



2023

CRRC Corporation Limited  
Environmental  
Social and Governance  
(ESG) Report



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# About the Report

## Information about the Report ●●●

The Report is the Environmental, Social and Governance (ESG) Report 2023 released by CRRC Corporation Limited (hereafter referred to as "CRRC", "the Company" or "we") to the public. The Report is intended for all stakeholders of CRRC and is released on the principles of objectivity, standardization and transparency. It truthfully discloses the duty performance of CRRC for shareholders, customers, partners, employees, and other important stakeholders in 2023, as well as our efforts in ESG, to respond to stakeholders' expectations and better fulfill social responsibilities in the future.

## Reporting Period ●●●

The Report is an annual report. Unless otherwise specified, the reporting period is from January 1, 2023 to December 31, 2023. To enhance the comparability and completeness of the Report, some data and contents are appropriately traced back to previous years.

## Scope of the Report ●●●

Unless otherwise specified, the Report covers the practice of CRRC and its wholly-owned and holding subsidiaries in the ESG field. The information boundary is consistent with that of the Company's Annual Report.

## Basis of Preparation ●●●

The Report is prepared in accordance with relevant requirements of *Guidelines No. 1 for the Self-regulation of Listed Companies — Standard Operation* issued by Shanghai Stock Exchange, relevant requirements of Appendix 27 *Environmental, Social and Governance Reporting Guide* to the *Guide to Rules Governing the Listing of Securities on the Main Board* issued by the Stock Exchange of Hong Kong Limited, *United Nations Sustainable Development Goals (SDGs)*, *GRI Standard 2021 Edition* published by the Global Reporting Initiative ("GRI") in 2021, *Guidelines on Corporate Social Responsibility Reporting for Chinese Enterprises (CASS-ESG 5.0)* of the Chinese Academy of Social Sciences, and the *Study on the Preparation of ESG Special Report for Listed Companies Controlled by Central Enterprises* issued by SASAC.

## Data Sources ●●●

Unless otherwise specified, the information and data used in the Report were all from the Company's statistical reports and related documents, as well as ESG information collected and audited by the Company. Unless otherwise specified, all the financial data herein is stated in RMB.

## Report Access ●●●

The Report is issued to stakeholders and the public in paper version and PDF electronic version. For further inquiries, or if you have any questions or suggestions regarding the Report and the Company's ESG efforts, please contact us through the following ways.

- Tel.: +86-10-51862188
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# Message from the Chairman

The year 2023 was the first year to fully implement the spirit of the 20th National Congress of the Communist Party of China. Over the past year, CRRC has adhered to the general principle of pursuing progress while ensuring stability. We have kept in mind the "Two Overall Situations" and the "Top Priorities of the State", and made great efforts in building the "Mega Projects of China" and brightening up the "National Business Card". We have energetically boosted the high-quality development and accelerated the construction of a world-class enterprise, contributing our wisdom and strength to the comprehensive promotion of the construction of a strong country and national rejuvenation with Chinese-style modernization.

## Focusing on Strategic Guidance, Striving to Build a New Pattern of Industrial Development

We have completed the mid-term adjustment of the development strategy for the "14th Five-Year Plan" period. We have proposed to speed up the building of a new industrial development pattern of "Dual Tracks and Dual Clusters" for rail transit equipment and clean energy equipment, as well as the building of a world-class enterprise featuring digital intelligence, high-end orientation, greening, internationalization, collaboration and branding. We are striving to better play the role of sci-tech innovation, industrial control and safety support in building a modern industrial system and serving the construction of a new development pattern.

## Focusing on Innovation-driven Development, Striving to Achieve Continuous Leadership

We have deeply implemented sci-tech projects such as establishing original technology bases and building a powerful country in transportation, promoted high-level scientific and technological self-reliance and self-improvement, and firmly grasped the initiative in development. The CR450 EMUs set a world record of 891 km/h in relative passing speed, and the semi-direct drive permanent magnet wind turbine generator with the world's highest power of 20MW successfully rolled off the line. Throughout the year, we have presided over and participated in the formulation of 8 international standards, 51 national standards and 28 industry standards, and been approved as one of the first batch of national standard verification points. Throughout the year, we have completed a total of 5,615 patent applications, including 4,046 invention patents and 552 overseas patents. Additionally, we have won one gold prize and one silver prize at the 24th China Patent Awards.



