展示环境、社会、企业管治及可持续发展方面的理念、管理、行动和成效。

### ○ 报告标准

本报告遵循香港联合交易所（以下简称“香港联交所”）《环境、社会及管治报告指引》，上海证券交易所《上海证券交易所上市公司环境信息披露指引》的有关规定与要求，并广泛参考全球报告倡议组织(GRI)《可持续发展报告指南》、中国社会科学院《中国企业社会责任报告编写指南(CASS—CSR4.0)》等在内的国内外社会责任报告标准。

### ○ 报告覆盖范围

如无特殊说明，本报告涵盖中铝国际工程股份有限公司总部、分支机构及其附属子公司。

### ○ 报告数据来源

除特殊说明，本报告所引用的信息与数据来自公司的正式文件、统计报告与财务报告，以及经由公司统计、汇总与审核的环境、社会及管治信息。

### ○ 报告时间范围

2020 年 1 月 1 日至 2020 年 12 月 31 日。部分内容适当追溯历史数据。

### ○ 报告称谓说明

为便于表述和方便阅读，“中铝国际”“公司”“我们”表示中铝国际工程股份有限公司总部、分支机构及附属子公司。如无特殊说明，本报告中的“元”“万元”“亿元”分别代表“人民币元”“人民币万元”“人民币亿元”。

## 报告周期

- 本报告为年度报告。

## 报告获取

- 可以在中铝国际官方网站、香港联交所网站或上海证券交易所网站浏览或下载本报告的中文简体 / 英文、中文繁体 / 英文版本。

## REPORT INTRODUCTION

To respond to the requirement of stakeholders, this report will demonstrate the company's concepts, management activities, events and achievement in environmental and social governance and sustainable development.

### ○ Report Standard

Besides complying with the relevant regulations and requirements of the "Environmental, Social and Governance Reporting. Guide (the ESG Guide)" of the Hong Kong Stock Exchange (hereinafter referred to as the "HKSE") and the Shanghai Stock Exchange's "Guidelines for Environmental Information Disclosure of Listed Companies in Shanghai Stock Exchange", the report also extensively refers to the "Sustainability Reporting Guidelines" of Global Reporting Initiative (GRI), the Chinese Academy of Social Sciences "China Corporate Social Responsibility Reporting Guide Framework (CASS-CSR4.0)" and other domestic and foreign social responsibility reporting standards.

### ○ Report Scope

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

### ○ Data Source

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 environmental and social governance information that has been collected, aggregated and audited by the company.

### ○ Time Range

From January 1, 2020 to December 31, 2020. Part of the content might appropriately trace historical data.

### ○ Terms and Description

For ease of readability, "CHALIECO" "the Company" "we" refer to the headquarters, branches and subsidiaries of China Aluminum International Engineering Corporation Limited. Unless otherwise specified, "yuan" in terms of currency represents "RMB yuan".

### ○ Reporting Period

This report is an annual report.

### ○ Report Access

Our publications in Chinese simplified/English, traditional Chinese/English are available to view and download on the websites of official website of CHALIECO, the websites of the HKSE or Shanghai Stock Exchange.



# 目录 Contents

|                                                 |    |
|-------------------------------------------------|----|
| 报告导读                                            | 02 |
| Report Introduction                             |    |
| 董事长致辞                                           | 06 |
| Message from the Chairman                       |    |
| 关于我们                                            | 10 |
| About Us                                        |    |
| 公司简介 Company Profile                            | 12 |
| 组织架构 Organization Structure                     | 14 |
| 企业治理 Corporate Management                       | 17 |
| 社会责任管理                                          | 22 |
| Social Responsibility Management                |    |
| 管理体系 Management System                          | 24 |
| 利益相关方参与 Stakeholder Participating               | 25 |
| 董事会参与 BOD Leading                               | 26 |
| 重大议题判定 Decision-making Process for Major Issues | 26 |
| 未来展望                                            | 76 |
| Future Outlook                                  |    |
| 附录                                              | 78 |
| Appendix                                        |    |
| ESG 指标索引 ESG Index                              | 78 |

|    |                                                    |    |
|----|----------------------------------------------------|----|
| 28 | <b>匠心之“铝” 引领行业</b>                                 |    |
|    | "Aluminum" with Ingenuity to Lead the Industry     |    |
| 30 | 优质工程 High-quality Project                          |    |
| 33 | 技术创新 Technological Innovation                      |    |
| 41 | 安全生产 Work Safety                                   |    |
| 44 | 责任产业链 Responsibility Industry Chain                |    |
|    |                                                    | 01 |
|    | <b>绿色之“铝” 律动未来</b>                                 | 46 |
|    | "Aluminum" with Green to Rhythm Future             |    |
|    | 应对气候变化 Tackling Climate Change                     | 48 |
|    | 降低环境影响 Reduce Environmental Impact                 | 50 |
|    | 推行环保技术 Promote Environmental Protection Technology | 54 |
|    | 铝应用推广 Aluminum Application Promotion               | 56 |
|    |                                                    | 02 |
| 58 | <b>幸福之“铝” 共享美好</b>                                 |    |
|    | "Aluminum" with Happiness to Share Prosperity      |    |
| 60 | 员工关爱 Employee Care                                 |    |
| 65 | 志愿服务 Volunteer Service                             |    |
| 66 | 精准扶贫 Targeted Poverty Alleviation                  |    |
| 70 | 防疫抗疫 Fight against COVID-19                        |    |
| 73 | 境外履责 Performing duties abroad                      |    |
|    |                                                    | 03 |

## 董事长致辞



武建强

中铝国际工程股份有限公司董事长  
**武建强**

2020 年，是极不平凡的一年。面对新冠疫情的严重冲击、严峻复杂的国内外经济形势，中铝国际上下齐心协力、攻坚克难，积极有序落实疫情防控、狠抓复工复产、深化改革调整，推动企业高质量发展走深、走实，取得新成绩。

**我们秉持匠心铸就至臻品质，致力打造优质工程。**质量之魂，存于匠心。中铝国际以质量安全为支撑，开展项目管理化标准体系建设，健全工程项目质量管理体系，不断创新优化施工工法，持续强化项目监督与管理，以工匠精神铸造优质工程、精品工程。2020 年，中铝国际 CEC·咸阳第 8.6 代薄膜晶体管液晶显示器件项目荣获国家级优质工程金奖；内蒙古蒙泰 90 万吨 / 年铝板带项目、车用锂电正极材料产业化及环保技改项目荣获国家优质工程奖。

**我们深入实施创新驱动发展，激发科技创新活力。**中铝国际坚持创新驱动，加大科研资金投入，积极开展科研与技术攻关，加快创新技术成果转化应用，推动有色金属产业清洁、低碳、高效、可持续发展。2020 年，中铝国际创新开发的智能铝电解多功能机组核心装置项目实现了电解铝生产换极全过程智能化，并通过了工信部组织的测评验收；“七点进电超大型铝电解槽精准调节深度节能成套技术”在多家国内企业取得成功应用。

**我们坚持生态优先绿色发展，守护一方绿水青山。**中铝国际持续深化生态文明建设，加快环保技术研发与推广应用，培育绿色发展新动能。2020 年，成功研发“湿法冶炼工艺”“铅阳极泥处理新技术”“RDP 全过程一体化精准协同膏体充填技术”等节能环保技术，提高资源利用率，减少“三废”排放，降低能源消耗。同时，中铝国际积极拓展绿色技术研发、绿色勘查施工、绿色运行管理、绿色项目开发等领域，推动落实绿色方案，为美丽中国建设贡献力量。

**我们紧抓“一带一路”发展机遇，加速海外业务布局。**中铝国际凭借“技术为先导”的集约发展模式，为多项海外工程提供工程设计与咨询、工程总承包、设备供货等服务，推动中国铝工业技术、装备及管理“走出去”，并与国际企业、科研机构等加强合作，实现互利互惠、合作共赢。2020 年，中铝国际成功签订印尼、印度、刚果（金）等一批海外项目，并打造以印尼和越南为基础的东南亚基地、以几内亚和刚果金为基础的非洲基地、以哈萨克斯坦和塔吉克斯坦为基础的俄语区基地、以委内瑞拉和秘鲁为基础的美洲基地，以及以意大利维斯梅港电解铝厂 EPS 总包项目为基础的欧洲市场业务基地，实现海外市场跨越式发展。

**我们聚善公益倾情回报社会，持续增进民生福祉。**中铝国际积极履行社会责任，深入落实精准扶贫任务，在基础设施建设、产业支持、教育、消费、就业等领域，助力贫困村脱贫摘帽。在疫情大考面前，中铝国际积极复工复产，踊跃捐款捐物，助力打赢疫情防控阻击战。与此同时，中铝国际热心公益事业，鼓励并支持员工积极参与志愿者活动，凝聚向善力量，为和谐社会建设注入新的生机与活力。

**勇毅笃行催奋进，蹄疾步稳踏新程。**中铝国际将一如既往地秉持“用心营造美好未来”的企业使命，凝心聚力、阔步前行，以更负责任的态度践行可持续发展，服务客户、回报股东、回馈社会、造福员工，以更宽广的视野、更高的目标要求、更有力的举措，向着高质量发展阔步前行。

## Message from the Chairman



The year 2020 has witnessed many remarkable events. Facing the Covid-19 pandemic and going against the economic headwinds home and abroad, CHALIECO has made concerted efforts of all the levels to overcome difficulties, actively and orderly implement epidemic prevention and control, vigorously resume work and production, deepen reforms and adjustments, and promote high-quality development of the company to achieve new results.

**We uphold the craftsmanship to create high-quality projects.** The quality lies at the heart of craftsmanship. Committed to the pursuit of quality and safety, CHALIECO has carried out standardized project management, improved project quality system, continuously innovated and optimized construction methods, continuing to strengthen project supervision and cast high-quality projects with the spirit of craftsmanship. In 2020, the 8.6th Generation Thin Film Transistor Liquid Crystal Display Device Project in Xianyang won the National Quality Engineering Gold Award. Montadalat aluminum plate and strip project in Inner Mongolia with output of 900,000-ton/year and industrialization of lithium battery cathode materials for vehicles and its green technology transformation projects won the National Quality Engineering Award.

**We deeply implement innovation-driven development to stimulate the vitality of technological innovation.** Adhering to innovation-driven policies, CHALIECO increases investment in scientific research, actively carrying out R&D and accelerating the transformation and application of innovative technological achievements to promote the low-carbon and sustainable development of the non-ferrous metal industry. In 2020, CHALIECO innovated to develop the core device of the aluminum electrolysis multifunctional

unit innovatively developed by CHALIECO realized the upgrade of the whole process of production and changeover, and passed the evaluation and acceptance organized by the Ministry of Industry and Information Technology. "Precise depth adjustment and energy-saving set of technology for ultra-large aluminum electrolytic cell with 7-power supply" has been successfully applied in many domestic enterprises.

**We always put ecology first and insist on green development.** CHALIECO continues to deepen the construction of ecological civilization, accelerate R&D and application of green technologies, and cultivate new momentums of green development. In 2020, we have successfully developed energy-saving and environment-friendly technologies such as "hydrometallurgy process", "new technology for lead anode slime treatment", "RDP full-process integration, precise and collaborative paste filling technology" to improve resource utilization, and reduce emissions and energy consumption. Besides, CHALIECO actively insists on green technology, green survey & construction, green operation and green project development to contribute to the construction of a beautiful China.

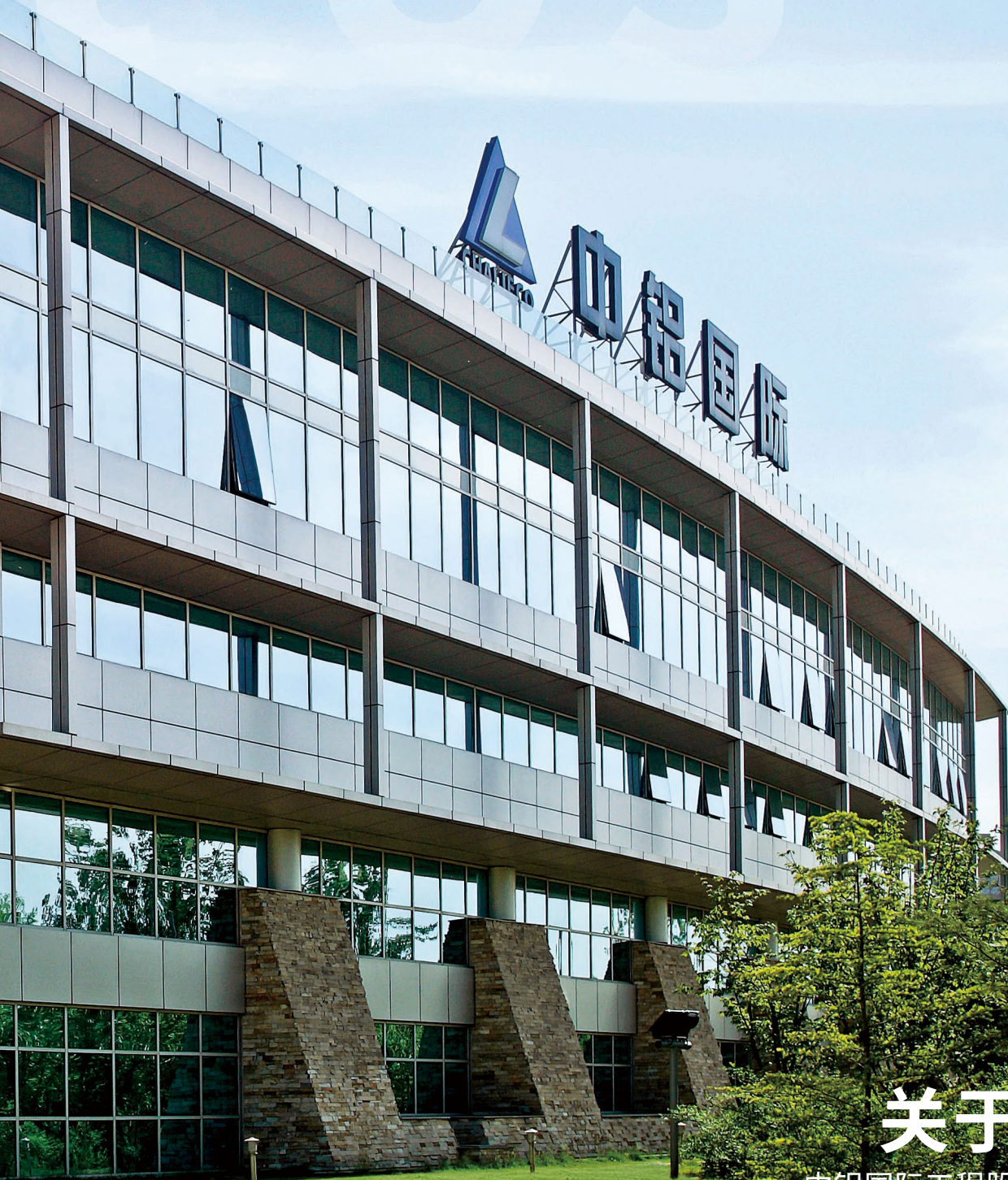
**We seize the opportunities brought by the Belt and Road Initiative to accelerate our overseas business deployment.** Relying on the "technology-led" intensive development model, CHALIECO provides various services including engineering design and consulting, engineering project contracting, and equipment supply for a number of overseas projects, promoting China's aluminum industry to export its technology, equipment, and management experience. We also strengthen partnerships with international enterprises, scientific research institutions, and other organizations to achieve mutual benefits and seek win-win cooperation. In 2020, CHALIECO successfully signed a number of overseas projects in Indonesia, India, and the Democratic Republic of Congo, and built the Southeast Asian bases in Indonesia and Vietnam, African bases in Guinea and the Democratic Republic of Congo, the Russian-speaking bases in Kazakhstan and Tajikistan, the American bases in Venezuela and Peru, and the European market bases with the EPS turnkey project of the electrolytic aluminum plant in Italy at its core.

**We pool little kindness into great strength of charity to give back to the society, and constantly improve public good and people's well-being.** CHALIECO actively fulfills its social responsibilities and implements targeted poverty alleviation tasks in depth. In the areas of infrastructure construction, industry support, education, consumption, employment, etc., the company adopts various methods for, such as, targeted assistance, infrastructure construction, charitable donations, agricultural products purchase, to help poor villages get rid of poverty. In the face of the pandemic, CHALIECO actively resumed work, and donated money and materials to help win the battle against the virus. At the same time, CHALIECO is also keen to public welfare, encouraging employees to actively participate in volunteer activities, and the construction of a harmonious society.

**We are courageously and eagerly embarking on a new journey.** CHALIECO will, as always, uphold the corporate mission of "to create a better future with heart". With sustainable operation, we will better serve the clients, reward shareholders, return to the society and benefit employees, and stride towards high-quality development with a broader vision and a higher requirements and greater executions as well.



tus



关于我们

中铝国际工程股份有限公司

## 公司简介 Company Profile

中铝国际工程股份有限公司成立于 2003 年 12 月，是中国铝业集团有限公司（以下简称“中铝集团”）的工程技术板块，属中铝集团控股子公司，是中国有色金属行业领先的技术、工程服务与设备提供商。公司于 2012 年 7 月 6 日在香港联交所主板（H 股代码：2068）上市，于 2018 年 8 月 31 日在上海证券交易所（A 股代码：601068）上市，成为“A+H”有色金属工程技术第一股。

中铝国际是一家集技术研发、测绘勘察、工程设计、工程施工、工程总承包等业务为一体的高新技术企业。中铝国际所属 6 家国家级甲级设计研究院、5 家大型综合建筑安装公司。中铝国际成立十多年来，创造了百余项“中国第一”和中国企业新纪录，取得中国建筑工程鲁班奖、国家优质工程奖等各级各类工程奖项 500 余项。近年来，中铝国际重点开展节能减排技术研发、积极参加地方基础设施建设、棚户区改造、生态建设、环境工程、道路桥梁城市公用事业等领域的投资、建设与开发，为构建资源节约型和环境友好型社会作出贡献。

Established in December 2003, China Aluminum International Engineering Corporation Limited (hereinafter referred to as "CHALIECO") is an engineering technology company and a holding subsidiary of Aluminum Corporation of China (hereinafter referred to as CHINALCO), also a leading technology and engineering services provider in nonferrous metals industry in China. The company was listed on the main board of the Hong Kong Stock Exchange (SEHK: 2068) on July 6, 2012 and the Shanghai Stock Exchange (SHA: 601068) on August 31, 2018, becoming the first non-ferrous engineering company listed on both Hong Kong and Shanghai markets.

CHALIECO is a high-tech enterprise integrating research and development, surveying, engineering design, engineering construction and engineering project contracting. CHALIECO has 6 national-level Class A design and research institutes and 5 large-scale integrated construction and installation companies. In the more than ten years since its establishment, CHALIECO has created more than 100 "China's No. 1" and many new records for Chinese enterprises, and has won more than 500 various engineering awards at all levels, including Luban Award and the National Quality Engineering Award. In recent years, CHALIECO has focused on research and development of energy-saving and emission-reduction technologies, and actively participated in the investment, construction and development of local infrastructure construction, shantytown renovation, ecological construction, environmental engineering, urban public utilities, etc., in order to make positive contributions to an environmentally friendly society.



### 发展使命 Mission

用心营造美好未来  
To Create A Better Future with Heart



### 愿景 Vision

具有国际竞争力的世界一流有色金属工程技术公司  
To Build A Leading Non-Ferrous Metal Engineering Technology Company with International Competitiveness

**定位** Positioning

引领和支持铝产业的科技进步，引领和开拓铝产品的工程应用，引领和带动铝铜国际产能的合作；做“一带一路”建设的积极参与者、有色行业海外工程建设和产能合作的有力推动者以及打造海外中铝的主要奉献者

A company to lead and support the technological progress, engineering application, and international cooperation of aluminum industry; to be an active participant in the Belt and Road Initiative, effectively promoting overseas project construction in the non-ferrous industry, and a major contributor to Chinalco international progress.

**发展战略** Development Strategy

以高质量发展为引领，技术为龙头，工程施工为基础，为有色行业提供产业链的服务；以创新为驱动，在确保有色行业技术优势的同时，充分利用智能制造、智能建造技术、服务有色行业并逐步向非有色业务拓展；以市场为导向，巩固并聚焦传统有色行业的市场领先优势，提升公司在新兴业务的效益和规模；以绿色发展为基调，大力推进工程用铝，积极拓展节能和生态产业，寻找新的利润增长点；以资本运作为纽带，密切与地方政府的关系，积极参与国家和地方的城市基础设施建设；紧跟“一带一路”国家战略，深耕海外市场，提升公司国际竞争力和品牌影响力

Led by high-quality development and technologies, and based on engineering construction, the Company provides full industrial-chain service for the nonferrous metal industry; driven by innovation, the Company will make full use of the technologies of intelligent manufacturing and intelligent construction, serves the nonferrous metal industry and gradually expand the ferrous metal business, while ensuring its technological advantages in the nonferrous metal industry; being market-oriented, the Company will consolidate and focus on its market-leading edge in the traditional nonferrous metal industry while improving the profit and scale of emerging business and overseas business; taking green development as the keynote, the Company will vigorously promote the aluminum application in engineering, actively expands energy-saving and ecological industries for new drivers of profit growth; taking capital operation as the link, the Company will form closer relations with local governments, and actively participate in the national and local urban infrastructure construction; the Company will stick to the Belt and Road Initiative, go further in overseas market exploration, and promote its international competitiveness and brand awareness.