## Focusing on Value Creation, Striving to Create Values for User

We have vigorously promoted the "product+" and "system+" business models and accelerated the improvement of product life cycle management capabilities and high-level and high-quality integration capabilities for all factors of projects. We have implemented a three-year action plan for urban transportation, and successfully won the bid for the first "system +" project, the Jiaozhou L2 Line Low-volume EPC Project in Qingdao. The first offshore WTG assembly base was commenced. The number of successful bids for WTGs throughout the year ranked sixth in the industry. The successful operation of the Jakarta-Bandung High-Speed Railway has been praised by General Secretary Xi Jinping as a "Gold Brand" for China and Indonesia to jointly build the Belt and Road. The DLS Project of Guadalajara Light Rail Line 4 in Mexico was listed in the *Belt and Road ESG Action Report*.

## Focusing on Reform Empowerment, Striving to Stimulate the Vitality of Enterprise Development

We have completed the three-year action plan for reform with high quality and got Grade A again in the key task assessment of three-year action plan for central enterprise reform. We have planned a new round of reforms to deepen and enhance actions at a high starting point, and formulated the implementation plan and work records. We have coordinated and promoted the "Four Major Actions", i.e. value creation, demonstration creation, management improvement and brand leading, to accelerate the building of world-class CRRC. We have conducted a comprehensive initiative to enhance the quality of listed holding companies and significantly bolstered the establishment of subsidiaries' boards of directors. We have been rated as Grade A in annual information disclosure of listed companies on the Shanghai Stock Exchange for eight consecutive years, and the 2022 Annual Report won the gold prize at the LACP Vision Awards.

## Focusing on Green Transformation, Striving to Promote Green and Low-carbon Development

Adhering to the "6G" concept (green investment, green innovation, green manufacturing, green product, green service and green enterprise), we have officially released the CRRC Dual Carbon Action Plan, aiming to become a top runner in green manufacturing, a creator of green life, and a pioneer in green development. We have been granted the Special Award for Contribution to the Belt and Road Initiative in the First China ESG Model Annual Ceremony, and our green manufacturing system construction project was selected as a national and central enterprise-level "Excellent ESG Practice Case". Among all the companies of our group, 3 were selected as 2023 China's Top Runner for Industrial Carbon Peaking, 31 were recognized as national green factories, and 6 were rated as national green supply chain management enterprises.

## Focusing on Safe Development, Striving to Prevent and Defuse Major Risks

We insist on promoting the co-chain action of modern industrial chains of rail transit equipment and clean energy equipment as a whole and continuously strengthen the resilience and safety level of the industrial chain and supply chain. We have further promoted the construction of CRRC under the rule of law and carried out world-class demonstration creation actions for legal construction. We have consolidated and deepened the achievements of compliance management, and promoted the implementation of the chief compliance officer system. We have organized and carried out the campaign to greatly improve the quality of rail transit equipment and new energy equipment, further promoted the "Year of Strengthening Safety Management" campaign and the "2023 Campaign for Special Investigation and Rectification of Major Accident Hidden Dangers", with an overall stable quality and safety situation.

## Focusing on Strengthening the Enterprise through Talents, Striving to Cultivate First Resources

We have deepened the construction of a powerful leading group with strong political ability, strong professional ability, strong reform and innovation ability, strong ability to overcome difficulties, and strong unity and cohesion, so as to create a clean and concerted entrepreneurial atmosphere. We have deeply implemented the piloting, nesting, empowering, advancing and double-excellence projects, aiming to build a first-class talent team that meets the needs of national strategy and enterprise development. We have accelerated the building of CRRC talent bases with Beijing as the center and Changchun, Dalian, Qingdao and Zhuzhou (Changsha) as the support to build a first-class talent attraction and gathering platform.

## Focusing on Brand Building, Striving to Brighten up the "National Business Card"

We have deeply implemented brand-leading action to create a trustworthy and respectable brand that surprises the world and makes compatriot proud. Our brand value has ranked first in China's machinery equipment manufacturing industry for consecutive years. We have organized a series of communication activities to celebrate the 10th anniversary of the Belt and Road. The "Around the World by Train" activity was rated as one of the "Top Ten Excellent Cases of International Image Building for China's Enterprises in 2023" and "Special Cases of International Communication Innovation". We practice the social responsibility concept of "Observing Peace and Being Virtuous", promote development with responsibility, strengthen management with responsibility, build an image with responsibility, and shape a brand with responsibility, striving to create an ESG model for high-end equipment manufacturing. We have promoted rural revitalization and received a "good" rating from the central government for three consecutive years.

Unity gathers strength, hard work forges achievements. In 2024, with the corporate mission of "Connecting the World and Benefiting Mankind", CRRC will adhere to high-quality development and focus on value creation, innovation leadership and reform empowerment. We will comprehensively start a new journey to accelerate the building of world-class CRRC in the new era, and join hands with stakeholders to contribute CRRC's products, technologies and solutions to the development of global sustainable transportation and the overall green transformation of economy and society.



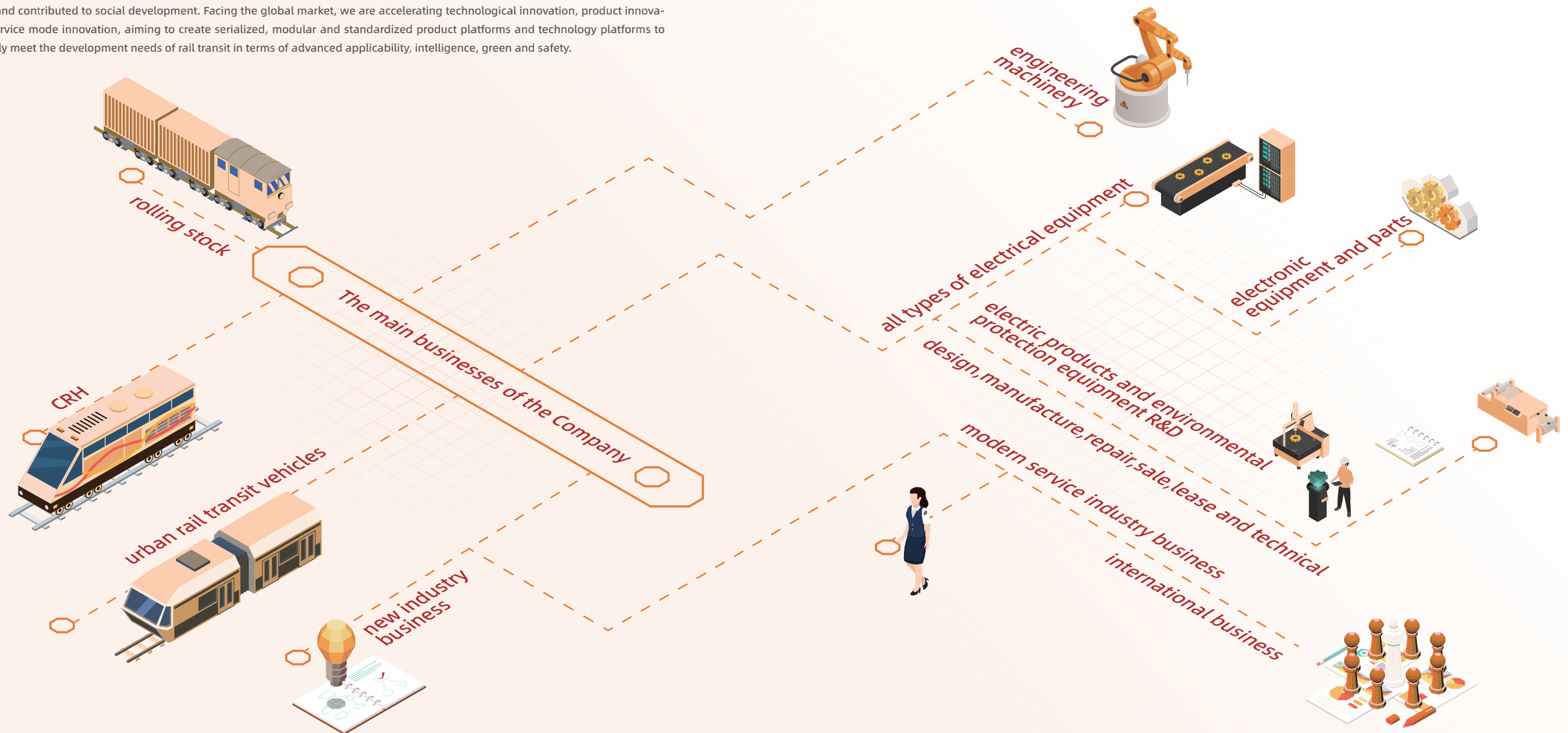
# About Us

## Company Profile ●●●

Headquartered in Beijing, CRRC Corporation Limited is the world's largest supplier of rail transit equipment with the most complete product lines and leading technologies. It has ranked world No.1 in sales in rail transit equipment business for consecutive years. CRRC is an A+H-share listed company established and merged by China CNR Corporation Limited and China South Locomotive & Rolling Stock Corporation Limited according to the principle of equality. On June 8, 2015, the Company was successfully listed on the Shanghai Stock Exchange and Hong Kong Stock Exchange (stock code: 601766).