**“4+1” 业务发展方向****"4+1" Business Directions****有色金属工程总承包**

EPC for Nonferrous Metal

**市政及民用工程总承包**

EPC for infrastructure &amp; Civil Work

**工程用铝**

Aluminum for Engineering Construction

**工程咨询服务**

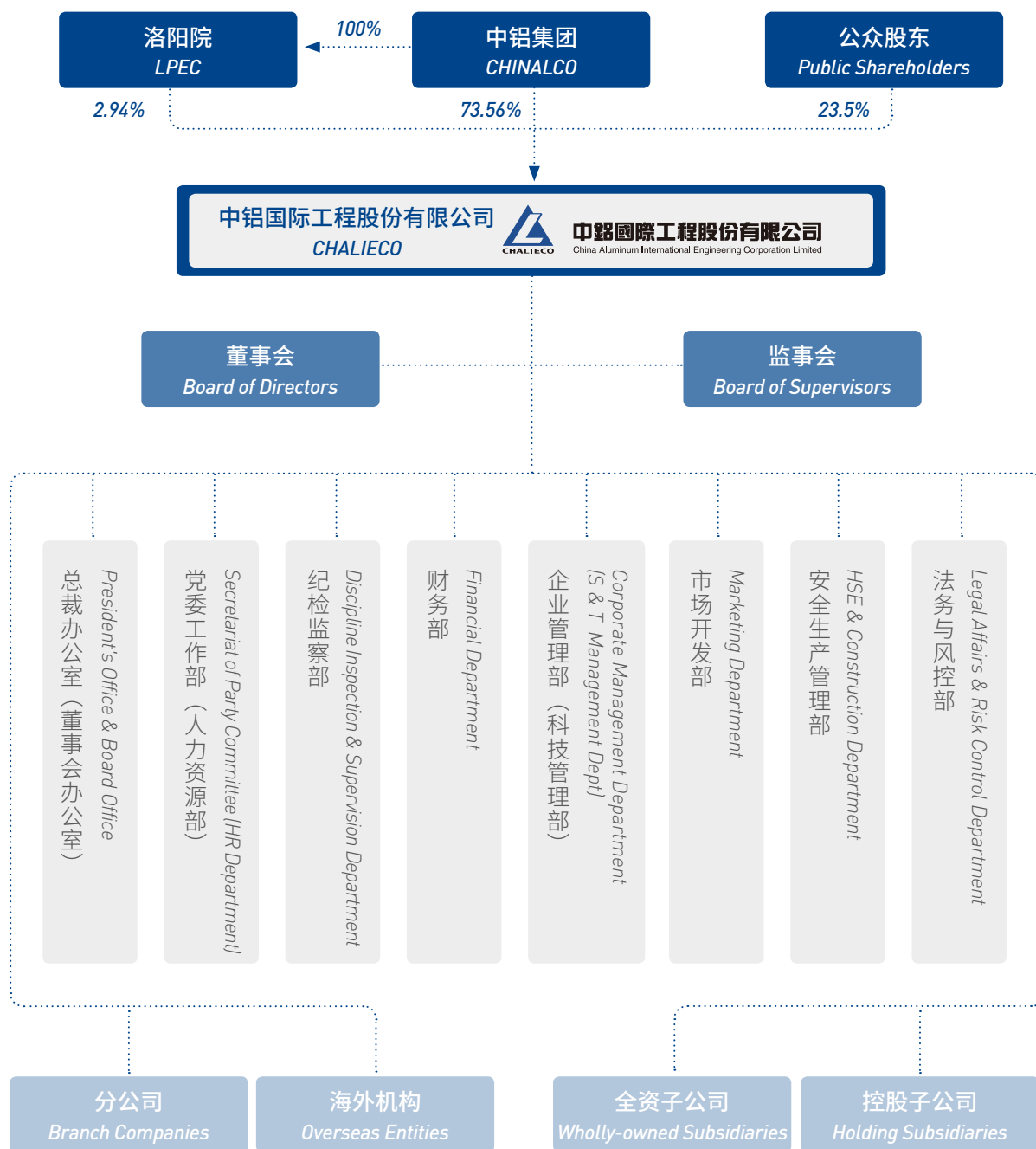
Engineering Consulting Service

**海外业务** Overseas Business

## 组织架构 Organization Structure

### 组织架构图

### Organization Diagram

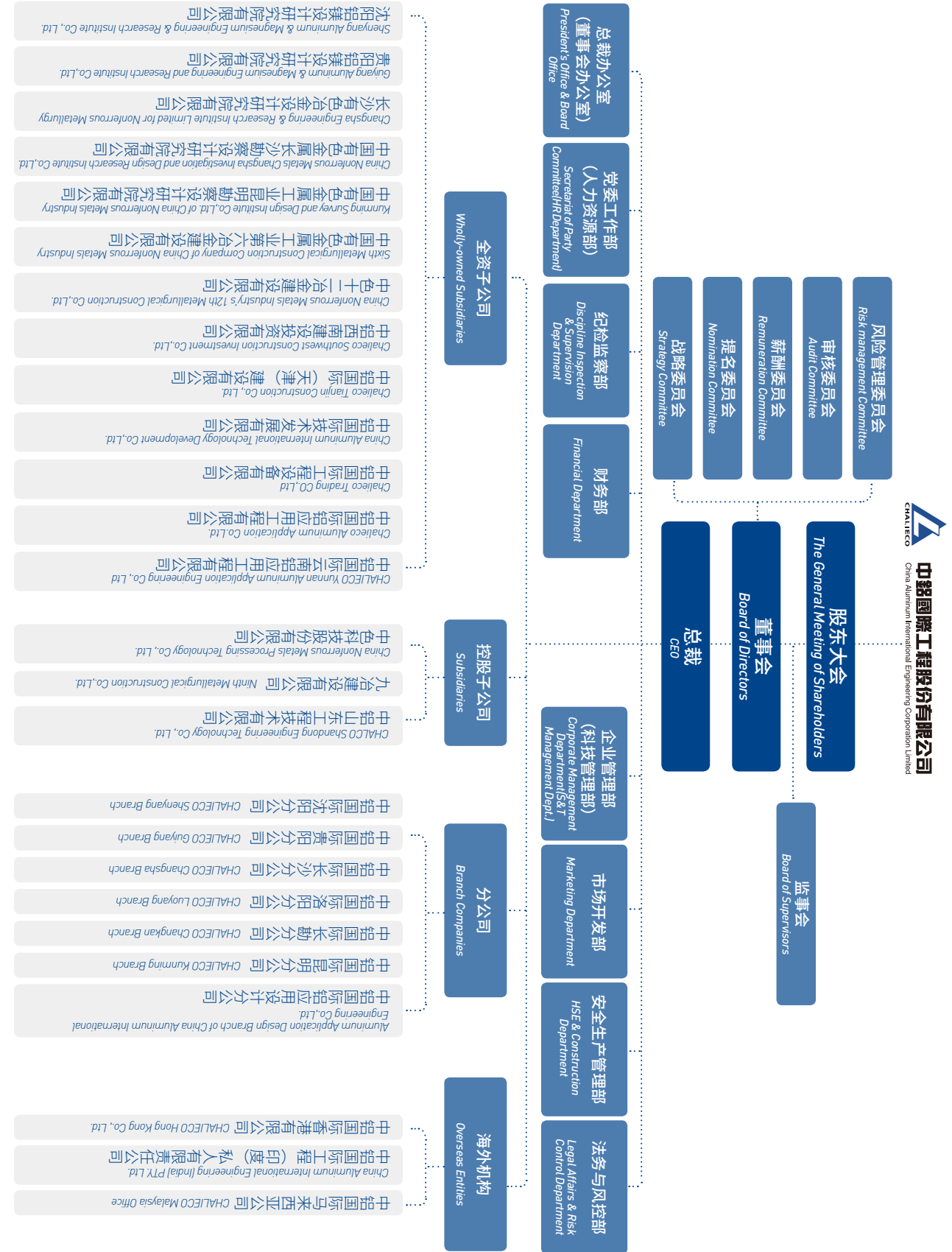


## 业务布局 Business Layout

截至报告期末，中铝国际重要分子公司、海外及港澳台机构如下：

As of the end of the reporting period, the major subsidiaries and institutions overseas or in Hong Kong, Macao and Taiwan are as follows:

|                                  |                                                                                                             |                                                                                                          |
|----------------------------------|-------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| 全资子公司<br>Wholly-owned subsidiary | 沈阳铝镁设计研究院有限公司（Sami）<br>Shenyang Aluminum & Magnesium Engineering and Research Institute Co., Ltd.           | 中铝西南建设投资有限公司<br>Chalieco Southwest Construction Investment Co., Ltd.                                     |
|                                  | 贵阳铝镁设计研究院有限公司（Gami）<br>Guiyang Aluminum & Magnesium Engineering and Research Institute Co., Ltd.            | 中铝国际（天津）建设有限公司<br>Chalieco Tianjin Construction Co., Ltd.                                                |
|                                  | 长沙有色冶金设计研究院有限公司（Cinf）<br>Changsha Engineering & Research Institute Limited for Nonferrous Metallurgy        | 中铝国际技术发展有限公司<br>China Aluminum International Technology Development Co., Ltd.                            |
|                                  | 中国有色金属长沙勘察设计院有限公司<br>China Nonferrous Metals Changsha Investigation and Design Research Institute Co., Ltd. | 中铝国际工程设备有限公司<br>China Aluminum Chalieco Trading Co., Ltd.                                                |
|                                  | 中国有色金属工业昆明勘察设计院有限公司<br>Kunming Survey and Design Institute Co., Ltd. of China Nonferrous Metals Industry    | 中铝国际铝应用工程有限公司<br>Chalieco Aluminum Application Co., Ltd.                                                 |
|                                  | 中国有色金属工业第六冶金建设有限公司<br>Sixth Metallurgical Construction Company of China Nonferrous Metals Industry          | 中铝国际云南铝应用工程有限公司<br>Chalieco Yunnan Aluminum Application Engineering Co., Ltd.                            |
|                                  | 中色十二冶金建设有限公司<br>China Nonferrous Metals Industry's 12th Metallurgical Construction Co., Ltd.                |                                                                                                          |
|                                  |                                                                                                             |                                                                                                          |
| 控股子公司<br>Holding Subsidiaries    | 中色科技股份有限公司（CNPT）<br>China Nonferrous Metals Processing Technology Co., Ltd.                                 | 中铝山东工程技术有限公司<br>Chalieco Shandong Engineering Technology Co., Ltd.                                       |
|                                  | 九冶建设有限公司<br>Ninth Metallurgical Construction Co., Ltd.                                                      |                                                                                                          |
| 分公司<br>Branch Companies          | 中铝国际沈阳分公司<br>CHALIECO Shenyang Branch                                                                       | 中铝国际长勘分公司<br>CHALIECO Changkan Branch                                                                    |
|                                  | 中铝国际贵阳分公司<br>CHALIECO Guiyang Branch                                                                        | 中铝国际昆明分公司<br>CHALIECO Kunming Branch                                                                     |
|                                  | 中铝国际长沙分公司<br>CHALIECO Changsha Branch                                                                       | 中铝国际铝应用设计分公司<br>Aluminum Application Design Branch of China Aluminum International Engineering Co., Ltd. |
|                                  | 中铝国际洛阳分公司<br>CHALIECO Luoyang Branch                                                                        |                                                                                                          |
|                                  |                                                                                                             |                                                                                                          |
| 海外及港澳台机构<br>Overseas Entities    | 中铝国际香港有限公司<br>CHALIECO Hong Kong Co., Ltd.                                                                  | 中铝国际马来西亚公司<br>CHALIECO Malaysia SDN.BHD                                                                  |
|                                  | 中铝国际工程（印度）私人有限责任公司<br>China Aluminum International Engineering (India) PTY. Ltd.                            |                                                                                                          |



## 企业治理 Corporate Management

中铝国际恪守合规原则，严格遵守《中华人民共和国公司法》《中华人民共和国证券法》《上市公司治理准则》等相关法律法规，建立“三会一层”公司治理架构，明确职责，建立合规章程，制定议事规则和程序，确保公司规范运营、决策科学。2020年，公司共召开董事会7次，董事会审核委员会5次，薪酬委员会1次，风险管理委员会2次，战略委员会1次；监事会5次，股东大会1次。

CHALIECO abides by the principle of compliance, strictly abides by the "Company Law of the People's Republic of China", "Securities Law of the People's Republic of China", "Listed Company Governance Guidelines" and other relevant laws and regulations. We have also established a governance structure known as "three meeting and one management team" (general meeting of shareholders, board of directors, board of supervisors, and senior management team) to clearly formulate rules of procedure and to ensure the company's standardized operations and scientific decision-making. In 2020, the company held a total of 7 board meetings, 5 audit meetings, 1 meetings for remuneration, 2 risk management meetings, and 1 meetings for strategic development; 5 for the board of supervisors and 1 for the general meeting of shareholders.

## 依法合规 Compliance with Laws and Regulations

中铝国际在企业治理和经营管理各环节中，始终贯彻依法治企、合规管控。把依法治企、合规治理工作职责落实到各部门，通过法务与审计、合规、风控、内控紧密结合，市场开发、工程管理、财务多条线合力，发挥审计、纪检、巡视等监督手段，确保依法合规。

In all aspects of corporate governance and business management, CHALIECO has always implemented corporate governance and compliance management and control in accordance with the law. We implement the responsibilities of governing to all departments. Through the close integration of legal affairs and auditing, compliance, risk control, and internal control, the joint efforts of market development, project management, and finance are combined to give full play to the supervision of auditing, disciplinary inspection to ensure compliance with laws and regulations.

## 风险管理 Risk Management

中铝国际高度重视可持续发展过程中面临的风险，建立风险管理及内部监控系统。制定《全面风险管理实施细则》《全面风险管理监控与报告实施细则》《全面风险管理体系测评办法》《风险评估管理办法》等制度，为风险管控提供制度保障。

中铝国际各层级建立上下贯通的全面风险管理三道防线，对由于经济环境、政策环境、外部监管、渠道变化、技术变化、竞争对手的行动等导致的安全风险、环境风险、现金流风险、国际化经营风险和员工疫情风险进行持续监控、记录、分析、评估，及时确定应对风险策略。

CHALIECO attaches great importance to the risks faced in the process of sustainable development and has established risk management and internal control systems. We have formulated "Comprehensive Risk Management Implementation Rules", "Comprehensive Risk Monitoring and Reporting Implementation Rules", "Comprehensive Risk Management System Evaluation Measures", "Risk Assessment Management Measures" and other systems to provide institutional guarantees for risk management and control.

CHALIECO has established three-level practice for comprehensive risk management, to deal with the company's safety and environmental risks, cash flow risks, international business risks and labor epidemic risks due to economic environment, policy environment, external supervision, channel changes, technological changes, and competitors' actions. We are continuously monitoring, recording, analyzing and evaluating, responding to the risk in a timely manner.

## 中铝国际风险管理三道防线

### Three-level practice for risk management

1

#### 各职能管理部门和业务单位

*Functional management departments and business units*

每月填写《全面风险管理监控报表》，识别风险，制订应对措施并实施。

Filling out the "Comprehensive Risk Management Monitoring Report" every month to identify risks, formulate countermeasures and implement them.

2

#### 法务与风控部门

*Legal Affairs and Risk Control Department*

跟踪措施落实，评价措施有效性，并按月编制《全面风险管理监控报告》，编制《全面风险管理年度报告》。

Following up the implementation of the measures, evaluating the effectiveness of the measures, and compiling the "Comprehensive Risk Management Monitoring Report" and the "Comprehensive Risk Management Annual Report" on a monthly basis

3

#### 公司风险评估委员会

*Corporate Risk Assessment Committee*

审议重大决策的风险评估报告；监督、评估、检查公司内部风险管理体系的完整性、运行效果，并向董事会提交报告。

To review the risk assessment report of major decisions; to supervise, evaluate and inspect the integrity and operational effects of the company's internal risk management system, and submit a report to the board of directors.

## 加强党建 Party Building

中铝国际深入学习贯彻习近平新时代中国特色社会主义思想 and 党的十九大精神，贯彻全国国有企业党建工作会议要求，全面落实从严治党责任，夯实党建基础。2020 年，公司以思想建设和政治建设作为重要抓手，从严推进党建各项工作开展。

CHALIECO has thoroughly studied and implemented Xi Jinping's new era of socialism with Chinese characteristics and the spirit of the 19th National Congress of the Communist Party of China, implemented the requirement proposed by Party Building Work Conference, fully implemented the responsibility of strict party management, and consolidated the foundation for party building. In 2020, the company has taken ideological and political construction as an important starting point to strictly promote the development of party building.

### 强化理论武装

*To strengthen theoretical support*

- 每月印发理论学习参考资料，及时学习习近平总书记关于疫情防控、复工复产等重要讲话精神，公司党委中心组集中学习 16 次，其中专题研讨 8 次

The theoretical study materials are issued every month to understand the important speeches delivered by General Secretary Xi Jinping on epidemic prevention and control, resumption of work, etc. The central group of the company's party committee conducted 16 courses for material study, including 8 special seminars.

- 深入学习党的十九届四中、五中全会精神，700 余名中层以上干部依托干部网络学院完成 38 门课 28 学时学习

In-depth study of the spirit of the Fourth and Fifth Plenary Sessions of the 19th Central Committee of the Communist Party of China, more than 700 middle-level and above cadres completed 38 courses and 28 hours of study relying on the Cadre Online Institute

## 提升党务工作能力

To improve Party affairs work

- 在照金干部学院举办 2020 年党务纪检干部能力提升培训班，14 个成员企业 64 名党务纪检干部参加培训

Cadre Academy for Zhaojin held a training course to improve the ability of party disciplinary inspection in 2020, and 64 cadres responsible for party disciplinary inspection from 14 member companies participated in the training

## 开展党建专题活动

To carry out special party building activities

- 挖掘内部资源，组织“党课开讲啦”“中铝国际大讲堂”，提升党员干部政治素质

We have excavated internal resources, organized the "Party Lectures" and "CHALIECO Lecture Hall" to improve the political quality of party members and cadres

- 开展建党 99 周年“七个一”活动

Carried out the "Seven Ones" activities for the 99th anniversary of the founding of CPC

## 开展党建考核

To carry out party building assessment

- 完成对 5 家成员企业的党建考核，及时反馈问题并督导整改

Completed the party building assessment of 5 member companies, promptly feedbacked problems and supervised rectification

- 接受国资委党建考核组考核，并获得考核组肯定

Accepted the assessment of the SASAC and was highly recognized by the assessment team

## 加强基层党建

To strengthen grassroots party building

- 加强“三基”建设：开展“两带两创”“党员攻关”“支部建在项目上”工作，持续推进标准化党支部创建和党员“双提升”，坚持基层党建工作“一月一提示、一季一检查”

Strengthened the construction of the "three bases" (rooted in the base layer, to lay the foundation, and practice basic skills): carried out the work of "two leads" (the Party leads the members to create values, and the party members lead the masses to innovate), "let party member tackle key problems" and "branch building on projects", continuing to promote the standardization party branches building and the "dual promotion" of party members, and adhering to the basic party building work "monthly reminder, quarterly inspection"

- 组织体系建设：中国有色金属长沙勘察设计研究院有限公司（以下简称“长勘院”）、中国有色金属工业第六冶金建设有限公司（以下简称“六冶”）、中铝国际（天津）建设有限公司党委完成换届，推进中色科技股份有限公司（以下简称“中色科技”）“两委”换届和中铝国际云南铝应用工程有限公司成立党支部

**Organizational system construction:** China Nonferrous Metals Changsha Investigation and Design Research Institute Co., Ltd. (hereinafter referred to as Changkan Institute), Sixth Metallurgical Construction Company of China Nonferrous Metals Industry (hereinafter referred to as Sixth Metallurgical Company) CHALIECO Tianjin Construction Co., Ltd., completed their Party committees renewal; China Nonferrous Metals Processing Technology Co., Ltd. (hereinafter referred to as "LPEC") promoted the renewal of the "two committees"; CHALIECO Yunnan Aluminum Application Engineering Co., Ltd. established its party branch.



11月30日，中铝国际党委组织召开中心组专题学习暨党的十九届五中全会专题辅导报告会，特邀中共中央党校（国家行政学院）政法部教授、博士生导师、博士后合作导师范文作《党的十九届五中全会精神与全面建设社会主义现代化国家新征程》专题辅导。

On November 30, CHALIECO Party Committee organized a special theoretical study and a special counseling report meeting of the Fifth Plenary Session of the 19th Central Committee of the Party. We invited professors and experts from the Political and Law Department of the Party School of the Central Committee of the Communist Party of China (National School of Administration) to make special guidance on "The Spirit of the Fifth Plenary Session of the Nineteenth Central Committee of the Party and the New Journey of Building a Socialist Modern Country in an All-round Way".

## 反腐倡廉 Anti-corruption

中铝国际严格遵守《中华人民共和国反不正当竞争法》《关于禁止商业贿赂行为的暂行规定》等相关法律法规，建立健全反腐败体系，扎实推进党风廉政建设、反腐倡廉工作，坚决反对商业腐败行为，为持续健康发展提供有力保障。

CHALIECO strictly abides by the "Anti-Unfair Competition Law of the People's Republic of China" and "Interim Provisions on the Prohibition of Commercial Bribery" and other relevant laws and regulations, has established and improved an anti-corruption system, solidly promoted the culture construction and anti-corruption work, and firmly opposed commercial corruption to provide a strong guarantee for sustainable and healthy development.

### 相关制度及规定

#### Relevant Systems and Regulations

##### 采购人员

For purchasing officers

专项制定《采购人员廉洁从业若干规定》，严格主体责任

Specially formulated "Procedures for Procurement Personnel's Probity in Practice" to clarify the officers' accountability

公司制定员工守则，规范员工日常行为，恪守商业道德

The company formulated employee codes to regulate the daily behavior of employees and business ethics

##### 员工

For staff

**管理层和党员**

*For management  
team and Party  
members*

制定《领导人员廉洁从业实施办法》，通过《党风廉政建设责任制》明确党风廉政责任，并接受党内准则及相关处分条例约束

Formulated the "Implementation Measures for the Clean Practice of Leaders", and clarified the responsibilities of the Party's work through the "Party Style and Clean Government Building Responsibility System" to restrain the members by internal party guidelines and relevant sanctions regulations

**防范措施****Precautions**

2020 年，公司制定印发《党风廉政建设和反腐败工作实施意见》，对 3 家成员企业开展巡视巡察；公司总部内共签订《党风廉政建设责任暨廉洁从业承诺书》45 份，对 99 名党员干部提拔重用、评优评先、党风廉政情况进行审核。报告年度内，公司发生贪污诉讼案件 0 件。

In 2020, the company formulated and issued the "Implementation Opinions on Party Conduct and Clean Government Building and Anti-Corruption Work", and conducted inspections on 3 member companies. A total of 45 copies of the "Party Conduct and Clean Government Building Responsibility Letters" were signed in the company headquarters, and 99 party members and cadres were inspected to review their promotion and awards. During the reporting year, the company had 0 corruption lawsuits.

**举报及审核****Corruption Report and Review**

中铝国际建立畅通的信访举报渠道，制定处理程序，在严格保护举报人隐私的前提下，组织开展举报线索核查。公司强化问题线索处置，存量线索办结率 94%，新发线索处置率 100%。

CHALIECO has established unobstructed channels for complaint letters and visits, formulated processing procedures, and organized the verification of reported clues on the premise of strictly protecting the information of the reporter. the company has strengthened the handling of problem clues, with a completion rate of 94% of stock complaints and 100% of new ones.

**队伍建设与廉洁教育****Team Building and Integrity Education**

2020 年，中铝国际完善纪检队伍建设，组织参加中铝集团纪检监察组专题学会 5 次；组织开展全体纪检监察干部业务培训等，提升纪检队伍能力。

全年组织召开 2 次党风廉政建设警示教育大会，2,100 多名党员干部参与；400 多个党组织学习观看警示教育片；组织“反腐倡廉宣传教育月”，开展全公司范围廉洁宣传教育。公司人均反贪污培训 5.5 小时。

In 2020, CHALIECO has improved the construction of the discipline inspection team, organized to participate in the special association of discipline inspection and supervision group of CHINALCO for 5 times. The company also organized cadres of the whole sector to carry out business training courses, enhancing the ability of the discipline inspection team.

We have convened 2 party conduct education conferences throughout the year, with more than 2,100 party members and cadres participating. More than 400 party organizations watched relevant educational films. "Anti-Corruption and Promoting Integrity Publicity and Education Month" was organized to enhance company-wide integrity and education. The anti-corruption training has reached 5.5 hours per capita.



中铝国际秉承“用心营造美好未来”的使命，将履行社会责任的理念融入企业发展战略、融进企业决策运营，不断提升企业治理能力，完善社会责任管理制度建设和体系建设，为实现“建设世界一流的有色金属工程技术公司”企业愿景提供保障。

Adhering to the mission of "to create a better future with heart", CHALIECO has integrated the concept of fulfilling social responsibility into corporate development strategies and corporate decision-making to continuously improve corporate governance capabilities and enhance social responsibility management system, providing strong support to the vision of "building a leading on-ferrous metal engineering technology company with international competitiveness".

# 社会责任管理

## Social Responsibility Management

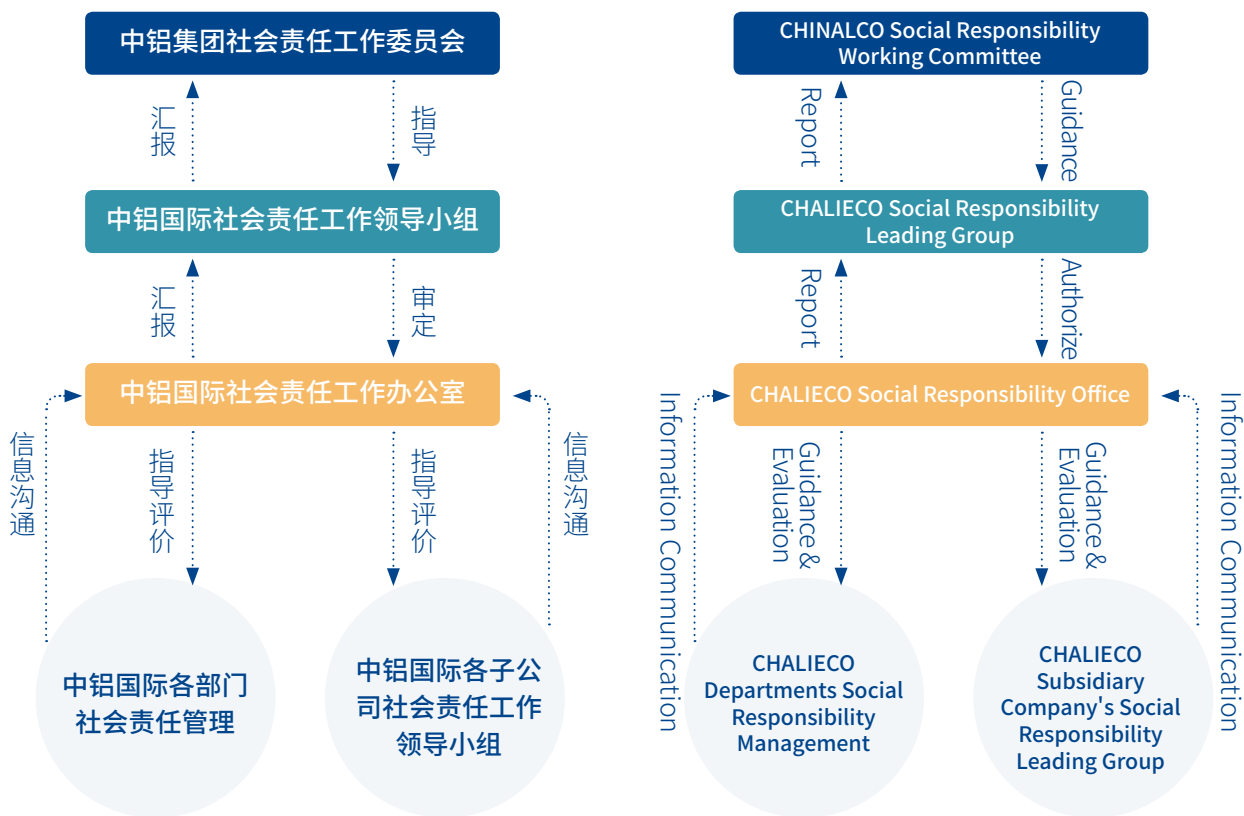


- 管理体系 Management System
- 利益相关方参与 Stakeholder Participating
- 董事会参与 BOD Leading
- 重大议题判定 Decision-making Process for Major Issues

## 管理体系 Management System

公司成立由公司党委书记、董事长担任组长，总裁担任常务副组长，领导班子其他成员及有关人员担任副组长的社会责任工作领导小组，各部门负责人为小组成员。该小组负责向上汇报社会责任工作进展，向下传达中铝集团关于社会责任工作的指导及管理意见，统筹规划公司社会责任工作的实施。领导小组下设办公室，负责社会责任的日常工作，归口职能部门为总裁办公室（董事会办公室），总裁办公室（董事会办公室）负责人兼任办公室主任。公司制定《中铝国际社会责任工作实施细则》，明确公司各成员企业及部门职责、履责指标，并通过负面清单梳理，制定《中铝国际社会责任管理模块及负面清单》，预防各单位、各层级重要决策和日常运营管理中的社会责任工作风险。

The company has established a social responsibility leadership group with the company's party committee secretary and chairman as the team leader, the president as the standing deputy team leader, other members of the management team as the deputy leaders, and the heads of each department as the team members. This group is responsible for reporting the progress of social responsibility work upwards, conveying the guidance and management opinions of Chinalco Group on social responsibility, and overall planning the implementation of the company's social responsibility work. The leading group has an office responsible for the daily work of social responsibility. The president's office (the office of the board of directors) plays the central functional department, and the head of the president's office concurrently serves as the director of the social responsibility office. The company formulated the "CHALIECO Social Responsibility Implementation Rules" to clarify the responsibilities and performance indicators of the company's member companies and departments. Through the negative list, the company has also formulated the "CHALIECO Social Responsibility Management Module and Negative List" to prevent social responsibility risks during important decision-making and daily operation at all levels.



## 利益相关方参与 Stakeholder Participating

中铝国际高度重视与利益相关方的沟通交流，建立起便捷有效的沟通机制，积极听取不同利益相关方的合理诉求与期望，就相关方关注的内容进行回应，不断提升公司运营透明度，提高运营管理能力。

CHALIECO attaches great importance to communication with stakeholders, has established a convenient and effective communication mechanism, actively listening to the reasonable demands and expectations of different stakeholders, and responding to the concerns of relevant parties, so as to continuously improve the transparency of the company's operations and improve operations ability.

| 利益相关方<br>Stakeholder                          | 期望与诉求<br>Expectations and demands                                                                                                                                                  | 沟通与回应方式<br>Communication and response methods                                                                       |
|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| 政府与监管机构<br>Government and Regulatory Agencies | 贯彻落实国家政<br>策及法律法规<br>促进地方经济<br>发展<br>推动行业发展<br>Implement national policies<br>and laws and regulations<br>Promote local economic<br>development<br>Promote industry<br>development | 上报文件<br>建言献策<br>专题汇报<br>洽谈合作<br>Report file<br>Offer advices and suggestions<br>Special report<br>Cooperation talks |
| 股东<br>Shareholder                             | 收益回报<br>合规运营<br>安全生产<br>Returns<br>Compliance operation<br>Safe production                                                                                                         | 公司公告<br>专题汇报<br>实地考察<br>Company announcement<br>Special report<br>on-the-spot investigaion                          |
| 客户及合作伙伴<br>Clients and Partners               | 依法履约<br>诚信经营<br>优质产品与服务<br>Fulfill the contract in<br>accordance with the law<br>Integrity management<br>Quality products and services                                             | 商务沟通<br>顾客反馈<br>交流研讨<br>Business communication<br>Customer feedback<br>Exchange seminar                             |
| 环境<br>Environment                             | 合规排放<br>节能减排<br>保护生态<br>Complied with discharge<br>information<br>Energy-saving<br>Ecology conservation                                                                            | 工作汇报<br>报表报送<br>调研检查<br>Work report<br>Report submission<br>Investigation and inspection                            |
| 员工<br>Staff                                   | 权益维护<br>职业健康<br>薪酬福利<br>职业发展<br>Rights protection<br>Occupational health<br>Salary and benefits<br>Career development                                                              | 职工代表大会<br>集体协商<br>民主沟通平台<br>Workers congress<br>Collective bargaining<br>Democratic communication<br>platform       |
| 社区及公众<br>Community and the Public             | 改善社区环境<br>参与公益事业<br>信息公开透明<br>Improve the community<br>environment<br>Participate in public<br>welfare<br>Open and transparent<br>information                                      | 公司网站<br>公司公告<br>采访交流<br>Company website<br>Company announcement<br>Interview and exchange                           |

## 董事会参与 BOD Leading

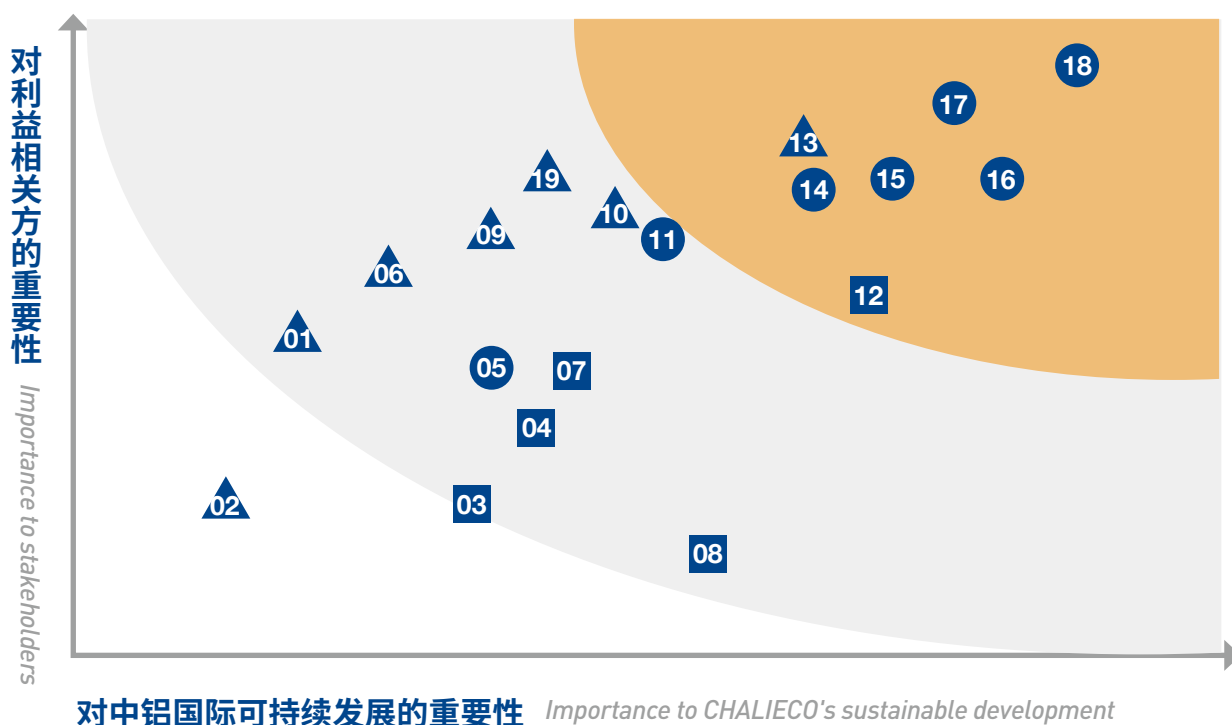
公司董事会负责制定社会责任方针、策略及目标、审核社会责任治理风险评估结果，并对可能影响公司业务运作的相关事宜，及对利益相关方重点关注的社会责任相关事宜进行监察。在社会责任报告信息披露过程中，董事会负责对利益相关方沟通结果及重大议题判定结果进行审批，并审核社会责任报告信息披露内容。2020 年，公司召开董事会 7 次，审议 ESG 相关议题 6 个。

The company's board of directors is responsible for formulating social responsibility policies, strategies and objectives, reviewing the results of governance risk assessments, and conducting relevant matters that may affect the company's operations, as well as monitoring the matters related to social responsibility that are of key concern to stakeholders. In the process of information disclosure in the social responsibility report, the board of directors will review the exchange results with stakeholders and the determination of major issues, and review the content of information disclosure in the social responsibility report. In 2020, the company held 7 board directors conference and reviewed 6 issues related to ESG.

## 重大议题判定 Decision-making Process for Major Issues

中铝国际梳理宏观经济政策导向，研究分析 ESG 报告相关披露要求，结合公司年度业务回顾总结、利益相关方关注议题、高管审阅意见等，对中铝国际 2020 年 ESG 重大议题进行评估和分析，得出重大性议题矩阵如下：

CHALIECO has sorted out the macroeconomic policy guidance, studied and analyzed the relevant disclosure requirements of the ESG report, combined with the company's annual business summary, stakeholder concerns, and senior management comments, etc., to evaluate and analyze CHALIECO's 2020 ESG major issues. The matrix of major issues is as follows:



● 高重要性 Vital

● 很高重要性 High priority

● 极高重要性 Top priority

● 管制议题 Regulatory issues

▲ 社会议题 Social issues

■ 环境议题 Environmental issues

|         |    |                                    |
|---------|----|------------------------------------|
| 社区发展贡献  | 01 | Community development contribution |
| 公益事业投入  | 02 | Investment in public welfare       |
| 水资源使用管理 | 03 | Water utilization management       |
| 绿色办公    | 04 | Green office                       |
| 供应链管理   | 05 | Supply chain management            |
| 员工沟通    | 06 | Employee communication             |
| 废弃物管理   | 07 | Waste management                   |
| 能源使用管理  | 08 | Energy usage management            |
| 员工关爱政策  | 09 | Employee care policy               |
| 员工培训发展  | 10 | Staff training and development     |
| 项目质量管理  | 11 | Project quality management         |
| 绿色施工    | 12 | Green construction                 |
| 员工权益保护  | 13 | Employees' rights protection       |
| 自主创新    | 14 | Innovation                         |
| 风险管理    | 15 | Risk management                    |
| 内部廉政管理  | 16 | Internal integrity management      |
| 安全生产    | 17 | Safe Production                    |
| 合规合法经营  | 18 | Compliance and legally operating   |
| 精准扶贫    | 19 | Targeted poverty alleviation       |

# 01



中铝国际加大人力资本和知识资本投入，开展技术研发与创新，提升研发设计与技术服务能力和现代化建造能力，并以质量安全为支撑，持续强化项目监督与管理，贡献优质工程、精品工程。

CHALIECO has increased investment in human resource and intellectual capital, carried out technological research and innovation, strengthened R&D and technical service capabilities. Supported by quality and safety, the company continued to strengthen project supervision and management, and contributed to high-quality projects .

# 匠心之“铝” 引领行业

"Aluminum" with Ingenuity to Lead the Industry



- 优质工程 High-quality Project
- 技术创新 Technological Innovation
- 安全生产 Work Safety
- 责任产业链 Responsibility Industry Chain

## 优质工程 High-quality Project

中铝国际谨守《中华人民共和国产品质量法》《建设工程质量管理条例》《建设工程施工项目管理规范》等相关国家法律法规，制定《中铝国际工程股份有限公司质量管理办法》等，不断加强工程总承包能力建设，对工程设计和开发进行全程管控，严格工程质量、严守工程进度，落实项目责任，打造匠心工程。

我们开展项目管理化标准体系建设，推动质量行为和工程实体质量控制标准化；健全工程项目质量管理体系，推行项目经理负责制，明确质量管理职责；不断创新、优化施工工法，提升项目品质；持续强化工程质量检测管理，以优质服务为客户创造价值。2020 年，公司新增 37 项部级施工工法，累计获得国家级优质工程 3 项，省部级以上优质工程（施工类）12 项，获得有色金属建设行业成果奖 119 项。

### 中国施工企业协会

#### 国家优质工程金奖

- 第 8.6 代薄膜晶体管液晶显示器件（TFT-LCD）项目动力中心、废水站及附属工程

#### 国家优质工程奖

- 内蒙古蒙泰达拉特铝板带
- 车用锂电正极材料产业化及环保技改项目

### 中国有色金属工业协会

#### 有色协会优质工程

- 中铝东南铜业铜冶炼基地项目原料系统
- 中铝东南铜业铜冶炼基地项目硫酸系统
- 中铝东南铜业铜冶炼基地项目办公及生活设施系统
- 山东工程 10 万吨精细分子筛项目（一期）
- 山东工程 15 万吨环保吸附新材料生产线（一期）
- 山东工程 10 万吨板状刚玉项目（一期）
- 西安煜阳重型机械制造有限公司生产基地

- 第 8.6 代薄膜晶体管液晶显示器件（TFT-LCD）项目电视组装厂房

- 第 8.6 代薄膜晶体管液晶显示器件（TFT-LCD）项目动力中心、废水站及附属工程

### 北京市工程建设质量管理协会

#### 长城杯（省部级）

- 北京环球影城主题公园项目

### 中国工程建设焊接协会

#### 全国优秀焊接工程

- 枣庄振兴炭材 4 万吨 / 年超高功率电极材料项目延迟焦化安装工程

### 陕西省建筑业协会

#### 陕西省建筑优质结构工程

- 安康高新区青峰、新强片区棚户区改造项目 19# 楼工程

CHALIECO abides by the "Product Quality Law of the People's Republic of China", "Construction Quality Management Regulations", "Construction Project Management Regulations" and other relevant national laws and regulations, and formulated "CHALIECO Quality Management Measures" to strengthen the EPC capacity, strictly controlling the whole process of project design, development and quality, observing project progress, and creating ingenious projects.

We carry out the construction of a standard project management system to promote the standardization of engineering quality assurance (QA) and quality control (QC). The company has also improved the project quality management system, to implement the project manager responsibility system, and clarify quality management responsibilities; We improve project quality by continuously innovating and optimizing construction methods to; continue to strengthen engineering quality inspection management, and create value for customers with high-quality services. In 2020, the company added 37 ministerial-level construction methods, accumulatively won 3 national-level high-quality projects, 12 provincial high-quality projects (construction), and won 119 awards in the non-ferrous metal industry.