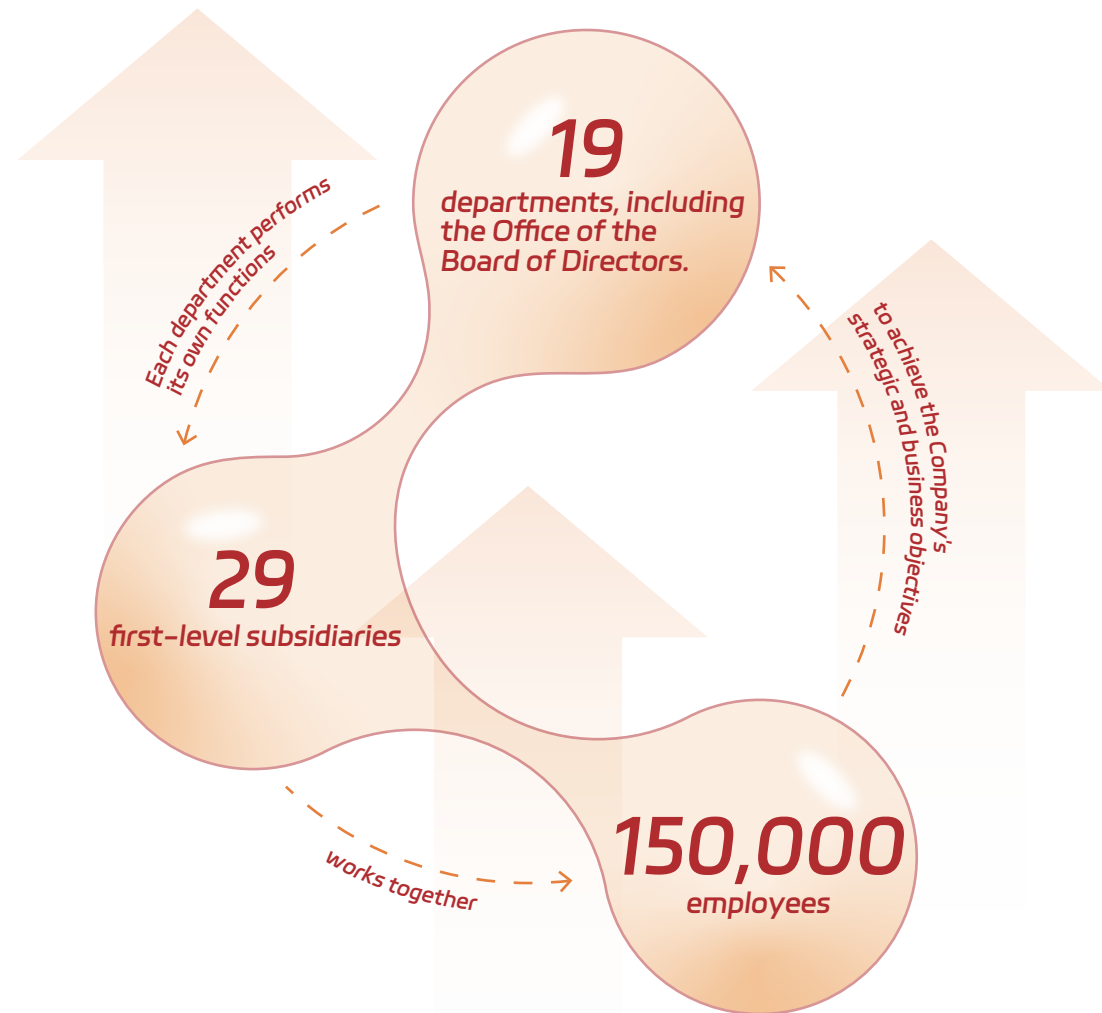
CRRC has continuously strengthened its sustainable operation capabilities, adhered to the mission of "Connecting the World and Benefiting Mankind", and contributed to social development. Facing the global market, we are accelerating technological innovation, product innovation and service mode innovation, aiming to create serialized, modular and standardized product platforms and technology platforms to continuously meet the development needs of rail transit in terms of advanced applicability, intelligence, green and safety.

CRRC has set up more than 100 overseas subsidiaries or institutions and 18 overseas R&D centers around the world to provide products and services for 116 countries and regions. The main businesses of the Company cover the R&D, design, manufacture, repair, sale, lease and technical services for rolling stock, urban rail transit vehicles, engineering machinery, all types of electrical equipment, electronic equipment and parts, electric products and environmental protection equipment; new industry business; modern service industry business; and international business.



## Company Structure ●●●

CRRC has set up 19 departments, including the Office of the Board of Directors. Each department performs its own functions and works together to achieve the Company's strategic and business objectives. The Company has 29 first-level subsidiaries with over 150,000 employees.



## Strategy and Culture ●●●

With the mission of "Connecting the World and Benefiting Mankind", CRRC adheres to the core values of "Abiding by Integrity and Responsibility, Insisting on Hard Work and Striving for Excellence". The Company organically integrates the concept of sustainable development into its strategy, continuously improves the level of environmental, social and corporate governance, and strives to achieve the harmonious unity of business value and social value. The Company adheres to the strategic vision of "Two Steps" and accelerates the construction of a world-class CRRC. We are committing to build a world-class CRRC marked by the strategic positioning of "becoming a world-class high-end equipment manufacturer and system solution provider with global competitiveness focusing on rail transit equipment" by 2025, and a world-class CRRC with a remarkable reputation by 2035.