#### China Association of Construction Enterprises Management

##### National Quality Engineering Gold Award

- The waste water treatment station and ancillary projects of 8.6th generation thin-film-transistor liquid-crystal display (TFT LCD) project

##### National Quality Engineering Award

- Montadalat aluminum plate and strip project in Inner Mongolia
- Cathode materials for automotive lithium batteries Industrialization and Environmental Technology Upgrade Project

#### China Nonferrous Metals Industry Association

##### High-quality Project

- Raw material system of Chinalco Southeast Copper Limited
- Sulfuric acid system of Chinalco Southeast Copper Limited
- Office and living facilities system of Chinalco Southeast Copper Limited
- 100,000-ton Fine Molecular Sieve Project of Shandong Engineering Institute (Phase I)
- 150,000 tons of environment-friendly adsorption new material production line of Shandong Engineering Institute (Phase I)
- 100,000-ton Tabular Corundum Project of Shandong Engineering Institute (Phase I)

- Xi'an Yuyang Heavy Machinery Manufacturing Co., Ltd. production base

- TV assembly plant for 8.6th generation thin-film-transistor liquid-crystal display (TFT LCD) project

- The waste water station and ancillary projects of 8.6th generation thin-film-transistor liquid-crystal display (TFT LCD) project

#### Beijing Engineering Construction Quality Management Association

##### Great Wall Cup (provincial and ministerial level)

- Beijing Universal Studios Theme Park Project

#### China Engineering Construction Welding Association

##### National Excellent Welding Project

- Delayed coking unit for the 40,000 tons/year ultra-high power electrode material project of Zaozhuang Zhenxing Carbon Material

#### Shaanxi Construction Industry Association

##### Shaanxi Province High-quality Structure Project

- 19# Building Project of Shantytown Reconstruction Project in Ankang High-tech Zone

我们组织 QC 小组活动，提升质量意识、改进项目质量；积极创建标杆项目，推动项目管理水平提升。2020 年，公司累计获得省部级以上优秀 QC 成果 75 项，其中一等奖 17 项，二等奖 39 项，三等奖 19 项。中铝国际上榜美国《工程新闻记录》（ENR）杂志 2020 年度“全球工程设计公司 150 强”“国际工程设计公司 225 强”“全球承包商 250 强”和“国际承包商 250 强”。

The company organize QC group to enhance quality awareness and improve project quality. Besides, we have also actively created benchmark projects and promoted the improvement of project management. In 2020, the company has won a total of 75 outstanding QC awards at or above the provincial and ministerial level, including 17 first prizes, 39 second prizes, and 19 third prizes. CHALIECO was recognized as the "Top 150 Global Design Firms", "Top 225 International Design Firms", "Top 250 Global Contractors" and "Top International Contractors" by the Engineering News Record(ENR) Magazine in the US.



四川成都建川综合陈列馆铝合金网壳结构建设项目  
Aluminium alloy reticulated shell of Comprehensive Exhibition Hall in Chengdu, Sichuan



越南仁基氧化铝工程项目  
Vietnam Nhan Co 650kt/a alumina Project



500kA 大型预焙电解槽工程——贵州华仁项目  
Guizhou Huaren large-scale pre-baked electrolytic cell project



## 中铝国际工程咨询、勘察、设计及信息技术等成果获佳绩

案例

CHALIECO's new achievements in engineering consulting, survey, design and information technology

Case

中国有色金属建设协会公布“2020年度有色金属建设行业工程咨询、勘察、设计及信息技术等成果评价（部级）”结果，中铝国际8家成员企业申报的119项成果获奖，数量接近本年度上榜总数的三分之一，显示出中铝国际在有色金属建设行业的雄厚实力和领先地位。

The China National Association for Nonferrous Metal Industries Construction announced "2020 Evaluation of Achievements in Engineering Consulting, Survey, Design and Information Technology of the Non-ferrous Metal Construction Industry (Ministry Level)". The 119 achievements declared by the 8 member companies of CHALIECO have won awards, accounting for one-third of the total awards on the list, which shows the strong strength and leading position of the company in the non-ferrous metal construction industry.

### 客户服务

#### Client Service

中铝国际高度重视项目管理及质量管控工作，以优质的服务和领先的技术赢得客户的认可。编制和实施《项目管理标准化手册》，致力打造标杆项目，力争优质工程，为客户创造价值。组织开展顾客满意度调查，年度顾客满意度98.35%，根据客户提出的意见建议，不断改善和提高质量管理体系执行标准，逐步提高质量管理体系运行水平。

CHALIECO attaches great importance to project management and quality control, and has won recognition from customers with its high-quality service and leading technology. The company has compiled and implemented the "Project Management Standardization Manual", striving to build benchmark projects, and creating more value for clients. We also have carried out surveys on customer satisfaction which demonstrated annual satisfaction rate reaching 98.35%. Based on the opinions and suggestions from customers, we have been continuously improving implementation standards of the quality management system, and gradually enhancing the operation of the quality management system.

## 技术创新 Technological Innovation

有色金属工程设计与承包行业是技术密集型、智力密集型的生产性服务业，中铝国际坚定实施科技引领战略，持续提高先进技术以及持续技术创新能力，在有色金属行业设备大型化、资源综合利用、节能减排、信息化创新成果应用等方面开展科研与技术攻关，强化企业竞争力。近年来，中铝国际拓展建筑工程用铝领域研究，在智能制造、智能建造、资源综合利用等方面，打造新的核心竞争力。2020年，中铝国际研发投入6.43亿元，研发投入总额占营收比例2.79%。

The engineering design and contracting of non-ferrous metal industry is a technology-intensive and intelligence-intensive industry. CHALIECO firmly implements the technology-leading strategy, continues to improve advanced technology and innovation capabilities, and tries to make breakthrough in equipment upgrade, resources unitization, energy saving and emission reduction and application of technological innovation in the non-ferrous metal industry to strengthen the competitiveness of enterprises. In recent years, CHALIECO has expanded its research in the field of aluminum for construction projects, and has created new core competitiveness in intelligent manufacturing, intelligent construction, and comprehensive utilization of resources. In 2020, the company has invested 6.43 million yuan in R&D, the total R&D investment accounts for 2.79% of revenue.

## 中铝国际科技项目成果情况 CHALIECO's Technology Project Achievements



## 提升创新能力 Improve innovation ability

公司制定了《中铝国际科研管理规定》《中铝国际科技创新奖励暂行办法》《中铝国际技术转让与许可管理办法》等制度文件，健全科技创新和研发业务的科学评价体系，加大科研资金投入，搭建科技创新平台，完善科技人才培养和激励机制，加强核心技术攻关，不断提升创新能力。2020 年，昆勘院获批“云南省岩土工程与地质灾害重点实验室”。

截至报告期末，中铝国际拥有 6 个国家级工程技术研究中心和国家级技术中心，2 个国家博士后科研工作站，14 个省级技术中心，1 个省级博士后创新实践基地，2 个省级工程实验室。

By formulating "CHALIECO Scientific Research Management Regulations", "CHALIECO Innovation Award Interim Measures", "CHALIECO Technology Transfer and Licensing Management Measures", etc., the company tries to improve the evaluation system for technology innovation and R&D, increase investment, build an innovation platform, improve the training and incentive mechanism for talents, strengthen the research on core technologies, and continuously improve the ability of innovation. In 2020, Kunming Survey and Design Institute Co., Ltd. of China Nonferrous Metals Industry (hereinafter referred to as Kunming Survey and Institute) was approved as "Key Laboratory of Geotechnical Engineering and Geological Hazard of Yunnan Province". Relying on the provincial technology center.

As of the end of the reporting period, CHALIECO has 6 national engineering technology research centers and national technology centers, 2 national post-doctoral research workstations, 14 provincial technology centers, 1 provincial post-doctoral innovation base, and 2 provincial engineering laboratory.



## 长沙院入选国家“科改示范行动”企业

案例

cinf was selected as a national "Science Reform Demonstration Enterprise"

Case

2020 年，长沙有色冶金设计研究院有限公司（以下简称“长沙院”）入选国企改革“科改示范企业”。以此为契机，长沙院从混合所有制改革、完善公司治理体制机制、健全市场化选人用人机制、健全激励机制、激发科技创新动能、坚持党的领导加强党的建设等 6 个方面，分别制定重点改革任务，明确每项改革任务的牵头单位、推进措施和完成时限，为长沙院建立健全长效激励机制、吸引和留住优秀人才、调动核心技术（业务）骨干的积极性，实现长远发展进一步奠定基础。

In 2020, Changsha Engineering & Research Institute Limited for Nonferrous Metallurgy. (hereinafter referred to as "Cinf") was selected as a "Science and Technology Reform Demonstration Enterprise" for the reform of state-owned enterprises. Taking this as an opportunity, the cinf has formulated key reforms in five aspects: mixing ownership reform; improving the system and mechanism of corporate governance; improving the market-based selection and employment mechanism; improving the incentive mechanism; stimulating the momentum of technological innovation; and adhering to the leadership of the party to strengthen party building. Based on the 6 aspects, the institute has formulated key reform tasks, clarifying the lead unit, advancement measures and time limit, and further laying a foundation for cinf to establish and improve a long-term talent-attracting mechanism and achieve long-term development basis.



## 创新成果应用 Innovation Application

凭借设计咨询、工程建设、装备制造三大业务之间的协同效应优势，中铝国际以市场为导向，积极推动创新技术成果转化应用，促进有色金属产业上下游共同发力、产学研协同创新，助力企业高质量发展。

Relying on the synergy advantage among the three major businesses of design consulting, engineering construction, and equipment manufacturing and market-oriented incentive, CHALIECO actively promotes the transformation and application of innovative technological achievements, and promotes the joint efforts of industry's upstream and downstream and the collaborative innovation throughout production and training to help high-quality development of the enterprise.

### 2020 年，公司多项重要成果得到推广应用

**In 2020, the Company's several major achievements have been broadly spread and applied**

沈阳院“大型氧化铝气态悬浮焙烧炉的研发与应用”成果形成系列化产品，将应用于重庆万州氧化铝焙烧炉总承包项目

The deliverables from The R&D and Application of Large-sized Gas Suspension Calciner for Alumina carried out by the Shenyang Aluminum & Magnesium Engineering & Research Institute Co., Ltd.(hereinafter referred to as Sami) have been converted into a collection of products and will be applied to the EPC project of alumina calciner located in Wanzhou, Chongqing.



贵阳院“七点进电超大型铝电解槽精准调节深度节能成套技术”不仅在多家国内企业取得成功应用，还凭借运行稳定、指标领先等优势，将输出海外，应用于印尼华青项目



The Seven-point Feed Super Large Aluminum Electrolytic Cell Precise Regulation and Deep Energy Saving Assembly Technology developed by the Guiyang Aluminum & Magnesium Design Institute Co., Ltd. (hereinafter referred to as Gami) has been successfully applied by many domestic enterprises and more importantly, has been exported and adopted by Hakin's Indonesia-based project, owing to its stability of running and best-in-class indicators, among other benefits.

长沙院自主研发的“富氧粉煤喷吹熔池熔炼技术和装备研究”项目在广西南方有色金属公司铅系统还原炉上进行工业化应用，其生产指标显著提升

The Research on Oxygen-enriched Pulverized Coal Blowing Bath Smelting Technology and Equipment conducted by the Cinf independently has been industrialized and applied to the reducing furnace of the lead system at Guangxi Nanfang Nonferrous Metal Co., Ltd and resulted in significant improvements in production indicators.



中色科技高端铝合金带材连续退火工艺及装备已经在东轻公司投入试生产

The high-end aluminum alloy strip continuous annealing process and equipment of CNPT have been put into pilot production at Northeast Light Alloy Co., Ltd.

山东工程研发的“大型企业产销管控系统”已推广至多家单位使用

The Production and Sales Management and Control System for Large Enterprises developed by Chalieco Shandong Engineering Technology has been adopted by a number of users.





## 白音华项目采用 500kA 预焙阳极电解生产技术

案例

500k pre-baked anode for aluminum electrolysis technology in Baiyinhua Project

Case

白音华高精铝板带产品项目一期建设工程是国家电力投资集团有限公司及内蒙古锡林浩特市的重点建设项目，项目建设规模为年产 40 万吨高精铝板带，电解铝生产系统配置 300 台沈阳院自主研发的 SY500 预焙阳极电解槽。2020 年，白音华项目圆满完成全年建设任务，先后荣获“中国有色金属建设行业新技术应用示范工程”“全国有色金属建设行业 2020 年度建设工程项目施工安全生产标准化工地”“全国有色金属建设行业 2019-2020 年度绿色施工示范工程”三个部级奖项。

The first phase of the Baiyinhua high-end aluminum plate and strip project is a key project of the SPIC and Xilinhot government in Inner Mongolia. To reach annual output of 400,000 tons, the project used 300 pre-baked anode electrolyzers, SY500, independently developed by Sami were applied. In 2020, the Baiyinhua project successfully completed the annual target, and successively won the "China Non-ferrous Metal Construction Industry New Technology Application Demonstration Project", "2020 Standard Chemical Site of Work Safety", and "2019-2020 Green Construction Demonstration Project".



## 推进信息化建设 Informatization Construction

数字化、信息化转型是改造提升传统动能、培育发展新动能的重要手段。中铝国际一方面不断推进自身数字化、信息化转型，加强新形势下自身工程总承包能力建设；另一方面加强有色金属行业信息化、数字化转型产品和系统解决方案研发，增强竞争优势的同时助力行业信息化转型。

Digitization and information transformation are important means to transform and upgrade traditional kinetic energy and cultivate new kinetic energy for development. On the one hand, CHALIECO continues to promote its own digital and information transformation, and strengthen its EPC capacity under the new situation. On the other hand, the company also strengthens the digital transformation in R&D and provides systematic for the non-ferrous metal industry to enhance the competitiveness and help the industry informatization transformation.

### 行业信息化应用研究与开发：

### Information application and R&D in nonferrous industry:

#### 勘探与监测领域

#### Surveying and monitoring field

- 长勘院“AL-DSR 工程灾害智能监控雷达系统”项目完成研发，向产业化进程迈出坚实一步

The "AL-DSR Engineering Disaster Intelligent Monitoring Radar System" project of Changkan Institute has completed research and development, which is a solid step towards industrialization.

- 长勘院“安全与环境机器人广义巡检系统”完成技术路线论证和详细设计；“矿山重大危险源无人自动安全巡检系统”完成设计工作，并加工出样机系统，实现无人机自动充电、自动换电、自动起飞和自动降落等功能

The "Safety and Environment Inspection Robot" of Changkan Institute has completed the technical demonstration and detailed design. The "Unmanned Automatic Safety Inspection System for Major Hazardous Sources in Mines" has completed the design work and prototype system to realize the functions of automatic charging, automatic power exchange, automatic take-off and automatic landing of the drone.

- 长勘院自主研发的 OnlineSAR 工程灾害智能化监测雷达系统监测精度和技术指标全部达到现行规范和既定目标要求，已具备全面推广应用条件

The OnlineSAR Disaster Monitoring Radar System independently developed by Changkan Institute has reached the accuracy and technical indicators required by the current specifications for comprehensive promotion and application.

加快数字化、信息化转型  
Digital and information transformation

中铝国际加强信息化能力建设，推广 BIM 技术应用，将建筑空间管理、设备管理、隐蔽工程管理、节能减排管理等纳入项目设计与施工，强化现场环境监测、智慧调度、物资监管、数字交付等能力，提升工程数字化交付能力。

CHALIECO has strengthened its informatization capacity, promoted the application of BIM technology, incorporated building site management, equipment management, concealed project management, energy conservation and emission reduction management, etc. into project design and construction, and strengthened on-site environmental monitoring, smart scheduling, material supervision, and improved the digital delivery capabilities of engineering.



贵阳院设计的广西华昇大型氧化铝数字化设计及应用项目，是国内首个全厂全专业利用 BIM 技术进行施工图设计的项目  
The large-scale alumina digital design and application project in Guangxi is the first project in China that uses BIM technology to design construction drawing

- 昆勘院“采空区群三维联测关键技术”，通过三维建模可视化助力矿山企业安全生产和保有资源安全再利用  
The "Key Technology of 3D Model of the Goaf Group" of Kunming Survey and Design Institute helps mining enterprises to work safely and maintain the safe reuse of resources through three-dimensional modeling and visualization

冶炼生产领域  
Smelting Production

- 贵阳院参与人工智能产业创新，“智能铝电解多功能机组核心装置”项目实现电解铝生产换极全过程智能化  
The "Intelligent Aluminum Electrolysis Multifunctional Unit Core Device" project Gami took part in realizes the intelligentization of the whole process of electrolytic aluminum production

互联网应用领域  
Internet Application

- 中色科技有色金属加工工业互联网平台项目立足于互联网媒介，改变有色金属加工行业传统备件采购、管理机制和流程，实现行业企业备品备件库的互联互通，有效减少各企业间备件库存量，提高社会资源利用效率，降低企业运营成本  
The Internet platform of CNPT is based on the Internet, upgrading the traditional spare parts procurement, management and process of the non-ferrous metal processing industry, realizes the interconnection of the spare parts warehouses of industry enterprises, effectively reduces the enterprises spare parts inventory, and improves the efficiency of social resource utilization, which would reduce business operating costs.



## 贵阳院被确定为国家新一代人工智能产业创新揭榜单位

案例

Gami was identified as the pioneering unit for national new-generation artificial intelligence industry Case

2020 年 2 月，国家工业和信息化部发布新一代人工智能产业创新重点任务入围揭榜单位名单，贵阳院被确定为“智能铝电解多功能机组核心装置”项目揭榜单位。

贵阳院“智能铝电解多功能机组核心装置”项目旨在解决目前铝电解生产作业中劳动强度大、技能要求高、人工成本高、用工难等难题，全面引导世界铝冶炼行业迈向智能化，占领行业智能制造制高点，扩大国际装备市场份额，引领全球电解铝企业的装备技术进步。

In February 2020, the Ministry of Industry and Information Technology released the list of shortlisted units for the new generation of artificial intelligence industry.

Gami was identified as pioneering unit for the project of "Intelligent Aluminum Electrolytic Multifunctional Unit Core Device". The "Intelligent Aluminum Electrolytic Multifunctional Unit Core Device" aims to solve the problems of high labor intensity, high skill requirements, high labor costs, and labor difficulties in operations, and comprehensively guide the world's aluminum smelting industry toward intelligence. To occupy the commanding heights of intelligent manufacturing in the industry, the project would expand the international equipment market share, and lead the equipment technology advancement of global electrolytic aluminum enterprises.

## 知识产权保护 Intellectual Property Protection

中铝国际注重知识产权管理，根据《中华人民共和国专利法》《中华人民共和国著作权法》《中华人民共和国反不正当竞争法》《企业知识产权管理规范》等相关法律法规，制定《中铝国际专利管理办法》，开展知识产权创造、管理、保护与运用系统工作，推动技术进步，提升竞争能力。中铝国际坚持自主创新，在保障自有知识产权不被侵犯的同时，避免侵犯其他企业知识产权。

公司企业管理部负责知识产权事务，对知识产权申请、维护等进行统一管理，法务与风控部负责知识产权许可转让风险审核、知识产权纠纷处置等相关工作，市场开发部及下属企业负责专利推广与普及应用。同时，中铝国际通过激励机制改革，推进公司及所属企业制定知识产权奖励、报酬和惩罚办法，促进知识产权工作。2020 年，中铝国际专利申请 317 件，国内授权专利 222 件，海外专利授权 12 件。

CHALIECO attaches great importance to intellectual property management. According to the "Patent Law of the People's Republic of China", "The Copyright Law of the People's Republic of China", "The People's Republic of China Anti-Unfair Competition Law", "Enterprise Intellectual Property Management Regulations" and other relevant laws and regulations, the company has formulated "CHALIECO Patent Management Measures" to better create, manage, protect and apply intellectual property rights to promote technological progress and enhance competitiveness. CHALIECO insists on independent innovation and protects its own intellectual property rights from being infringed while avoiding infringement of the intellectual property rights of other enterprises.

The Enterprise management and Science and Technology Department is responsible for intellectual property affairs and management of intellectual property applications and maintenance; the Legal Affairs and Risk Control Department is responsible for IP licensing transfer risk review and dispute resolution; the Marketing Development Department and affiliated companies are responsible for patent promotion and application. At the same time, through the reform of the incentive mechanism, CHALIECO has promoted the company and its affiliated companies to formulate intellectual property rewards, remuneration and punishment measures to promote intellectual property work. In 2020, CHALIECO has 317 patent applications, 222 domestic authorized patents, and 12 overseas patents.

## 安全生产 Work Safety

中铝国际深入践行“一切风险皆可控制、一切事故皆可预防”安全管理理念，贯彻落实“安全第一、预防为主、综合治理”的安全生产方针，本着“强基础、抓重点、补短板”的工作思路，促进安全生产落细落小落实。报告期内，公司安全生产总投入 16,226 万元。

CHALIECO deeply implements the safety management concept of "all risks should be controlled, and all accidents should be prevented", and implements the safety production policy of "safety first, prevention first, with comprehensive management" to promote the implementation of safety production. During the reporting period, the company's total investment to improve safety has reached 162.26 million yuan.



公司安全生产  
总投入

**16,226** 万元

## 安全管理体系 Safety Management System

中铝国际坚持 CAHSE 及 QHSE 体系并轨运行，将质量、健康、安全、环境纳入风险管控体系，开展企业自评 - 中铝集团和中铝国际分级审核 - 第三方外部审核，提高企业安全环保管理的制度化、规范化及体系化水平。针对工程技术企业安全风险管控重点在基层、难点在一线的特点，中铝国际制定《工程项目安全生产责任》，明确项目现场施工安全管理及各职级的安全生产责任，通过风险分级管控，确定风险控制措施，保障施工人员人身安全、减少职业病发生。中铝国际编制适用于工业施工、民用建筑施工、市政道路施工、非煤矿山施工、勘察测绘和加工制造不同领域的职业健康考评标准，加强考核管理。

Adhering to the combined operation of the CAHSE and QHSE systems, CHALIECO incorporates quality, health, safety, and environment into the risk management and control system, conducting self-assessment, graded review of CHINALCO and CHALIECO, and third-party external audits to improve the level of institutionalization, standardization and systematization of management. In view of the fact that difficulty of safety risk is on the front line, CHALIECO has formulated the "Project Safety Production Responsibility" to clarify the project site construction safety management and the safety responsibilities of all ranks, and determine the risks through risk management and control measures to ensure the personal safety and reduce the occurrence of occupational diseases. CHALIECO has compiled occupational health assessment standards applicable to industrial construction, civil construction, municipal road construction, non-coal mine construction, surveying and mapping, and processing to strengthen assessment management.



VR 安全教育体验

Experience VR Safety education



## 中铝国际职业健康安全管理架构

### CHALIECO Occupational Health, Safety and Environment (HSE) Management Framework



## 建设安全现场 Safe Construction Site

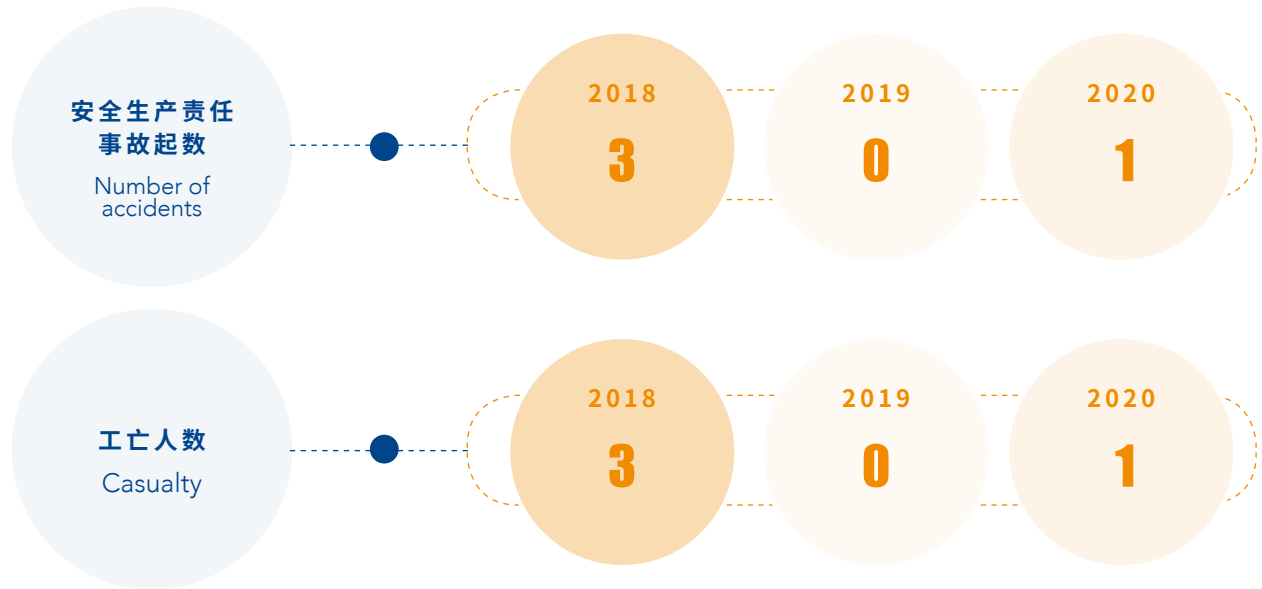
中铝国际持之以恒抓好现场安全管理, 对项目安全生产明确提出“十条禁令”“七必须”“八不准”要求。公司不断强化重点环节管理, 落实项目经理责任, 以项目现场检查为重点, 扎实推进安全生产专项整治三年行动。在作业现场推广使用中铝国际 CARC 工具, 现场风险评价得到了改善。组织企业开展安全生产集中整治、安全生产及疫情防控等自查。对重点项目开展“抓两头、带中间”专项督查, 并对各成员企业机关、部分二级单位及项目部进行渗透式的督查, 通过督查检查, 有效改善了现场的安全管理现状。

中铝国际多个项目安全管理工作获得政府、业主的表彰和认可。其中由沈阳院总承包的内蒙古锡林郭勒白音华煤电有限公司高精铝板带产品项目一期建设工程以及十二冶安阳国际金融中心项目荣获“全国有色金属建设行业 2020 年度建设工程项目施工安全生产标准化工地(部级)”荣誉称号。

CHALIECO has persisted in implementing site safety management and clearly put forward the "ten-ban", "seven-must" and "eight prohibitions" requirements for project safety in production. The company continuously strengthens the management of key links, implements the responsibilities of project managers, and focuses on project site inspections, and solidly promotes the three-year special rectification of production safety. The use of CHALIECO's CARC tools was promoted on the job site, and the on-site risk assessment has been improved. The company also organized enterprises to carry out self-inspections such as centralized rectification of production safety and epidemic prevention and control. We also have conducted special supervision on key projects and penetrated the supervision on member enterprise agencies and some secondary units and project departments. Through supervision and inspection, the current safety management situation on the spot has been effectively improved.

The safety management of many projects of CHALIECO has been commended and recognized by the government and the clients. Among them, the first phase of the high-end aluminum plate and strip project of Baiyinhua and the Anyang International Financial Center project won the honorary title of "2020 Standard Site of Work Safety of Nonferrous Metal Construction".

### 中铝国际 2018-2020 年度健康与安全关键绩效 CHALIECO's key health and safety performance in 2018-2020



### 提升安全意识 Safety Awareness

中铝国际从“基层、基础、技能”为切入点，广泛开展安全教育，强化安全培训，并通过丰富活动载体，营造浓厚安全文化氛围等方式，为高质量发展奠定安全基石。公司通过专题培训、警示教育、应急演练、文化宣传等形式，调动员工参与安全管理的积极性和主动性。近年来，中铝国际加强现代科技手段在安全培训与教育中的应用，创新动漫视频宣传、VR安全体验馆等方式，增强现场人员安全意识教育。公司组织开展施工现场安全管理、高速公路施工安全管理、基层安全管理人员履职能力等8期培训，累计1,225人次参训，通过培训解决了问题、提高了人员能力，取得了一定效果。全年累计开展应急演练382次，共7,968人次参与。

Starting from "basic level, foundation, and skills", CHALIECO conducts extensive safety education, strengthens safety training, and creates a strong safety culture through enriching activity, laying the foundation of safety for high-quality development. The company mobilizes the enthusiasm and initiative of employees to participate in safety management through special training, warning education, emergency drills, etc. In recent years, CHALIECO has strengthened the application of modern technology in safety training and education, innovated in animation video promotion, VR safety experience hall, etc., to enhance the safety awareness education of on-site personnel. The company organized and carried out 8 sessions of training on construction site safety management, highway construction safety management, and personnel's ability to perform safety management duties using online and offline training and seminars. The total number of participants was 1,225, and the training has solved problems and improved personnel capabilities and achieved certain results. In the whole year, all enterprises carried out a total of 382 emergency drills, with a total of 7,968 people participating.



## 推出“中铝国际安全强企”小程序

案例

Launched "Safety for a Strong Enterprise" Mini App

Case

中铝国际利用互联网技术提升安全意识与能力，与中国有色报合作推出“中铝国际安全强企”微信小程序安全知识答题活动，公司累计注册 10,635 人，占比企业在岗员工人数的 78%，共 9,282 人完成考核答题，平均得分 81.5 分，在基层取得较好的反响。

CHALIECO uses Internet technology to enhance safety awareness and capabilities, and cooperates with China Nonferrous Press to launch the knowledge-answer activity on "Safety for a Strong Enterprise" Wechat mini app. 10,635 people registered, accounting for 78% of the company's employees. A total of 9,282 people completed the assessment and answered the questions, with an average score of 81.5 points.



2020 年 6 月，长勘院组织开展 2020 年度消防培训及应急演练，进一步夯实广大员工的消防安全理论和实操知识，提升全员消防安全应急处置能力

In June 2020, Changkan Institute organized fire and emergency drills to further consolidate the practical knowledge of the employees, and enhance the emergency response capabilities of all employees



## 责任产业链 Responsibility Industry Chain

作为生产性服务企业，中铝国际不断提高自身技术、研发、承包建设服务能力，积极推动有色金属产业链安全、绿色、高质量发展。同时，我们也重视与公司业务相关供应商、分包商的责任，推动负责任、可持续产业链建设。

As a productive service company, CHALIECO has continuously improved its own technology, research and development, contracting and construction service capabilities, and actively promoted the safe, green, and high-quality development of the non-ferrous metal industry chain. At the same time, we also attach importance to the responsibilities of suppliers and subcontractors associated with the company's business, and promote the construction of a responsible and sustainable industrial chain.

## 采购管理 Procurement Management

中铝国际遵守《中华人民共和国合同法》《中华人民共和国招标投标法》《中华人民共和国审计法》《中华人民共和国反不正当竞争法》等国家法律法规，制定《工程招投标管理及监督办法实施细则》《工程建设招标投标督察办法》《工程建设招标投标督察办法实施细则》《本部费用招投标管理和监督办法》等，规范中铝国际及下属企业采购管理，明确采购原则及流程，实施阳光采购，保障供应商、分包商公平参与竞争的权利。2020 年，中铝国际供应商总数 3,864 家，分包商总数 1,305 家。

Complying with the "Contract Law of the People's Republic of China", "The Tendering and Bidding Law of the People's Republic of China", "The Audit Law of the People's Republic of China", "The People's Republic of China Anti-Unfair Competition Law" and other national laws and regulations, CHALIECO has formulated the "Administrative and Supervision Measures for Project Bidding and Bidding", "Implementation Rules", "Project Construction Bidding Supervision Measures", "Construction Bidding Implementation Rules", etc., to standardize the procurement management of CHALIECO and its subsidiaries, clarify procurement principles and procedures, and guarantee fair competition. In 2020, CHALIECO has establish cooperation with 3,864 suppliers and 1,305 subcontractors.

## 供应商、分包商管理 Supplier and Subcontractor Management

中铝国际持续完善供应商管理体系，制定《中铝国际供应商管理办法》《合格供应商管理规定》《中铝国际贸易类客户和供应商信用风险管理办法（暂行）》《中铝国际客户及供应商信用管理暂行办法》等，规范供应商准入管理、退出管理，降低供应链风险。

在准入期间，公司要求承包商提供 QHSE 管理体系与认证文件，并优先考虑使用环保节能产品的供应商。

在生产施工期间，为保障工程进度、质量及目标，中铝国际按照《分包商安全重点管控办法》，通过分包商过程管控及奖惩考核机制，对分包商队伍资质、能力、信誉、素质等进行综合考评，动态调整合格分包商名录。对分包商用工管理、安全环保工作落实情况进行监管，对有违反法律规定的用工行为、发生突发性环境事件的分包商进行清退并列入黑名单。公司将分包商纳入项目安全环保教育培训及监督管理中，严格检查分包商文明施工情况，定期组织考评，敦促分包商落实好现场安全环保责任。

CHALIECO continues to improve its supplier management system, formulating "CHALIECO Supplier Management Measures", "Qualified Supplier Management Regulations", "CHALIECO Trade Customers and Supplier Credit Risk Management Measures (Interim)", "Interim Measures for CHALIECO Credit Management", etc., to standardize supplier access, management, and exit management, and reduce supply chain risks.

During the access period, the company requires contractors to provide QHSE management system and certification documents, and gives priority to suppliers that use green products.

During the production and construction period, in order to ensure the progress, quality and objectives of the project, CHALIECO, in accordance with the "Subcontractor Safety Key Management and Control Measures," to evaluate subcontractor and for a list of qualified subcontractors. The company continues to supervise the implementation of labor management, safety and environmental protection work, and remove subcontractors that violate the laws and regulations, or cause environmental incidents from the list. The company incorporates subcontractors into the project's safety and environmental protection training and supervision and management, strictly inspects the construction of subcontractors, regularly organizes evaluations, and urges subcontractors to implement on-site safety and environmental protection responsibilities.

## 02



绿水青山就是金山银山。中铝国际坚定践行绿色发展理念，落实生态文明建设要求，积极应对气候变化，加强能源资源管理与控制，严格废弃物排放管理，研发环保技术，推广铝应用产品，助力有色金属行业绿色转型，为助力人与自然和谐共生贡献力量。

Lucid waters and lush mountains are invaluable assets. CHALIECO firmly practices the concept of green development, implements the requirements of ecological civilization construction, actively responds to climate change, strengthens energy and resource management and control, waste management, research and development of environmental protection technologies. We also promote aluminum application products to help the green transformation of the non-ferrous metal industry and make contribution to the harmonious coexistence of man and nature.



# 绿色之“铝”律动未来

## "Aluminum" with Green to Rhythm Future

- 应对气候变化 Tackling Climate Change
- 降低环境影响 Reduce Environmental Impact
- 推行环保技术 Promote Environmental Protection Technology
- 铝应用推广 Aluminum Application Promotion

## 应对气候变化 Tackling Climate Change

气候变化是当今人类面临的重大全球性挑战。中国政府已承诺，二氧化碳排放力争于 2030 年前达到峰值，努力争取 2060 年前实现碳中和。在该承诺下，中国政策法规、制度体系都将发生重要变化。铝行业处于能源消费和碳排放重点领域，推动“碳达峰”、实现“碳中和”势在必行。这为中铝国际带来了一定挑战，也带来新的机遇。一方面，我们要从项目施工与生产领域，积极推进减排降碳、非化石能源替代、低碳生产等降碳措施，主动参与、积极应对气候变化，提升企业“低碳”竞争力。另一方面，将为我们聚焦碳减排关键技术研发、开展新装备、新工艺攻关和成果应用，进而拓展工程项目市场份额带来契机。开展铝应用推广也成为我们业务发展的有利机遇。气候变化还容易引发各类地质灾害，我们正在积极开拓地质灾害治理新业务领域。

此外，我们还积极协同业主、客户共同行动，从源头治理碳排放，努力实现减污降碳协同效应；重视运用基于自然的解决方案，并应用于环保治理相关项目中，助力减缓和适应气候变化。

Climate change is a major global challenge facing mankind today. The Chinese government has promised that carbon dioxide emissions will reach a peak by 2030 and strive to achieve carbon neutrality by 2060. Under this commitment, China's policies, regulations, and institutional systems will undergo important changes. The aluminum industry is in the key areas of energy consumption and carbon emissions, and it is imperative to control "carbon peak" and achieve "carbon neutrality". This has brought certain challenges to CHALIECO, but also new opportunities. On the one hand, we must actively promote carbon reduction measures such as emission reduction and carbon reduction, non-fossil replacement, and low-carbon production in the field of project construction and production, actively respond to climate change, and enhance the "low-carbon" competitiveness of enterprises. On the other hand, it will bring us an opportunity to focus on the research and development of key carbon reduction technologies, develop new equipment, new technology research and application of results, and expand the market share of engineering projects. At the same time, the promotion of aluminum has also become a favorable opportunity for our business. Climate change is also prone to cause various geological disasters. We are actively exploring new business areas for geological disaster management.

In addition, we also actively cooperate with customers to act together to control carbon emissions from the source, and strive to achieve a synergistic effect of reducing pollution and carbon. We attach importance to the use of nature-based solutions and apply them to environmental protection projects to help mitigate and adapt to climate change.



## 我们采取的应对措施有

### The countermeasures we have taken are

#### 技术研究

##### Technology Research

- 研发更节电、低碳的绿色解决方案，通过技术优化，助力业主、客户低碳排放  
R&D for more energy-saving, low-carbon green solutions, through technological optimization, to help customers decrease carbon emissions
- 开展碳捕集、固碳技术等碳排放控制技术研究，为铝行业低碳发展提供更好方案  
To carry out research on carbon emission control technologies such as carbon capture and carbon sequestration technology to provide better solutions for the low-carbon development of the aluminum industry

#### 生产与施工

##### Production and construction

- 采用高环保标准、低碳排放的设施及系统  
To adopt facilities and systems with high environmental standards and low carbon emissions
- 采用低排放、清洁能源的工程设备  
To use low-emission, clean energy engineering equipment
- 加强施工管控，采用碳排放更低的机械设备  
To strengthen construction control and adopt machinery and equipment with lower carbon emissions
- 加强生产过程管控，降低各环节、各流程能源消耗  
To strengthen production process control and reduce energy consumption in all links and processes
- 生产与施工现场使用天然气替代煤炭  
The use of natural gas instead of coal in production and construction sites
- 推广铝应用  
To promote aluminum material

#### 办公及物业

##### Office and Property

- 推广使用 LED 灯  
To promote the use of LED lights
- 公共区域照明设备采用声光控制，节约电能  
Lighting equipment in public area uses light controlled by sound or light to save energy
- 采用更集约的空调系统，合理控制空调运作时间及温度  
To adopt more intensive air-conditioning system to reasonably control the operating time and temperature
- 路灯等外部区域夜间照明，采用太阳能产品替代  
Street lights in other external areas are using solar products
- 推广绿色办公，关闭非必要照明、排风、显示器、采光灯等  
To promote green office, turn off non-essential lighting, ventilation, displays, etc.



## 长沙院助力湖南黄花国际机场降碳减排获认可

案例

Cinf assisted Hunan Huanghua International Airport to reduce carbon emissions

Case

在 2020 年 9 月举办的中国（湖南）国际绿色发展博览会上，长沙院为湖南黄花国际机场设计的“冷热电三联供能源站”项目被湖南省发改委评为节能改造典型案例，并特别提出表彰。

2010 年长沙院为湖南黄花国际机场设计冷热电三联供能源站，并于 2011 年 7 月投入正式运营。该项目是湖南省第一个三联供分布式能源项目，也是全国分布式能源示范项目。投入使用 9 年来，能源站运行良好，不仅为黄花国际机场节省能源费用和运营成本，还充分发挥分布式能源“削峰填谷”的作用，符合用电安全以及天然气发展方向，为湖南省能源可持续发展和“两型社会”建设做出有益探索和良好示范。

冷热电三联供系统，通过以天然气为燃料带动燃气发电机，产生电力供机场使用，系统发电后排出的余热，通过余热回收利用设备，供机场冬天采暖、夏天制冷。同时，三联供系统不需要建设大电网进行远距离、高压或超高压输送，可减少线损，节省输配电建设费用。

At the China (Hunan) International Green Development Expo held in September 2020, the "Triple Energy Station Integrating Cooling, Heating and Power" project designed by Cinf for Huanghua International Airport was highly recognized as an energy-saving renovation case by the Hunan Provincial Development and Reform Commission.

In 2010, Cinf designed a distributed energy resource, combined holding hinting on the power (DER/CCHP) for Huanghua International Airport, which was put into operation in July 2011. This project is the first DER/CCHP in Hunan Province, and it is also a national DER/CCHP project. After being put into use for 9 years, the energy station has been running well, not only saving energy and operating costs for Huanghua International Airport, but also giving full play to the role of this technology in "peak cut", in line with electricity safety and natural gas development. This project is a useful explorations and good demonstrations for the sustainable development of Hunan.

The DER/CCHP system uses natural gas as a fuel to drive a gas generator to generate electricity for the airport. The waste heat discharged is used by waste heat recovery equipment to provide the airport for air-conditioning. At the same time, the DER/CCHP does not need to build a large power grid for long-distance, high-voltage or ultra-high-voltage transmission, which can reduce line losses and save transmission and distribution construction cost.

## 降低环境影响 Reduce Environmental Impact

中铝国际严格遵循《中华人民共和国环境保护法》《中华人民共和国大气污染防治法》《中华人民共和国水污染防治法》《中华人民共和国固体废物污染环境防治法》《中华人民共和国环境噪声污染防治法》《中华人民共和国清洁生产促进法》及项目所在运营地的环保法律、法规及标准。公司严格内部管理，制定《QHS 程序文件》《QHSE 管理体系手册》，坚持 HSE 体系及中铝集团 CAHSE 体系并轨运行，对环境管理进行持续监督。2020 年，中铝国际未发生较大及以上突发性环境事件。

节约能源是中铝国际落实科学发展观、践行绿色发展的根本要求。中铝国际重视科技创新，实施源头节能，各个设计企业在设计咨询项目中严格遵守国家有关法律法规，严格执行国家产业政策和国家、行业技术规定，精心设计，为企业生产创造良好的节能条件。加强项目一线能源节约，积极推广新材料、新工艺，合理安排施工工序，加强材料的循环利用，减少原材料的浪费与能源的消耗。加强节能教育宣传，组织企业开展“节能宣传周及环保日”活动，营造节能降碳的浓厚氛围，提高广大员工节能意识。2020 年，中铝国际未发生节能违法违规事件。

CHALIECO always strictly complies with the Environmental Protection Law of the People's Republic of China, the Air Pollution Prevention and Control Law of the People's Republic of China, the Water Pollution Prevention and Control Law of the People's Republic of China, the Law of the People's Republic of China on the Prevention and Control of Solid Waste Pollution, and the Environmental Noise Pollution of the People's Republic of China. Prevention and Control Law, Cleaner Production Promotion Law of the People's Republic of China and other environmental protection laws, regulations and standards of the place where the project is located. With strict internal management, the company has formulated "QHS Procedure Documents" and "QHSE Management System Manual". Adhering to the concurrent operation of the HSE system and Chinalco's CAHSE system, we have continuously supervised environmental management. In 2020, CHALIECO did not have any major or more sudden environmental incidents.