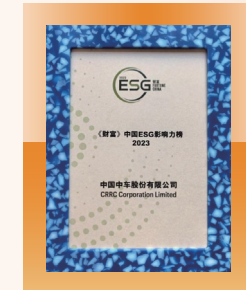
## Honors ●●●



Special Award for Contribution to the Belt and Road Initiative in the First China ESG Model Annual Ceremony  
China Media Group



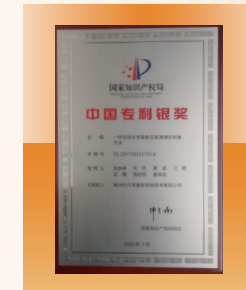
Selected into the Fortune China ESG Influence List  
Fortune



Gold Prize of China Patent Award  
China National Intellectual Property Administration, World Intellectual Property Organization



Silver Prize of China Patent Award  
China National Intellectual Property Administration





ESG

## ESG Governance

CRRC has a clearer and deeper understanding of its social responsibilities with the rapid development of China's economy and society, and the continuous advancement and innovation of rail transit equipment products. Through deep integration with the capital market, benchmarking against international top enterprises and extensive communication with various stakeholders, the Company has gradually established a sound ESG management system, which not only promotes the in-depth integration of ESG concepts in corporate operation and management but also demonstrates our proactive attitude in actively fulfilling social responsibilities.

### ESG Governance System ●●●

Based on the new development stage, the Company has implemented the new development concept and formulated a three-year ESG action plan from four dimensions: governance, strategy, risk (opportunity) management, goals and indicators according to the idea of "one year for construction, two years for promotion and three years for improvement", with reference to the relevant theoretical framework of the International Sustainability Standards Board (ISSB). Through the construction and management improvement of the ESG system, the Company will focus on issues related to stakeholder management, corporate governance and green transformation, enhance the sustainable development ability of the Company and stakeholders, and promote the high-quality development of ESG management.

#### Governance ✕

The Company has continuously improved its ESG governance structure, strengthened the management of ESG matters, and integrated ESG concepts into corporate culture.

**Decision-making layer:** The Board of Directors is the decision-making organization for ESG system construction, responsible for the overall deployment and promotion of ESG system management. Its functions include issuing the ESG strategy of the Company, issuing ESG assessment indicators to the management layer, supervising the implementation of ESG strategy, etc.

**Management layer:** As the management organization of ESG work, the management team is responsible for formulating ESG strategies and incorporating them into the management system, organizing the construction of ESG digital platforms, identifying ESG risks and opportunities and including them in the company's overall risk management system, and clarifying ESG goals, indicator systems and performance assessment priorities.

**Executive layer:** All relevant departments and subsidiaries at all levels are the executive organizations of ESG work, responsible for implementing ESG indicators and forming a complete working framework.

#### Strategies ✕

The Company actively integrates ESG into enterprise development and comprehensively promotes the construction of ESG systems and cultural cultivation. Supported by "green, value, governance and responsibility", with stakeholder management, corporate governance and green transformation as the main line, and digitization, standardization and systematization as the direction, we strive to be the top runner of green manufacturing, the demonstrator of green transportation, the creator of green life, the driver of green development, the demonstrator of value leading, the forerunner of governance optimization and the undertaker of great power responsibilities, aiming at building an ESG system model with Chinese enterprises' characteristics.

#### Risk (Opportunity) Management ✕

The Company continues to pay attention to changes in the global industry, comprehensively assesses the risks and opportunities brought about by the external environment and industry development, and analyzes various types of risks. It deeply analyzes the potential impact on the Company according to the nature and characteristics of different risks, actively formulates countermeasures, and enhances its resilience and intervention ability under the situation of global change.

The Company has continuously improved ESG policies and management systems such as climate risk management, health and safety, stakeholder communication and response, etc. It plans to identify, assess and manage ESG risks (opportunities), and incorporate ESG risks into the comprehensive risk management system.

#### Goals and Indicators ✕

The Company has gradually built an ESG indicator system to support the goals of different development stages, refined and decomposed it and applied it to ESG evaluation, giving full play to the role of assessment as a "baton", further optimizing and improving internal management systems, and enhancing management efficiency.

## Communication with Stakeholders ●●●

The Company attaches importance to effective communication with all stakeholders, actively responds to the demands of all parties, comprehensively and directly interacts with stakeholders through public open days and other means, and fully understands the opinions and suggestions of stakeholders such as government and regulatory agencies, shareholders, partners, communities, employees and media. The Company timely discloses the important progress and achievements in fulfilling social responsibilities around major issues of concern to stakeholders, cooperates with relevant departments to evaluate and manage selected topics, and accurately responds to the demands of various stakeholders.