Energy conservation is the fundamental requirement for CHALIECO to implement the scientific development concept and practice green development. CHALIECO attaches great importance to technological innovation and implements source energy conservation. In design consulting projects, all design companies strictly abide by relevant national laws and regulations, strictly implement national industrial policies and technical regulations to create good energy-saving conditions for enterprise production. To strengthen the energy conservation of the project, we actively promote new materials and new processes, rationally arrange construction procedures, strengthen the recycling of materials, and reduce the waste of raw materials and energy consumption. To raise energy conservation awareness, the company has carried out "Energy Conservation Publicity Week and Environmental Protection Day" activities to create a strong culture for energy conservation and carbon reduction. In 2020, CHALIECO had no violations of energy-saving laws and regulations.

### 中铝国际 2018-2020 年能源消耗情况 CHALIECO's energy consumption in 2018-2020



① ② ③ 2020 年，中铝国际重新检视和规范了燃油使用量、用电量、天然气使用量的数据统计口径，并启用了线上填报系统，此前数据不具有可比性。

In 2020, CHALIECO re-examined and standardized the The data statistics of fuel consumption, power and natural gas, and launched an online reporting system. The previous data were not comparable.

## 环保治理业务

### Environmental Governance

中铝国际深耕类壤土基质复绿、边坡复绿等环境治理项目领域，积极开拓绿色技术研发、绿色勘查施工、绿色运行管理、绿色项目开发的生态环保新业务领域，为业主提供绿色方案。

CHALIECO has actively developed Simulate Loam Substrate (SLS) and Mine Simulate Loam to promote green technology R&D, green survey construction, green operation, and green project development, providing green solutions to clients.

## 绿色施工

### Green Construction

中铝国际加强工程项目施工管理，广泛推行文明施工、绿色施工。在节地、节水、节能、节材方面，做出详细规定，规范项目现场扬尘、噪音、废弃物及污水排放；提出项目施工“六个百分百”目标，确保项目施工对环境的影响降到最低。

CHALIECO has strengthened construction management of engineering projects, and extensively promoted green construction. In terms of saving land, water, energy and material, detailed regulations have been made to regulate the discharge of dust, noise, waste and sewage on the project site. The company also puts forward the goal of "six-100%" for project construction to ensure that the impact of project construction on the environment is minimized.

### 中铝国际项目施工“六个百分百”目标 "six-100%" standard of project site



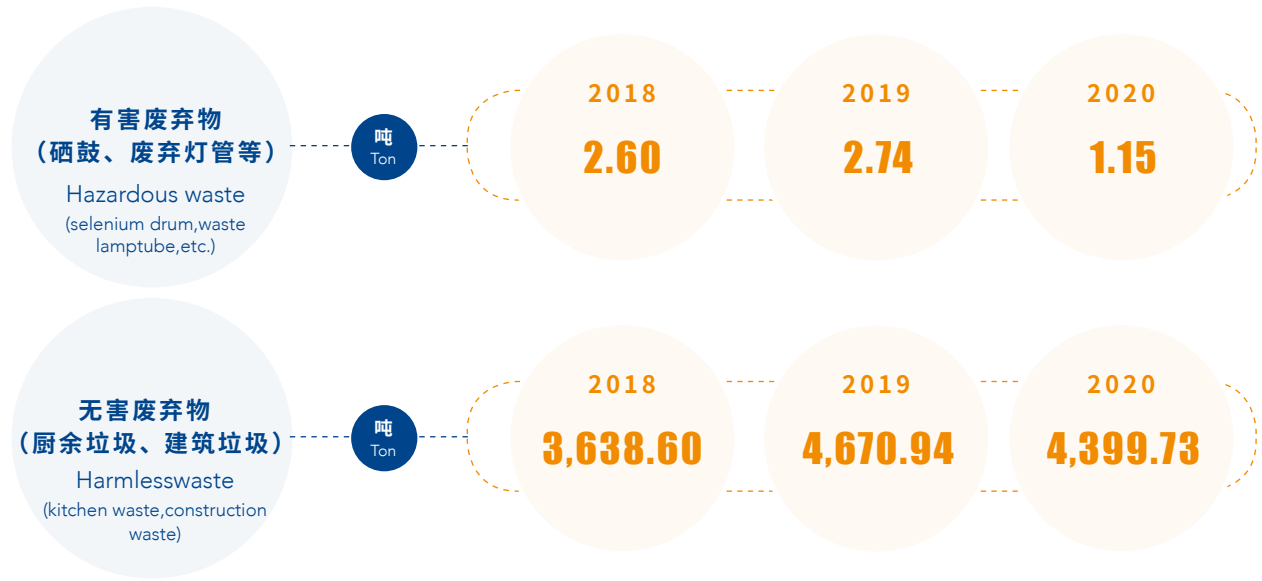
## 废弃物管理

### Waste Management

中铝国际制定《环境保护管理规定》《固体废弃物管理规定》《粉尘和毒物管理规定》等制度，对施工过程中产生的废沙、渣土、钢筋、废料等废弃物处置方法做出明确规定，并交由分包商 / 承包商进行妥善处置；对危险废弃物进行统一收集后，交由环境保护部门或具备有资质的第三方机构进行妥善处置，以减少对生态环境造成的影响。

To cope with the waste generated by engineering projects, CHALIECO has formulated the "Environmental Protection Management Regulations", "Solid Waste Management Regulations", and "Dust and Poison Management Regulations" to deal with waste sand, muck, steel bars, waste materials, etc. According to these regulations, waste disposal shall be handed over to the subcontractor/contractor for proper disposal. After the hazardous wastes are collected uniformly, they are handed over to the environmental protection department or a qualified third-party organization in order to reduce the impact to the ecological environment.

## 中铝国际 2018-2020 年固体废弃物总量情况 CHALIECO's total amount of solid waste in 2018-2020



## 水资源利用 Water Resource Utilization

中铝国际制定《工程项目施工现场用水管理规定》，对施工现场水资源使用和产生生活污水排放做出规定，降低水资源消耗，清洁排放废水，避免水资源污染。

CHALIECO has formulated the "Regulations on Water Management at Construction Sites of Engineering Projects", which stipulates the use of water resources and the discharge of sewage at construction sites to reduce water consumption and avoid water pollution.

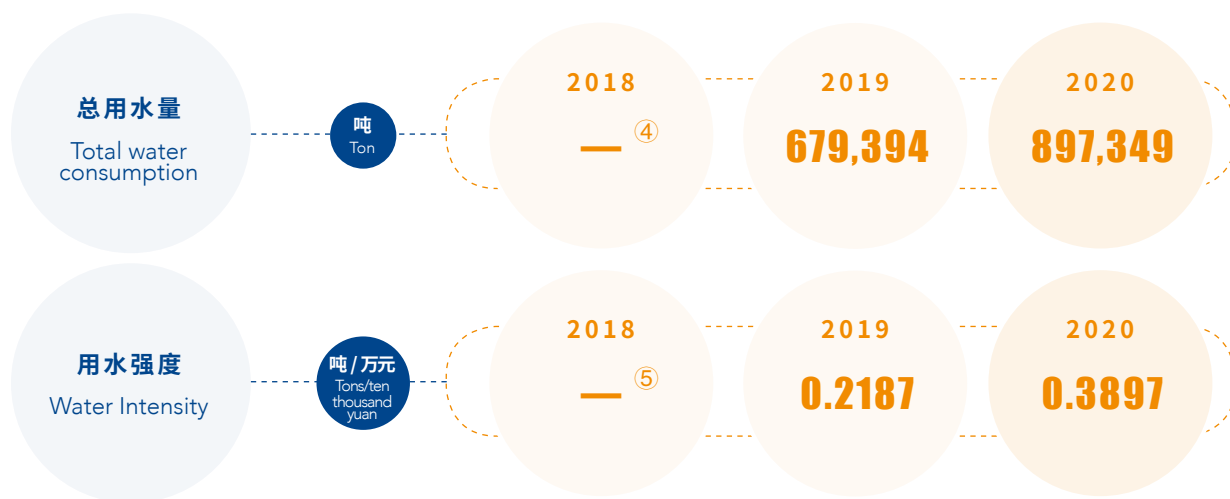
### 项目施工节水做法 Water Saving Practices

- 施工现场安装雨水收集系统，用于植被灌溉、清洗车辆等，降低新鲜水使用量  
Installment of rainwater collection system on the construction site for vegetation irrigation, washing vehicles, etc., to reduce the consumption of fresh water
- 联通用水环节，注重循环利用，减少污水排放  
Integrating water links, paying attention to recycling, and reducing sewage discharge
- 安装节水设备，降低水资源使用  
Installment of water-saving equipment to reduce water usage

### 项目施工废水合规排放 Wastewater Discharge Compliance

- 施工现场设置排水沟渠、沉淀池等，收集污水及泥浆，并进行沉降处理，达标后排入市政污水管网系统，严格避免污水渗入自然水源造成污染  
Setting up drainage ditches, sedimentation tanks, etc. on the construction site to collect sewage and mud, and perform settlement treatment, and discharge it into the municipal sewage pipe network system after reaching the standard, strictly avoiding sewage infiltration into natural water sources and causing pollution
- 酸度较高的管道洗液委托有资质的污水处理站处理  
The pipeline washing lotion with higher acidity is entrusted to a qualified sewage treatment station for treatment

## 中铝国际 2018—2020 年水资源消耗情况 CHALIECO's total amount of water in 2018-2020



④ ⑤ 2019 年，中铝国际重新检视和规范了用水量与废水排放量的数据统计口径，并启用了线上填报系统，此前数据不具有可比性。

In 2019, CHALIECO re-examined and standardized the data statistics of water consumption and wastewater discharge, and launched an online reporting system. The previous data were not comparable.

## 推行环保技术 Promote Environmental Protection Technology

随着我国环境要求和标准的提升，矿区高效开采、工厂清洁冶炼、排放物回收利用、生态治理等领域，为中铝国际的发展带来了新的机遇。作为有色行业的工程技术龙头企业，中铝国际积极拓展环保技术与推广，在能源使用效率提升、废气有机处理、污染物排放控制与治理、金属回收率提升、矿区自动探测、低品位铝土矿高效利用等领域展开技术研发，为承接项目工程奠定基础。同时，我们对环保关键装备做出深入分析和研究，从设计源头出发，为项目提供更清洁、更高效、更绿色的环境解决方案。

2020 年，长勘院拓展环保与生态修复治理领域，承接郴州临武县、岳阳临湘市、湖北黄石市等在内的一批修复工程项目。长沙院牵头承担的国家重点研发计划项目《面向有色金属冶炼流程精细管控的网络协同制造关键技术与平台研发》成为工信部绿色制造系统解决方案供应商项目。

With the improvement of China's environmental requirements and standards, high-efficiency in mining areas, clean smelting of factories, recycling of emissions, and ecological governance have brought new opportunities for the development of CHALIECO. As a leading engineering technology company in the non-ferrous industry, CHALIECO actively expands the research and promotion of environmental protection technology, focusing on energy efficiency improvement, waste gas treatment, pollutant control and treatment, metal recovery rate improvement, automatic mining area detection, and efficient use of low-grade bauxite. With advanced technology and experience in China, the company has laid the foundation for undertaking project engineering. At the same time, we have made in-depth analysis and research on key environmental protection equipment, starting from the design source, and providing cleaner, more efficient and greener environmental solutions for the project.

In 2020, Changkan Institute expanded ecological restoration application, and undertook a number of restoration projects in Linwu County of Chenzhou, Linxiang City of Yueyang, and Huangshi City of Hubei. The National Key R&D Project "Key Technology and Platform R&D for Network Collaborative Manufacturing for Fine Control of Non-ferrous Metal Smelting Process" led by Cinf has become a green manufacturing solution project of the Ministry of Industry and Information Technology.

## 中铝国际有色领域一流环保技术（例举）

## Some of the first-class environmental technology in the field of nonferrous metals

|                           |                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                        |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 沈阳院<br>Sami               | 蓄热式焚烧炉（ROT）技术<br>Regenerative thermal oxidizer (RTO) technology                                                                  | 治理炭素生产过程中的有机废气<br>Treatment of waste gas in the carbon production process                                                                                                                                                                                                                                                              |
| 长沙院<br>Cinf               | 湿法冶炼工艺<br>Hydrometallurgy process                                                                                                | 解决铜冶炼行业二氧化硫排放问题<br>Reducing sulfur dioxide emissions in the copper smelting industry                                                                                                                                                                                                                                                   |
| 长沙院<br>Cinf               | 铅阳极泥处理新技术<br>New technology of lead anode slime treatment                                                                        | 提高金属回收率的同时减少排放、节约能耗<br>While increasing the metal recovery rate reducing emissions and save energy consumption                                                                                                                                                                                                                         |
| 长沙院<br>Cinf               | RDP 全过程一体化精准协同膏体充填技术<br>RDP full-process integration, precise and collaborative paste filling technology                         | 提高矿山填充实验室数据准确性，提供工艺设计标准方法与平台，助力全流程智能化管控，为矿山绿色高质量发展提供技术支持<br>Improving the accuracy of mine filling laboratory data, providing standard methods for process design and platforms, helping the entire process of intelligent management and control, and providing technical support for the green and high-quality development of mines |
| 长沙院<br>Cinf               | 富氧粉煤喷吹熔池熔炼技术和装备研究<br>Oxygen-enriched pulverized coal injection molten pool smelting technology and equipment                     | 提升铅系统还原炉生产指标、降低渣含铅、煤耗、氧耗、劳动强度<br>Improving the production indicator of the reduction furnace of the lead system, reducing the lead content of the slag, coal consumption, oxygen consumption, and labor intensity                                                                                                                      |
| 长沙院<br>Cinf               | 铜冶炼企业废水“零排放”关键技术及应用<br>Key Technologies and Application of "Zero Discharge" of Wastewater in Copper Smelting Enterprises         | 实现铜冶炼废水资源化、无害化经济型“零排放”<br>Ensuring wastewater from copper smelting harmless and "zero discharge"                                                                                                                                                                                                                                       |
| 长沙院<br>Cinf               | 锌浸出渣高值化清洁冶炼技术<br>High-value clean smelting technology for zinc leaching residue                                                  | 实现危废渣——锌浸出渣中有价金属的富集和综合回收<br>Gathering valuable metals and comprehensive recovery in the hazardous waste residue-zinc leaching residue                                                                                                                                                                                                  |
| 长勘院<br>Changkan Institute | 有色行业矿渣堆场生态修复技术研究和推广<br>Research and promotion of ecological restoration technology for slag storage yard in non-ferrous industry | 基于自然的解决方案，实现生态修复<br>已在河南中州铝业的赤泥堆场开展现场试验，现场植物长势良好<br>Nature-based solutions to achieve ecological restoration<br>The field test has been carried out in the red mud disposal site of Henan Zhongzhou Aluminum Industry, and the plants on the spot are growing well                                                                     |
| 长勘院<br>Changkan Institute | 矿山地下采空区无人自动探测技术<br>Unmanned automatic detection technology for underground goaf of mine                                          | 整合矿产资源、避免矿山环境恶化和资源浪费<br>Integrating mineral resources to avoid deterioration of the mine environment and waste of resources                                                                                                                                                                                                            |

## 铝应用推广 Aluminum Application Promotion

铝制品的可回收性、轻巧性、抗腐蚀性，在节约能耗、降低温室气体排放方面具有独特的重要性。从环保角度长远来看，铝应用将在建筑业、交通运输业等领域具有更为广泛的前景，也将具有更为显著的社会效益。中铝国际推进铝精深加工价值链高端转型，加大创新力度，开展工程用铝，探索新的市场领域，打造核心竞争力。我们以市场和用户需求为导向，在建筑用铝、交通用铝，电信产品、工业设备、基础设施等领域开发铝合金产品，推广实施铝应用。

2020 年，中铝国际工程用铝业务和市场实现新的拓展，建成云南铝应用产业基地，中标全国首例大直径异形铝结构建筑——四川成都建川综合陈列馆铝合金网壳结构建设项目；承建的 3 座铝合金天桥亮相内蒙古赤峰市，其中 1 座为目前国内单体规模、原材料用量最大的铝合金天桥。

九冶承建西安天谷六路人行天桥顺利开通  
Xi'anTiangu No.6 pedestrian overpass constructed by 9th Metallurgical Construction opened smoothly



The recyclability, lightness, and corrosion resistance of aluminum products are of unique importance for saving energy and reducing greenhouse gas emissions. From a long-term perspective of environmental protection, aluminum applications will have broader prospects in the construction industry, transportation and other fields, and will also have more significant social benefits. CHALIECO is advancing the high-end transformation of the aluminum intensive processing value chain, increasing innovation, launching engineering aluminum, exploring new market areas, and building core competitiveness. Guided by market and user needs, we develop aluminum alloy products and promote the implementation of aluminum applications in areas such as construction, transportation, telecommunications, industrial equipment, and infrastructure.

In 2020, CHALIECO's engineering aluminum business and market has achieved new expansion, building an aluminum application industry base in Yunnan, and winning the bid for the country's first large-diameter special-shaped aluminum structure building-Aluminum alloy reticulated shell of Comprehensive Exhibition Hall in Chengdu, Sichuan. The three cross-street aluminum alloy flyovers undertaken by our company appeared on the streets of Chifeng City, Inner Mongolia. One of them is the aluminum alloy flyover with the largest monomer scale and the largest amount of raw materials in China.



# 03



中铝国际在稳定开展自身业务经营的同时，主动承担企业社会责任，携手利益相关方共建和谐社会。公司维护员工权益，搭建员工发展平台，助力员工成长；倡导志愿精神，积极参与精准扶贫，支持社会公益事业，服务、奉献社会；拓展海外项目，注重社区责任履行，助推当地经济发展，创造共赢价值。

While stably carrying out its own business operations, CHALIECO also actively assumes corporate social responsibilities and works with stakeholders to build a harmonious society. The company safeguards the rights and interests of employees, builds an employee development platform, and helps them grow. Advocating volunteerism, we actively participate in targeted poverty alleviation to support social welfare, serve and contribute to society. Oversea entities focus on fulfilling community responsibilities, boosting local economic development, and creating win-win value.

# 幸福之“铝” 共享美好

## "Aluminum" with Happiness to Share Prosperity



- 员工关爱 Employee Care
- 志愿服务 Volunteer Service
- 精准扶贫 Targeted Poverty Alleviation
- 防疫抗疫 Fight against COVID-19
- 境外履责 Performing Duties Abroad

## 员工关爱 Employee Care

中铝国际 2020 年度员工构成情况 The composition of CHALIECO's employees in 2020

| 类别<br>Category                                    | 员工人数 (人)<br>Number of employees   |
|---------------------------------------------------|-----------------------------------|
| 按员工类型划分雇佣人员总数<br>Characterized by employee type   | 劳动合同员工 Contract employees 14,633  |
| 按年龄结构划分的员工数量<br>Characterized by age              | ≥ 55 岁 ≥ 55 years old 1,204       |
|                                                   | 41-54 岁 41-54 years old 5,400     |
|                                                   | 31-40 岁 31-40 years old 4,512     |
|                                                   | ≤ 30 岁 ≤ 30 years old 3,517       |
| 按职称划分的员工数量<br>Characterized by professional title | 高级职称 Senior title 2,214           |
|                                                   | 中级职称 Intermediate title 3,209     |
|                                                   | 初级职称 Junior title 2,931           |
| 按性别划分的员工数量<br>Characterized by gender             | 男 male 11,239                     |
|                                                   | 女 Female 3,394                    |
| 按地区划分的员工数量<br>Characterized by region             | 中国内陆 Mainland China 14,633        |
|                                                   | 港澳台 Hong Kong, Macau and Taiwan 0 |
|                                                   | 国外 foreign 0                      |

中铝国际 2020 年度员工流失情况 Employee turnover in 2020

| 类别<br>Category                                   | 离职员工人数 (人)<br>Number of the resigned | 流失率 (%)<br>Churn rate (%) |
|--------------------------------------------------|--------------------------------------|---------------------------|
| 按年龄结构划分的离职员工人数<br>Number of the turnover by age  | ≥ 55 岁 ≥ 55 years old 7              | 0.04                      |
|                                                  | 41-55 岁 41-55 years old 73           | 0.5                       |
|                                                  | 31-40 岁 31-40 years old 205          | 1.4                       |
|                                                  | 20-30 岁 20-30 years old 313          | 2.14                      |
| 按性别划分的离职员工人数<br>Number of the turnover by gender | 男 male 478                           | 3.27                      |
|                                                  | 女 Female 120                         | 0.82                      |
| 按地区划分的离职员工人数<br>Number of the turnover by region | 中国内陆 Mainland China 598              | 4.1                       |

## 维护员工权益 *Safeguard the rights and interests of employees*

中铝国际坚持“以人为本”，尊重并维护职工合法权益，制定《中铝国际总部员工招聘管理办法》《中铝国际劳动合同管理办法》等制度，构建完善的员工权益保护体系，切实保障员工合法权益。公司坚决杜绝强制劳动，保障平等就业，落实民族政策，严禁使用童工。截至报告期末，中铝国际共有在职员工 14,633 人。

在薪酬待遇方面，中铝国际为员工提供合理的薪资与福利，依法为员工缴纳社会保险和公积金、提供带薪休假，落实病休假制度等，并为员工提供体检、节日慰问等福利待遇。中铝国际还鼓励有条件的下属企业为员工缴纳企业年金、补充医疗险。

民主管理方面，中铝国际完善以职工代表大会为基本形式的企业民主管理体系，保障员工的知情权、建议权、参与权和监督权。



中铝国际共有  
在职员工

**14,633人**

Adhering to the "people-oriented" principle, CHALIECO respects and protects the legitimate rights and interests of employees, and formulates the "CHALIECO Headquarters Staff Recruitment Management Measures", "CHALIECO Labor Contract Management Measures" and other systems to build a complete employee rights protection system. The company resolutely eliminates forced labor, guarantees equal employment, implements ethnic policies, and strictly prohibits the use of child labor. As of the end of the reporting period, CHALIECO had 14,621 employees.