Stakeholders	Expectations and demands	Communication and responses
 <b>Government and regulators</b>	Operating in compliance with the law Fair competition and anti-corruption Product carbon footprint Implementing energy conservation and emission reduction tasks Preserving and increasing the value of state-owned assets	Implementing national policies Participating in the formulation of industry standards Accepting supervision and assessment Official correspondence Information disclosure
 <b>Shareholders and investors</b>	Steadily growing return on investment Stable operation Timely disclosure of information, openness and transparency	Convening General Meetings Reports and announcements Investor hotlines Roadshow and reverse roadshow Respond to investor queries
 <b>Customers</b>	Providing high-quality products and services Meeting the diversified needs of customers Creating value for customers	Visiting and exchanging Guest satisfaction survey Full life cycle product services CRRC "Q" quality management system
 <b>Media</b>	Safe and reliable services Improving operational transparency	Media interviews Exchange visits Social media information disclosure
 <b>Employees</b>	Safeguarding employees' rights Safeguarding occupational health Improving vocational ability Improving the development channels Balancing work and life	Internal management meetings and reports Internal mail exchanges Management dialogues Labor Union and Employees' Congress Employee satisfaction survey Pay visit and extend greetings
 <b>Suppliers</b>	Open, fair and impartial procurement Adherence to contracts Mutual benefit, win-win and long-term development	Conference on the integration and development of industrial chain and supply chain Supplier conference Supplier integrity co-construction initiative
 <b>Partners</b>	Fair operation Achieving a win-win cooperation Promoting industrial development	Industry meetings Association activities Standards and policies development Strategic cooperation projects
 <b>Public and communities</b>	Carrying out cultural exchanges Participation in community development Supporting public welfare undertakings	Around the World by Train, Date with Fans, etc. Community public welfare project Volunteer activities

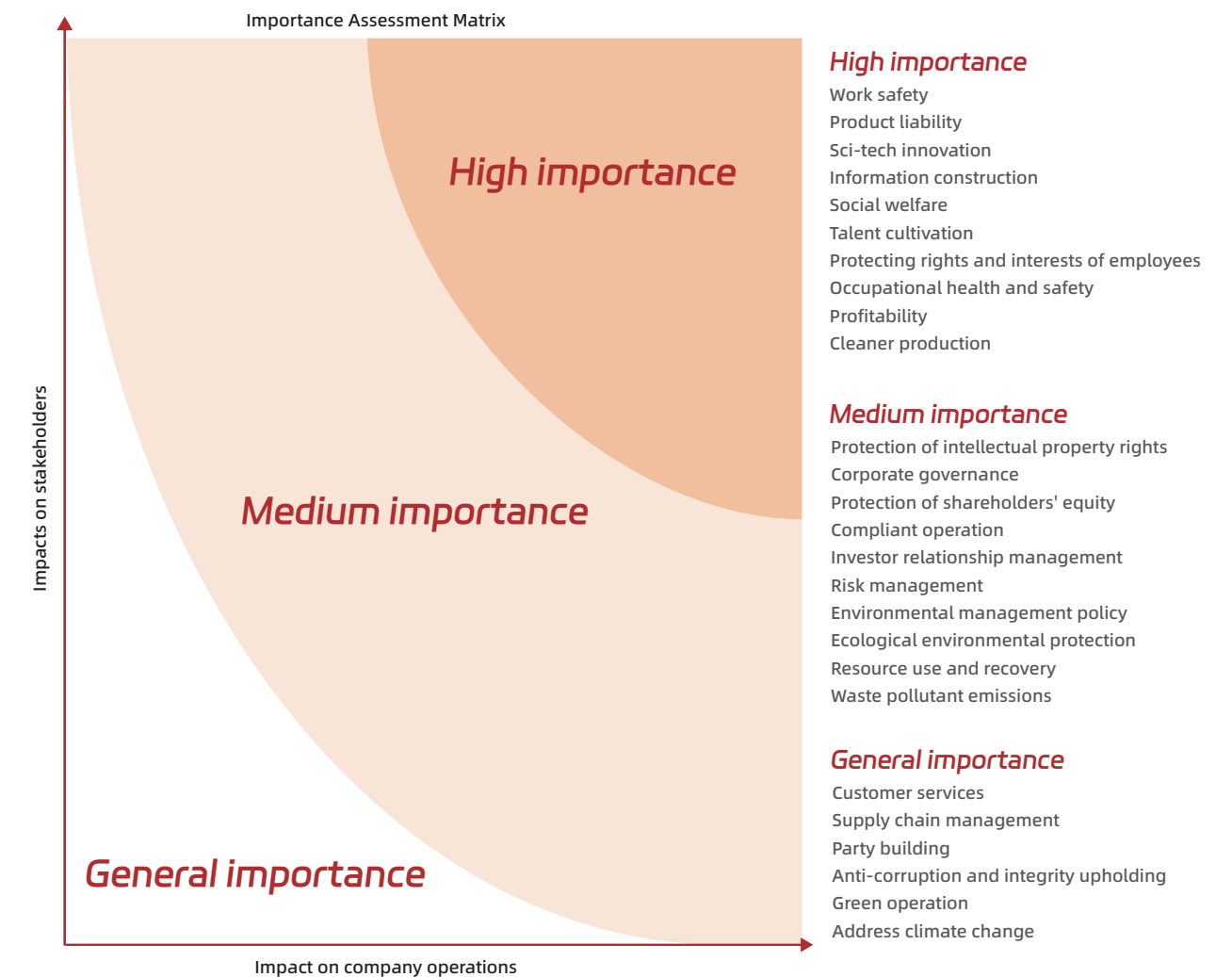
## Analysis of Substantive Issues ●●●

The Company has continued to improve the ESG governance system and coordinate and guide its practices in sustainable development. To continuously improve the level of ESG management, the Company has identified ESG issues that have an important impact on itself and its stakeholders and formed a substantive issue bank. The judgment process of substantive issues this year is as follows:

**Issue identification:** Identify major trends related to the Company and their impact on society and the environment through policy analysis, industry research, peer benchmarking, communications with stakeholders and investigation, etc., and identify ESG issues based on their own business development strategies and characteristics in combination with national policies and capital market concerns.

**Issue ranking:** Analyze the rationality of the survey results and understand the priority issues concerned by all stakeholders. In addition to stakeholder research, integrate internal and external perspectives to identify the importance and impact of each ESG topic.

**Identification of important issues:** Based on the analysis results, identify substantive issues that have an important impact on the environment, society and economy. The latest substantive issue assessment of the Company was completed at the end of 2023, and the identified substantive issues were confirmed to be valid, with key disclosure and response in the Report.





# ESG Topic I

## Mega Projects of China, High-quality Development



As a leading enterprise in the equipment manufacturing industry, CRRC has accelerated basic research and cutting-edge technological breakthroughs and provided driving forces for technological innovation and management innovation in intelligent construction, intelligent equipment, intelligent operation, intelligent maintenance and repair, intelligent services, etc. The Company has comprehensively improved the intelligence level of China's high-speed railways, and provided China's solutions for the world's high-speed railway construction and development.

### Rail Transit Products Serve the Strategy of Building a Powerful Country in Transportation

The rail transit products of the Company effectively promote the process of urbanization and city cluster construction, promote the agglomeration of the manufacturing industry, and promote the continuous development of new technologies, new equipment and new materials industries; they enhance the degree of regional economic integration, and help the "eight-plus-eight" high-speed railway network take shape. By the end of 2023, China's railway operating mileage reached 159,000 kilometers, including 45,000 kilometers of high-speed rail. During the 19th Asian Games, the 31st Universiade, and other significant events, our 'Fuxing' and 'Hexie' trains were the primary means of transportation.

**159,000 kilometers**

China's railway operating mileage reached

**45,000 kilometers**

high-speed rail

#### Case

In August 2023, more than 360 "Fuxing", "Hexie" and other EMUs developed by the Company provided efficient transportation services for the 31st Universiade, becoming the main force of trunk transport during the event.



#### Case

During the 19th Asian Games in September 2023, our "Fuxing" Asian Games intelligent EMU rail transit equipment crossed hills and rivers, connecting Hangzhou with 5 co-host cities of the Asian Games, namely Ningbo, Wenzhou, Jinhua, Shaoxing and Huzhou. We escorted the Hangzhou Asian Games with China's speed and China's intelligent manufacturing and interpreted the beautiful vision of "Heart to Heart, @Future" with responsibility and persistence. The Company provided a guarantee in terms of response time, staffing, material support and technical support to ensure smooth and convenient rail transit during the events.



## Clean Energy Equipment Promote Regional Coordinated Development

The Company actively responds to the national "3060" major strategy of carbon peaking and carbon neutrality, promotes clean energy equipment projects in key regions, and helps regional coordinated development.

### Supporting the construction of the Yangtze River Economic Belt with new industries

The Company implements the national regional strategy, vigorously invests in strategic emerging industries such as new energy, new energy vehicles, integrated circuits and new materials in the Yangtze River Economic Belt, and makes a reasonable layout of service businesses represented by logistics and finance. Six new subsidiaries were established along the Yangtze River Economic Belt to promote the all-round and three-dimensional healthy development of various businesses in the region.