In terms of remuneration, CHALIECO provides employees with reasonable salary and benefits, pays social insurance and provident funds for employees in accordance with the law, provides paid leave, implements the sick leave system, etc., and provides employees with benefits such as medical examinations. CHALIECO also encourages subsidiaries to pay corporate annuities and supplementary medical insurance for their employees.

In terms of democratic management, CHALIECO has perfected the corporate democratic management system based on the workers' congress to protect the employees' right.



“中铝国际杯”首届工程技术职业技能大赛  
Chalico Cup the first engineering technology vocational skills competition

## 培育员工成长 Career Growth

中铝国际为员工搭建职业发展平台，满足员工提升素质、挖掘潜能的需要；建立员工晋升机制，为员工搭建发展多元通道；完善人才激励机制，激励员工成长成才。

2020 年，中铝国际组织 24 人参加中铝集团“合金计划”“锋刃计划”“飞跃计划”培训班；组织人员参加中铝集团班组长综合管理技能培训、综合办公技能比武、首届“中铝国际杯”工程技术职业技能大赛、“中铝国际杯”中铝集团第四届创新创业大赛、“安全、干净”班组竞赛、本部新员工入职培训等活动，提升员工素质和能力。开办“中铝国际讲堂”，举办安全生产管理、人力资源、法务风控、市场开发、办公技能、财务管理等 6 个专题讲堂，围绕公司生产经营改革发展的相关问题，开展业务交流、研讨培训。2020 年，中铝国际累计培训 12,546 人次。



中铝国际累计  
培训

**12,546** 人次

CHALIECO builds a career development platform for employees to meet the needs to improve their quality and tap their potential; establishes an employee promotion mechanism and builds a diversified channel for employee development; improves the talent incentive mechanism to encourage employees to grow.

In 2020, 24 employees participated in the training courses of "Alloy Plan", "Edge Plan" and "Flying Plan". Many employees also participated in the comprehensive management skills training for team leaders of CHINALCO, comprehensive office skills competition. Besides, the first "CHALIECO Cup" Engineering Skills Competition, the 4th "CHALIECO Cup" innovation and creativity competition, "Safety Work" competitions and induction training for new employees have improved the quality and abilities of employees. "China Aluminum International Lecture Hall", as well as other six thematic lectures on safety management, human resources, legal and risk control, market development, office skills, and financial management provided opportunities for business exchanges, seminars and training on issues related to the company's production and operation reform and development. In 2020, CHALIECO has trained 12,546 people in total.

经营管理人员  
Operation and management staff

**4,077**

工程技术人员  
Engineer

**5,807**

生产操作人员  
Production operator

**697**

服务及其他人员  
Personnel in client service and other field

**1,965**



## 关怀员工生活 Caring for Employees' Lives

中铝国际深入了解员工工作和生活诉求，真情帮扶困难员工，组织开展丰富多彩的员工活动，提升员工的幸福指数，增强企业凝聚力和向心力。

CHALIECO has a deep understanding of employees' work and life demands, sincerely helps employees in need, organizes a variety of employee activities, improves employees' happiness index, and enhances corporate cohesion and centripetal force.

**关心关爱员工：**在元旦春节、中秋等节日期间组织慰问一线员工、困难职工，为员工发放节日慰问品、生日蛋糕券等，让员工感受到企业的温暖。2020 年疫情期间，公司本部建立员工理发室，为员工解决疫情期间的理发难题。

**Caring for employees:** visiting frontline employees and employees in difficulties during New Year's Day, Spring Festival, Mid-Autumn Festival and other festivals, and presenting employees with holiday gifts and birthday cake. During the 2020 pandemic, the company's headquarters established a barber shop for employees to solve the problem of haircuts.

**困难员工帮扶：**公司建立困难员工帮扶长效机制，规范困难帮扶专项资金管理，明确救助范围、帮扶额度等，给予困难员工更多关心和慰问，帮助他们解决实际困难。

**Assistance to employees in need:** The company establishes a long-term mechanism for assistance to employees in need, regulates the management of special funds for assistance in difficulties, clarifies the scope of assistance and the amount of assistance, etc., to give more care and condolences to employees in need, and help them solve practical difficulties. In 2020, CHALIECO invested a total of 761,800 yuan in employee assistance funds.



2020 年，中铝国际共投入员工帮扶资金

**76.18** 万元

**多元文化活动：**公司持续推进职工之家建设，组织开展员工文体活动，丰富员工业余生活。

**Multicultural activities:** The company continues to organizes cultural and sports activities for employees, and enriches their spare-time lives.



2020 年 6 月，中铝国际讲堂首期开讲  
In June 2020, the first session of the CHALIECO Lecture Hall initiated.

长沙院安排专车接送员工上班  
Cinf arranged shuttle bus for employees



中铝山东工程技术有限公司组织开展职工运动会  
Organize and carry out employee sports meeting

## 志愿服务 Volunteer Service

中铝国际弘扬“奉献、友爱、互助、进步”的志愿服务精神，鼓励员工参与志愿服务，组织志愿者服务队伍，深入社区开展学雷锋志愿服务活动，培育“我为人人、人人为我”的良好风尚。2020年，中铝国际组织志愿者活动116次，累计活动1,191小时。

CHALIECO promotes the spirit of volunteer service of "dedication, friendship, mutual assistance, and progress", encourages employees to participate in voluntary service, organizes volunteer service teams, goes deep into the community to carry out volunteer service activities. In 2020, CHALIECO organized 116 volunteer activities, with a total of 1,191 activity hours.



贵阳院学雷锋

Learn from Leifeng, volunteers from Gami participated in voluntary service



山东工程学雷锋

Volunteers from Shandong Engineering Technology participated in voluntary service

## 精准扶贫 Targeted Poverty Alleviation

中铝国际及下属企业深入贯彻落实党中央、国务院脱贫攻坚决策部署，按照“统筹规划、突出重点、尽力而为、量力而行”的原则，通过定点帮扶、基础设施建设、爱心捐赠、消费贫困地区农特产品等方式，积极参与精准扶贫。中铝国际派驻村干部，立足帮扶地区实际需要，在基础设施建设、产业支持、教育、消费、就业等领域，积极筹划、展开帮扶，助力贫困村脱贫摘帽。

CHALIECO and its subsidiaries have thoroughly implemented poverty alleviation and deployment, in accordance with the principle of "planning overall, highlighting key points, doing their best, and acting within their capabilities" through targeted assistance, infrastructure construction, donations, consuming agricultural products in poverty-stricken areas to participate in targeted poverty alleviation. CHALIECO dispatched cadres to villages, based on the actual needs of the region, and actively planned and carried out assistance in the fields of infrastructure construction, industrial support, education, consumption, and employment to help poor villages get rid of poverty.

### 中铝国际 2020 年精准扶贫投入

#### CHALIECO's Investment in Targeted Poverty Alleviation in 2020



2020 年，中色科技、长勘院、长沙院和贵阳院 4 家二级企业定点帮扶的 4 个村已全部实现贫困村摘帽，建档立卡贫困户 408 户 1,581 人已全部实现脱贫。

In 2020, all of villages supported by the four secondary enterprises of CHALIECO were lifted out of poverty, which benefited 408 poor households and 1,581 people.

## 中铝国际定点帮扶工作地区 CHALIECO's designated areas for assistance



长勘院爱心助学  
Changkan institute helping poor students

“脱贫摘帽不是终点，而是新生活、新奋斗的起点”，公司及下属企业将继续巩固脱贫成效，确保达到户有致富门路，村有特色产业，群众收入增加，集体经济不断壮大，全面推进乡村振兴。

Getting rid of poverty is not the end, but the starting point of new life and new struggle. The company and its subordinate enterprises will continue to consolidate the effect of getting rid of poverty, ensure that every household has away to get rich, the village has characteristic industries, the income of the masses increases, and the collective economy continues to grow comprehensively promote rural revitalization.



长沙院扶贫点教育基金启动仪式

Launching Ceremony of Cinf Poverty Alleviation Education Fund

### 中铝国际精准扶贫荣誉

Honor of CHALIECO for Poverty Alleviation



中色科技取得 2020 年洛阳智慧扶贫系统数据录入质量比赛团体第一名

CNPT won the first prize of Team Competition in Louyang Smart Poverty Alleviation System Data Entry Quality Competition

中色科技驻村第一书记卢廷革同志荣获“新安县脱贫攻坚贡献奖”

Lu Tingge, the first secretary from CNPT in the village, won the "Poverty Alleviation Contribution Award" of Xin'an County

贵阳院被评为全州优秀帮扶企业、全县优秀帮扶企业

Gami was rated as excellent helping enterprises in Qiandongnan Miao and Dong Autonomous Prefecture

贵阳院全资子公司贵阳新宇建设监理有限公司被评为全县优秀帮扶单位

Guiyang Xinyu Construction Supervision Co., Ltd, Gami's wholly owned subsidiary, was rated as the Shibing County's outstanding aid units

贵阳院驻村第一书记李彤同志荣获贵州省优秀第一书记、全州优秀援黔东南干部

Li Tong, the first secretary from the Gami in the village, was awarded the outstanding first secretary of Guizhou Province and the outstanding cadre in Qiandongnan Miao and Dong Autonomous Prefecture

长勘院扶贫工作在湖南省委组织部组织的年度考核评定中评定为优秀等次

Poverty alleviation work team dispatched by Changkan Institute was highly recognized by organization department of Hunan Provincial Party committee and rated A level in the assessment



## 精准帮扶成效显，拳拳真情满金坑

案例

### Targeted Poverty Alleviation in Jinkeng

Case

贵州省施秉县牛大场镇金坑村，位于大山深处，由于恶劣的自然环境，落后的基础设施，成为镇里唯一的二类贫困村，全村辖 14 个村民组 596 户 2,021 人，有贫困人口 148 户 566 人。

2018 年 3 月，贵阳院选派李彤赴金坑村落实扶贫工作。在对村情进行深入了解后，李彤决定紧紧围绕发展金坑村经济建设这一中心，强化班子建设、基础建设、文化建设、民生建设，有效实施结对帮扶计划，帮助贫困户脱贫。

贵阳院与村两委一致支持这一帮扶思路。在李彤的协调配合组织下，贵阳院为金坑村投入帮扶资金（含物资、设计费等）45.5 万元。其中，直接投入用于基础设施 16.8 万元、产业扶贫 3 万元、文化教育 1 万元、医疗卫生 1.5 万元、赈灾救济送温暖 3.2 万元；帮助引进各类资金（含无偿和有偿）1,000 余万元；帮助贫困户实现劳务就业 5 人，实现劳务收入 40 余万元。

2019 年 4 月 24 日，贵州省人民政府正式批准施秉全县成功脱贫摘帽，贵阳院党建扶贫点金坑村以认可度 100% 的优异成绩脱贫出列。

Jinkeng Village, Niudachang Town, Shibing County, Guizhou Province, is located deep in the mountains. Due to the harsh natural environment and outdated infrastructure, it has become the only second-class poor village in the town. The whole village has 14 villager groups with 596 households and 2,021 people among which 566 people in 148 households in poverty.

In March 2018, the Gami appointed Li Tong to go to Jinkeng Village to implement poverty alleviation work. After in-depth understanding of the village situation, Li Tong decided to focus on the development of Jinkeng Village's economic construction center, strengthen team construction, infrastructure construction, cultural construction, and people's livelihood construction, and effectively implement the paired assistance program to help poor households get out of poverty.

The Gami and the two village committees unanimously supported this idea of assistance. Under the coordination of Li Tong, Gami invested 455,000 yuan in assistance funds (including materials, design fees, etc.) for Jinkeng Village. Among them, 168,000 yuan was directly invested for infrastructure, 30,000 yuan for industrial poverty alleviation, 10,000 yuan for culture and education, 15,000 yuan for medical and health care, and 32,000 yuan for disaster relief. Besides, more than 10 million yuan of various funds were introduced (including free and paid); Li Tong helped poverty-stricken households to achieve 5 labor employment, and achieved labor income of more than 400,000 yuan.

On April 24, 2019, the People's Government of Guizhou Province officially recognized that Shibings County successfully out of poverty and the Gami's Poverty Alleviation Point in Jinkeng Village was listed as an excellent achievement.



为金坑村投入  
帮扶资金

**45.5** 万元



帮助引进各类资  
金(含无偿和有偿)

**1,000** 余万元

## 防疫抗疫 Fight against COVID-19

2020 年初，新冠肺炎疫情突如其来。面对疫情严峻形势，中铝国际认真贯彻习近平总书记、李克强总理对疫情作出的重要指示精神，全面落实中铝集团党组关于疫情防控的要求，迅速行动、周密部署，统筹做好疫情防控和复工复产各项任务，为打赢疫情防控阻击战贡献力量。

At the beginning of 2020, the Covid-19 strikes suddenly. Faced with the severe situation of the epidemic, CHALIECO earnestly implemented the spirit of the important instructions given by General Secretary Xi Jinping and Premier Li Keqiang to the epidemic, fully implemented the requirements of the Chinalco's Party on epidemic prevention and control, acted quickly and carefully deployed, and coordinated the prevention and control of the epidemic to contribute to winning the fight against the epidemic.

### 严格落实防控责任

#### Strictly implementing prevention and control responsibilities

疫情就是命令，防控就是责任。疫情暴发后，为确保各项工作落到实处，中铝国际成立由主要领导挂帅、班子成员全体参加的预防新型冠状病毒感染肺炎工作领导小组，并组建领导小组办公室，各部门、各单位迅速响应，全面安排部署，层层压实防控责任。结合疫情防控态势，中铝国际还及时组织研究各施工企业、项目部节后复工事宜，统筹开展疫情防控和经营生产工作。

The epidemic is the order, and prevention is company's responsibility. After the outbreak, in order to ensure the implementation of various tasks, CHALIECO established a leading group for the prevention of COVID-19, and established a leading group office. All departments and units responded quickly to comprehensively arrange for deployment, and layered implementation of prevention and control responsibilities. In light of the epidemic prevention and control situation, CHALIECO also promptly organized research on the resumption of work by construction companies and project departments, and coordinated the development of epidemic prevention and control and operation and production.



## 广泛开展捐款捐物

### Extensively carrying out donations

疫情发生后，中铝国际所属企业和广大职工积极捐款捐物，支援疫情抗击，以实际行动为疫情防控一线提供支持和保障，合计捐资捐物达到 14.59 万元。

After the outbreak of the COVID-19, CHALIECO's subsidiaries and employees actively donated money and materials to support the fight against the epidemic, and provided support for the front line of epidemic prevention and control with practical actions. The total donations reached 145,900 yuan.

## 稳步推进复工复产

### Steadily promoting the resumption of work

面对疫情严峻大考，中铝国际直面困难，迎难而上，坚持疫情防控与复工复产“两手抓、两不误”，建立三级疫情防控、复工复产管理体系，制定印发《施工现场新冠肺炎防控工作实施方案》《关于加快在建项目复工复产的指导意见》等，在防控好疫情的前提下加强生产经营组织管理，全力以赴保重点项目，分级分层抓实做细生产经营工作。同时，各企业积极结合自身优势，开展信息化、技术化应用开发，助力安全复工复产。截至 2020 年 3 月底，公司 200 余个项目全部复工复产，得到地方政府和媒体的广泛关注。

Faced with the severe examination of the epidemic, CHALIECO insisted on the prevention and control of the epidemic and the resumption of production with both hands. The company established a three-level management system for epidemic prevention and control, resumption of production and production, and formulated and issued the "Implementation Plan for the Virus Prevention at Construction Sites" and "Guiding Opinions on Accelerating the Resumption of Work and Production of Projects Under Construction", etc. Under the premise of preventing and controlling the epidemic, we also strengthened the organization and management of production and operation to protect key projects, and grasp at different levels. At the same time, all branches actively combined their own advantages to carry out informatization and technological application development to help safe resumption of work and production. As of the end of March 2020, all of the company's more than 200 projects have resumed operation, which has highly recognized by local governments and the media.



山东工程信息技术中心开发 2 套外来人员疫情防控手机 APP，创新信息登记模式，满足疫情期间企业对外来施工人员信息管控的需要，有效助力企业防疫复工

The Information Technology Center of Chalico Shandong Engineering Technology developed 2 sets of mobile apps for epidemic control, and innovated information registration models to meet the needs of enterprises for information management and control of migrants during the epidemic, and effectively help enterprises to resume work in epidemic prevention and control



## 昆勘院应急研发红外测温仪助力复工复产

案例

The infrared thermometers by the Kunming Survey and Design Institute helps resumption of work and production Case

为做好复工后员工的安全保障，昆勘院提出“研制红外测温仪应急自用，全力保障疫情防控设备供应”的方案。昆勘院威海信息化分公司接到任务后，分工合作齐行动，历时 9 天完成红外测温仪的设计、组装和调试，成功研发出第一台样机。经过与医用测温仪进行核验，该红外测温仪总体误差在行业标准范围内，可用于人员日常测温使用。

In order to ensure the safety of employees after the resumption of work, the Kunming Survey and Design Institute put forward the plan of "developing infrared thermometers for emergency use and ensuring the supply of epidemic prevention and control equipment". After receiving the task, the Weihai Information Technology Branch of the Kunming Survey and Design Institute took 9 days to complete the design, assembly and commissioning of the infrared thermometer, and successfully developed the first prototype. After verification with a medical thermometer, the overall error of the infrared thermometer is within the industry standard range and can be used for daily temperature measurement.



## 保障重点民生工程建设

### Ensuring the construction of key livelihood projects

中铝国际各成员企业统筹抓好疫情防控、复工复产工作，在做好重点工业项目施工的同时，积极推进和保障重点民生工程复工。云南推进“三区三州”扶贫攻坚的重点工程——“泸水-腾冲”二级公路项目、河南安阳中东孟村棚改项目等一批民生工程项目，多举措开展防疫工作，有序推进项目复工，把新冠肺炎疫情对施工进度的影响降到最低。

The member companies of CHALIECO have coordinated efforts to prevent and control the epidemic, resume operation. While doing a good job in the construction of key industrial projects, they actively promoted the resumption of key livelihood projects. Yunnan promoted a number of livelihood projects such as the "Lushui-Tengchong" secondary road project and the Zhongdongmeng Villiage shantytown renovation in Anyang, Henan, which are key projects for poverty alleviation, and carried out epidemic prevention work in an orderly manner. The resumption of the project has minimized the impact of the pandemic on the construction progress.

## 保障员工安全健康

### Ensuring the safety and health of employees

中铝国际切实保障员工生命安全和身心健康，建立人员台账和个人健康档案，严格实行“日报告”“零报告”制度，精准掌握员工行程动态和健康状况；积极为员工采购发放防疫物资，开展员工心理健康疏导，宣传普及疫情防控知识，筑牢员工生命安全和身心健康防线。全年，公司近 15,000 名员工无一例感染。

CHALIECO effectively guarantees the safety and physical and mental health of employees, establishes personnel accounts and personal health files, and strictly implements the "daily report" and "zero report" system to accurately grasp the dynamics and health status of employees. By providing epidemic prevention materials for employees, carrying out employee mental health counseling, and publicizing epidemic prevention knowledge, the company built a line of medical defense for employee. Throughout the year, nearly 15,000 employees in the company, no case of infection reported.

## 境外履责 Performing duties abroad

中铝国际凭借“技术为先导”的集约发展模式，为多项海外工程提供工程设计与咨询、工程总承包、设备供货等服务，是世界铝工业的主要技术供应商之一，向全球数十个国家和地区输出技术、设备和劳务，并与国际企业、科研机构等建立起合作关系，并打造以印尼和越南为基础的东南亚基地、以几内亚和刚果金为基础的非洲基地、以哈萨克斯坦和塔吉克斯坦为基础的俄语区基地、以委内瑞拉和秘鲁为基础的美洲基地，以及以意大利维斯梅港电解铝厂 EPS 总包项目为基础的欧洲市场业务基地。

Relying on the intensive development model of "technology as the leader", CHALIECO provides engineering design and consulting, EPC, equipment supply and other services for a number of overseas projects, exporting technology, equipment and labor services to dozens of countries and regions, and establishing cooperative relations with international enterprises and scientific research institutions. We have built Southeast Asian bases based on Indonesia and Vietnam, African bases based on Guinea and the Democratic Republic of Congo, and Russian-speaking base based in Kazakhstan and Tajikistan, the American base based in Venezuela and Peru, and the European market business base based on the EPS turnkey project of the electrolytic aluminum plant in Italy.

### 境外业务拓展 Business expansion abroad

2020 年，公司以核心技术和成本优势，实现海外市场的新突破，新签定多个项目：

In 2020, the company has achieved new breakthroughs in overseas markets with its core technology and cost advantages, and have signed a number of new projects:

#### 印尼年产 100 万吨冶金级氧化铝项目 EPC 总承包项目

1,000,000 TPA (expandable) Smelter Grade Alumina Refinery Mempawah Project

#### 埃及年产 160 万吨螺纹钢项目施工总承包项目

The general contracting project for the construction of the 1,600,000 tons of rebar project in Egypt

#### 印度氧化铝扩建项目设计项目

Design project for alumina factory expansion in India

#### 刚果金湿法铜钴冶炼设计项目

Wet Process Copper Cobalt Smelting Design Project of Democratic Republic of the Congo

### 守望相助，共克时艰 Keep watching and help each other to overcome the difficulties together

在中国处于新冠肺炎疫情防控的关键时期，中铝国际曾在海外合作伙伴的鼎力相助下，从海外采购物资，第一时间发回国内。土耳其、印尼等国合作伙伴还向公司及成员企业捐赠防疫物资。

新冠肺炎疫情向全球扩散后，部分海外合作伙伴紧缺防疫物资，中铝国际及成员企业及时伸出援手，向委内瑞拉、印尼、意大利、法国、韩国等国相关企业捐赠口罩、防护服等防疫物资，见证中铝国际与海外合作伙伴“守望相助、共克时艰”的患难真情。

When China is in a critical period of fighting the virus, CHALIECO has purchased some materials from overseas with the help of partners and sent them back to China as soon as possible. Partners in Turkey, Indonesia and other countries also donated some anti-epidemic materials to the company and member companies.

After the global spread of the COVID-19, some overseas partners were short of protective materials. CHALIECO and its branches gave a helping hand in time, donating masks, protective materials to relevant companies in Venezuela, Indonesia, Italy, France, South Korea and other countries. This witnessed CHALIECO and its overseas partners "helping and supporting each other and overcoming difficulties together".



意大利维斯梅电解铝改造项目  
Electrolytic Aluminum  
Reconstruction Project in Italy



## 关注境外员工健康

### Pay attention to the health of overseas employees

针对海外疫情发展实际，中铝国际印发《关于在境外新冠肺炎疫情防控中发挥党组织战斗堡垒和党员先锋模范作用的通知》《中铝国际工会关于在疫情防控期间关心关爱海外员工的通知》，密切关注海外人员生命安全，积极筹备防疫物资，动态调整应急预案，为全体境外员工共 427 人购买疫情人身意外险。同时，及时为海外员工家庭送去关怀、排忧解难，解决境外员工的后顾之忧。

In response to the spread of the overseas pandemic, CHALIECO issued the "Notice on Playing the Role of Party as Fighting Fortress to Fight Against the Pandemic Overseas" and "Notice of the CHALIECO on Caring for Overseas Employees During the Period of Pandemic", paying close attention to the health of overseas personnel, actively preparing anti-epidemic supplies, dynamically adjusting emergency plans, and purchasing personal accident insurance for all 427 overseas employees. At the same time, the company supported trouble-shooting for the families of overseas employees in a timely manner, so as to solve the worries of overseas employees.



### 中铝国际成员企业承建的几内亚 Boffa 项目核心工程获各方高度评价

案例

The core project of the Boffa project in Guinea undertaken by a member company of CHALIECO has been highly praised by all parties Case

4 月 6 日，Boffa 项目皮带输送系统带料重载联调一次成功，标志着中国在几内亚投资最大铝土矿项目全线贯通投运，也意味着中铝国际“会战”西非交出一份满意答卷。

几内亚 Boffa 铝土矿矿山项目位于非洲几内亚博法省博法市东北部，是中铝集团重大海外绿地工程，备受全球铝行业关注。项目自启动以来，中铝国际充分发挥技术优势，从 Boffa 项目决策、谈判再到建成，全过程参与咨询、设计、施工等工作。

2016年8月，长沙院组建 Boffa 项目组，开展几内亚 Boffa 铝土矿资源开发的概念设计研究，实施项目资源勘查，编制项目可研报告，为中铝集团决策、几内亚政府审查及矿业协议谈判提供可靠支持。基于前期的出色表现，长沙院随即承担了 Boffa 项目总体设计任务，派出人员 12 批次赴现场进行建设、施工、试车、投产等方面的技术服务。

项目试生产建设期间，六冶、十二冶项目部克服当地没有用电用水等基础条件、物资设备和施工材料不足等难题，保证生活区按时达到入住条件。在中铝国际成员企业的积极努力下，Boffa 项目接连创造斜拉桥 303 天合龙，23 公里长距离越野皮带 246 天完成土建施工，162 天完成钢结构安装等施工佳绩，得到中国驻几内亚大使、业主方的高度认可。

在项目建设期间，中铝国际还通过帮助当地完善道路、桥梁交通条件，开展本地采购、招聘当地人员务工，租赁当地设备的方式，助力矿区周边社区经济发展。

On April 6th, the belt conveyor system of the Boffa project was successfully adjusted with heavy loads, marking the completion of China's investment in Guinea's largest bauxite project. It also means that CHALIECO's "exploration" in West Africa got great recognition.

The Boffa bauxite mine project in Guinea is located in the northeast of Boffa City, Bofa Province, Guinea, Africa. It is a major overseas greenfield project of Chinalco Group and has attracted the attention of the global aluminum industry. Since the project was launched, CHALIECO has given full play to its technological advantages, from decision-making, negotiation to completion of the Boffa project, and participating in consultation, design, and construction throughout the entire process.

In August 2016, Cinf formed the Boffa project team to carry out conceptual design research on the development of Boffa bauxite resources in Guinea, implement project resource surveys, prepare project feasibility reports, provide reliable support for Chinalco and the Guinea government. Based on the outstanding performance in the early stage, Cinf immediately undertook the overall design task of the Boffa project and sent 12 batches of personnel to the site for technical services such as construction, construction, test run, and production.

During the trial production and construction of the project, the Project Department of Sixth Metallurgical Company and China Nonferrous Metals Industry's 12th Metallurgical Construction Co., Ltd. overcame the obstacles such as lack of electricity and water, as well as the shortage of materials, equipment and construction materials to ensure living conditions on time. With the efforts of the member companies of CHALIECO, the Boffa project has successively completed a cable-stayed bridge in 303 days closure, 23km long-distance off-road belts in 246 days, and steel structure installation joints in 162 days, which were highly recognized by the Chinese Ambassador to Guinea, and the clients.

During the construction of the project, CHALIECO also helped the local community improve the road and bridge traffic conditions, carried out local procurement, recruited local personnel to work, and leased local equipment to help the economic development of the surrounding communities in the mining area.



几内亚 Boffa 项目 Fatale 河斜拉桥

The Fatale River Cable-stayed Bridge of Guinea Boffa Project



越南仁基氧化铝工程项目——焙烧炉

Calcinator of Alumina Project in Vietnam



中鋁國際工程股份有限公司  
China Aluminum International Engineering Corporation Limited

# 未来 Future

2021 年是“十四五”开局之年，是中国共产党建党 100 周年，也是中铝国际改革创新发展的关键之年。中铝国际将继续以习近平新时代中国特色社会主义思想为指导，坚定发展信心，强化价值管理，主动全面变革，以科技创新为驱动，深入开展关键技术攻关，为企业发展注入科技动力；以市场为导向，巩固传统有色行业市场地位，提升公司新兴业务效益和规模；以绿色发展为基调，推进环保创新和节能减排，实现企业环境的和谐发展；积极响应“一带一路”倡议，深耕海外市场，持续激发企业高质量发展新动能。

潮起江海千帆竞，迎风奋楫正当时。中铝国际也将继续勇担新使命，谋求新作为，不断增强企业竞争力、创新力、影响力、控制力和抗风险能力，以实干担当创建具有国际竞争力的世界一流有色金属工程技术公司。



# 展望 Outlook

2021 is the first year of the "14th Five-Year Plan", and the 100th anniversary of the founding of the Communist Party of China, which is also vital to CHALIECO's reform, innovation and development. CHALIECO will continue to adhere to Xi Jinping's Thoughts on Socialism with Chinese Characteristics in the New Era, firm the confidence in development, strengthen value management, and take the initiative to make comprehensive changes. Being driven by technological innovation and in-depth research on key technologies, we will inject new impetus into the development of the enterprise. Being market-oriented, we will consolidate the market position in the traditional non-ferrous industry, and enhance the efficiency and scale of the company's emerging business. Taking green development as the keynote, we will promote innovation on environmental protection and energy saving to realize the harmonious relation between enterprises and the environment. Actively responding to the Belt and Road Initiative, we will deeply promote overseas markets, and continue to stimulate new momentum for high-quality development of enterprises.

Thousands of sails in the rivers and seas are rising, ready for the new journey. CHALIECO will also continue to bravely assume new missions, seek new achievement, enhance its corporate competitiveness, innovation, influence and anti-risk capabilities to create a world-class non-ferrous metal engineering company with international competitiveness.

## ESG 指标索引 ESG Index

| 章节         | 指标披露                                                    | 页码         |
|------------|---------------------------------------------------------|------------|
| 范畴：环境      |                                                         |            |
| A1：排放物     |                                                         |            |
| 一般披露       |                                                         |            |
| A1.1       | 排放物种类及相关排放数据                                            | P50-54     |
| A1.2       | 温室气体总排放量（以吨计算）及（如适用）密度（如以每产量单位、每项设施计算）                  | P48-49     |
| A1.3       | 所产生有害废弃物总量（以吨计算）及（如适用）密度（如以每产量单位、每项设施计算）                | P52-53     |
| A1.4       | 所产生无害废弃物总量（以吨计算）及（如适用）密度（如以每产量单位、每项设施计算）                | P52-53     |
| A1.5       | 描述所订立的排放量目标及为达到这些目标所采取的步骤                               | P52-53     |
| A1.6       | 描述处理有害及无害废弃物的方法及描述所订立的减废目标及为达到这些目标所采取的步骤                | P52-53     |
| A2：资源使用    |                                                         |            |
| 一般披露       |                                                         |            |
| A2.1       | 按类型划分的直接及／或间接能源（如电、气或油）总耗量（以千个千瓦时计算）及密度（如以每产量单位、每项设施计算） | P50-51     |
| A2.2       | 总耗水量及密度（如以每产量单位、每项设施计算）                                 | P53-54     |
| A2.3       | 描述所订立的能源使用效益目标及为达到这些目标所采取的步骤                            | P50-51     |
| A2.4       | 描述求取适用水源上可有任何问题，以及所订立的用水效益目标及为达到这些目标所采取的步骤              | P53-54     |
| A2.5       | 制成品所用包装材料的总量（以吨计算）及（如适用）每生产单位占量                         | 公司业务不涉及此指标 |
| A3：环境及天然资源 |                                                         |            |
| 一般披露       |                                                         |            |
| A3.1       | 描述业务活动对环境及天然资源的重大影响及已采取管理有关影响的行动                        | P52-53     |
| A4：气候变化    |                                                         |            |
| 一般披露       |                                                         |            |
| A4.1       | 描述已经及可能会对发行人产生影响的重大气候相关事宜，及应对行动                         | P48-49     |
| 范畴：社会      |                                                         |            |
| 雇佣及劳工常规    |                                                         |            |
| B1：雇佣      |                                                         |            |
| 一般披露       |                                                         |            |
| B1.1       | 按性别、雇佣类型（如全职或兼职）、年龄组别及地区划分的雇员总数                         | P60-61     |
| B1.2       | 按性别、年龄组别及地区划分的雇员流失比率                                    | P60-61     |
| B2：健康与安全   |                                                         |            |
| 一般披露       |                                                         |            |
| B2.1       | 过去三年（包括汇报年度）因工作关系而死亡的人数及比率                              | P41-43     |
| B2.2       | 因工伤损失工作日数                                               | P41-43     |
| B2.3       | 描述所采纳的职业健康与安全措施，以及相关执行及监察方法                             | P41-42     |

| Chapter                                      | General Disclosures and KPIs                                                                                                                                              | Page No.             |
|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| <b>A: Environment</b>                        |                                                                                                                                                                           |                      |
| Aspect A1: Emissions                         |                                                                                                                                                                           |                      |
| General disclosure                           |                                                                                                                                                                           |                      |
| A1.1                                         | The types of emissions and respective emissions data                                                                                                                      | P50-54               |
| A1.2                                         | Greenhouse gas emissions in total (in tons) and, where appropriate, intensity (e.g. per unit of production volume, per facility)                                          | P48-49               |
| A1.3                                         | Total hazardous waste produced (in tons) and, where appropriate, intensity (e.g. per unit of production volume, per facility)                                             | P52-53               |
| A1.4                                         | Total non-hazardous waste produced (in tons) and, where appropriate, intensity (e.g. per unit of production volume, per facility)                                         | P52-53               |
| A1.5                                         | Description of the emission targets set and the steps taken to achieve them                                                                                               | P52-53               |
| A1.6                                         | Description of how hazardous and non-hazardous wastes are handled, the waste reduction goals set and the steps taken to achieve these goals                               | P52-53               |
| Aspect A2: Use of resources                  |                                                                                                                                                                           |                      |
| General disclosure                           |                                                                                                                                                                           |                      |
| A2.1                                         | Direct and/or indirect energy consumption by type (e.g. electricity, gas or oil) in total (kWh in '000s) and intensity (e.g. per unit of production volume, per facility) | P50-51               |
| A2.2                                         | Water consumption in total and intensity (e.g. per unit of production volume, per facility)                                                                               | P53-54               |
| A2.3                                         | Description of energy use efficiency targets set and the steps taken to achieve these goals                                                                               | P50-51               |
| A2.4                                         | Description of issues (if any) in sourcing water that is fit for purpose, And the water efficiency set and the steps taken to achieve these goals                         | P53-54               |
| A2.5                                         | Total packaging material used for finished products (in tons) and, if applicable, with reference to per unit produced                                                     | Irrelevant indicator |
| Aspect A3: Environment and natural resources |                                                                                                                                                                           |                      |
| General disclosure                           |                                                                                                                                                                           |                      |
| A3.1                                         | Description of the significant impacts of activities on the environment and natural resources and the actions taken to manage them                                        | P52-53               |
| Aspect A4: Climate change                    |                                                                                                                                                                           |                      |
| General disclosure                           |                                                                                                                                                                           |                      |
| A4.1                                         | Description the major climate related issues that have and may have an impact on the issuer, and the response actions                                                     | P48-49               |
| <b>B: Society</b>                            |                                                                                                                                                                           |                      |
| Employment and Labor Practice                |                                                                                                                                                                           |                      |
| Aspect B1: Employment                        |                                                                                                                                                                           |                      |
| General disclosure                           |                                                                                                                                                                           |                      |
| B1.1                                         | Total workforce by gender, employment type (e.g. full-time or part-time), age group and geographical region                                                               | P60-61               |
| B1.2                                         | Employee turnover rate by gender, age group and geographical region                                                                                                       | P60-61               |
| Aspect B2: Health and safety                 |                                                                                                                                                                           |                      |
| General disclosure                           |                                                                                                                                                                           |                      |
| B2.1                                         | Number and rate of work-related fatalities in the past three years (including reporting years)                                                                            | P41-43               |
| B2.2                                         | Lost days due to work injury                                                                                                                                              | P41-43               |
| B2.3                                         | Description of energy use efficiency targets set and the steps taken to achieve these goals                                                                               | P41-42               |

| 章节       | 指标披露                                    | 页码                 |
|----------|-----------------------------------------|--------------------|
| B3：发展及培训 |                                         |                    |
| 一般披露     |                                         |                    |
| B3.1     | 按性别及雇员类别（如高级管理层、中级管理层等）划分的受训雇员百分比       | P60-62             |
| B3.2     | 按性别及雇员类别划分，每名雇员完成受训的平均时数                | P60-62             |
| B4：劳工准则  |                                         |                    |
| 一般披露     |                                         |                    |
| B4.1     | 描述检讨招聘惯例的措施以避免童工及强制劳工                   | P60-61             |
| B4.2     | 描述在发现违规情况时消除有关情况所采取的步骤                  | P60-61             |
| 运营惯例     |                                         |                    |
| B5：供应链管理 |                                         |                    |
| 一般披露     |                                         |                    |
| B5.1     | 按地区划分的供货商数目                             | P44-45             |
| B5.2     | 描述有关聘用供货商的惯例，向其执行有关惯例的供货商数目，以及相关执行及监察方法 | P44-45             |
| B5.3     | 描述有关识别供货链每个环节的环境及社会风险的惯例，以及相关执行及监察方法    | P44-45             |
| B5.4     | 描述在拣选供应商时促使多用环保产品及服务的惯例，以及相关执行及监察方法     | P44-45             |
| B6：产品责任  |                                         |                    |
| 一般披露     |                                         |                    |
| B6.1     | 已售或已运送产品总数中因安全与健康理由而须回收的百分比             | 公司业务<br>不涉及此<br>指标 |
| B6.2     | 接获关于产品及服务的投诉数目以及应对方法                    | P30-32             |
| B6.3     | 描述与维护及保障知识产权有关的惯例                       | P38-40             |
| B6.4     | 描述质量检定过程及产品回收程序                         | P30-32             |
| B6.5     | 描述消费者数据保障及隐私政策，以及相关执行及监察方法              | 公司业务<br>不涉及此<br>指标 |
| B7：反贪污   |                                         |                    |
| 一般披露     |                                         |                    |
| B7.1     | 于汇报期内对发行人或其雇员提出并已审结的贪污诉讼案件的数目及诉讼结果      | P20-21             |
| B7.2     | 描述防范措施及举报程序，以及相关执行及监察方法                 | P20-21             |
| B7.3     | 描述向董事及员工提供的反贪污培训                        | P20-21             |
| 社区       |                                         |                    |
| B8：社区投资  |                                         |                    |
| 一般披露     |                                         |                    |
| B8.1     | 专注贡献范畴（如教育、环境事宜、劳工需求、健康、文化、体育）          | P66-74             |
| B8.2     | 在专注范畴所动用资源（如金钱或时间）                      | P65-71             |

| Chapter                             | General Disclosures and KPIs                                                                                                                                      | Page No.             |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| Aspect B3: Development and training |                                                                                                                                                                   |                      |
| General disclosure                  |                                                                                                                                                                   |                      |
| B3.1                                | The percentage of employees trained by gender and employee category (e.g. senior management, middle management)                                                   | P60-62               |
| B3.2                                | The average training hours completed per employee by gender and employee category                                                                                 | P60-62               |
| Aspect B4: Labor guidelines         |                                                                                                                                                                   |                      |
| General disclosure                  |                                                                                                                                                                   |                      |
| B4.1                                | Description of measures to review employment practices to avoid child and forced labor                                                                            | P60-61               |
| B4.2                                | Description of steps taken to eliminate such practices when discovered                                                                                            | P60-61               |
| Operational practices               |                                                                                                                                                                   |                      |
| Aspect B5: Supply chain management  |                                                                                                                                                                   |                      |
| General disclosure                  |                                                                                                                                                                   |                      |
| B5.1                                | Number of suppliers by geographical region                                                                                                                        | P44-45               |
| B5.2                                | Description of practices relating to engaging suppliers, number of suppliers where the practices are being implemented, how they are implemented and monitored    | P44-45               |
| B5.3                                | Description of identifying environmental and social risks in each link of the supply chain, as well as relevant implementation and monitoring methods             | P44-45               |
| B5.4                                | Description of promoting multi-use environmental protection products and services in selecting suppliers, and the relevant implementation and monitoring methods  | P44-45               |
| Aspect B6: Product responsibility   |                                                                                                                                                                   |                      |
| General disclosure                  |                                                                                                                                                                   |                      |
| B6.1                                | Percentage of total products sold or shipped subject to recalls for safety and health reasons                                                                     | Irrelevant indicator |
| B6.2                                | Number of products and service-related complaints received and how they are dealt with                                                                            | P30-32               |
| B6.3                                | Description of practices relating to observing and protecting intellectual property rights                                                                        | P38-40               |
| B6.4                                | Description of quality assurance process and recall procedures                                                                                                    | P30-32               |
| B6.5                                | Description of consumer data protection and privacy policies, implementation and monitoring methods                                                               | Irrelevant indicator |
| Aspect B7: Anti-corruption          |                                                                                                                                                                   |                      |
| General disclosure                  |                                                                                                                                                                   |                      |
| B7.1                                | Number of concluded legal cases regarding corrupt practices brought against the issuer or its employees during the reporting period and the outcomes of the cases | P20-21               |
| B7.2                                | Description of preventive measures and whistle-blowing procedures, how they are implemented and monitored                                                         | P20-21               |
| B7.3                                | Description of anti-corruption training provided to directors and employees                                                                                       | P20-21               |
| Community                           |                                                                                                                                                                   |                      |
| Aspect B8: Community investment     |                                                                                                                                                                   |                      |
| General disclosure                  |                                                                                                                                                                   |                      |
| B8.1                                | Focus areas of contribution (e.g. education, environmental concerns, labor needs, health, culture, sport)                                                         | P66-74               |
| B8.2                                | Resources contributed (e.g. money or time) to the focus area                                                                                                      | P65-71               |