Yixing Phase I Construction Project of CRRC Medium and Low Voltage Power Device Industrialization



Zhuzhou Project for Capacity Improvement of CRRC New Energy Passenger Vehicle Electric Drive System and Components

### Promoting the revitalization of Northeast China with a new energy industry

The Company gives full play to its own advantages, highlights the two characteristics of green and wisdom, actively participates in the adjustment and optimization of industrial structure in three provinces in northeast China, and contributes to the integrated development of central and local governments. It invested in the construction of Songyuan New Energy Industrial Base in Songyuan City, Jilin Province, and jointly established FAW-CRRC Electric Drive System Co., Ltd. with China FAW Group in Changchun City, Jilin Province to help Jilin Province build the "Onshore Scenery Three Gorges" project and the "100 billion-level new energy equipment manufacturing industrial cluster". It relied on new energy to promote the comprehensive revitalization of Northeast China.

### Promoting the rise of central China with key technological breakthroughs

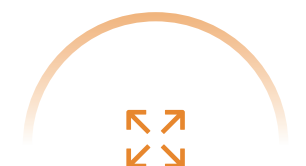
The Company takes Hunan Province as the core link in central China, gives full play to industrial radiation and synergy effects, and vigorously invests in a series of strategic emerging industries such as power semiconductors, new energy vehicle electric drive, WTGs and parts equipment, solar power inverters, energy storage equipment, hydrogen production power supply equipment, etc. It focuses on breaking through key technologies, accelerates the improvement of new energy industry chain construction, and continuously promotes the formation of new quality productivity.



Focuses on breaking through key technologies



Accelerates the improvement of new energy industry chain construction



Continuously promotes the formation of new quality productivity

## System Solutions Empower the Belt and Road

Over the past decade, the Company has kept in mind the important instructions of General Secretary Xi Jinping during his three visits to CRRC and actively responded to the national strategy of the "Belt and Road". By providing complete product lines such as locomotives, EMUs, passenger cars, freight cars, urban rail vehicles, wind power equipment and new materials, the Company has exported innovative railway transportation solutions and advanced railway equipment to help the construction and development of infrastructure transportation facilities in countries and regions along the route and provide China's wisdom and China's plans for the rapid development of world rail transit, and has made positive contributions to building a community of shared future for mankind. The Company's products and services are sold in 116 countries and regions around the world, including 52 countries and regions along the "Belt and Road". It has become an important link for communicating with the world, opening up and cooperation, mutual benefit and win-win results, and cultural integration.

**116**  
countries and regions  
around the world  
The Company's products  
and services are sold in

**52**  
countries and regions  
"Belt and Road"

### Case

By the end of 2023, the Jakarta-Bandung High-speed Railway has transported more than 1 million passengers, with a single-day passenger occupancy rate up to 98.7%. It is a flagship project of pragmatic cooperation between China and Indonesia, and also the first overseas construction project in which China's technology and standards are adopted for the whole system, all elements and the whole industrial chain of China's High-speed Railway.



EMUs of Jakarta-Bandung High-speed Railway



Indonesian Middle School Students Experience Jakarta-Bandung High-Speed Train

### Case

In the China-Europe Railway Express that is gradually "connecting points into lines" and "weaving lines into a network", the Company has actively participated in the construction of European rail transit equipment, promoted sci-tech innovation of Asia-Europe rail transit, and let "China Power" inject more certainty and positive energy into the world economy. The transportation cost of China-Europe Railway Express trains is about 1/5 of that of air transportation, the transportation time is about 1/4 of that of sea transportation, and the average carbon emissions are 1/7 of those of road transportation. Diesel locomotives, electric locomotives and other train products have served China-Europe Railway Express trains, helping China-Europe economic and trade cooperation to build a friendship bridge featuring economy, environmental protection, connectivity, mutual benefit and win-win results.



CRRC Electric Locomotives Pull China-Europe Railway Express Train through Yellow River Super Major Bridge on Datong-Xi'an Railway



Diesel Locomotive Operation of CRRC

### Case

The Company upgraded the Metro Line 1 in Mexico City, boosting the modernization of local rail transit, and driving the comprehensive income of local vehicles, electromechanical equipment and maintenance to exceed RMB 15 billion through investment. In addition, the Guadalajara Light Rail Line 4 Project in Mexico is a landmark project of the Company's "System +" (DLS) business implemented overseas. It reduces the travel cost of residents and improves travel convenience. To some extent, it solves the problem of suburban population loss and drives the integrated development of the area with stations as the core. It is expected to create about 12,500 direct jobs every year. Relevant cases were listed in the *Belt and Road ESG Action Report*.



## ESG Topic II

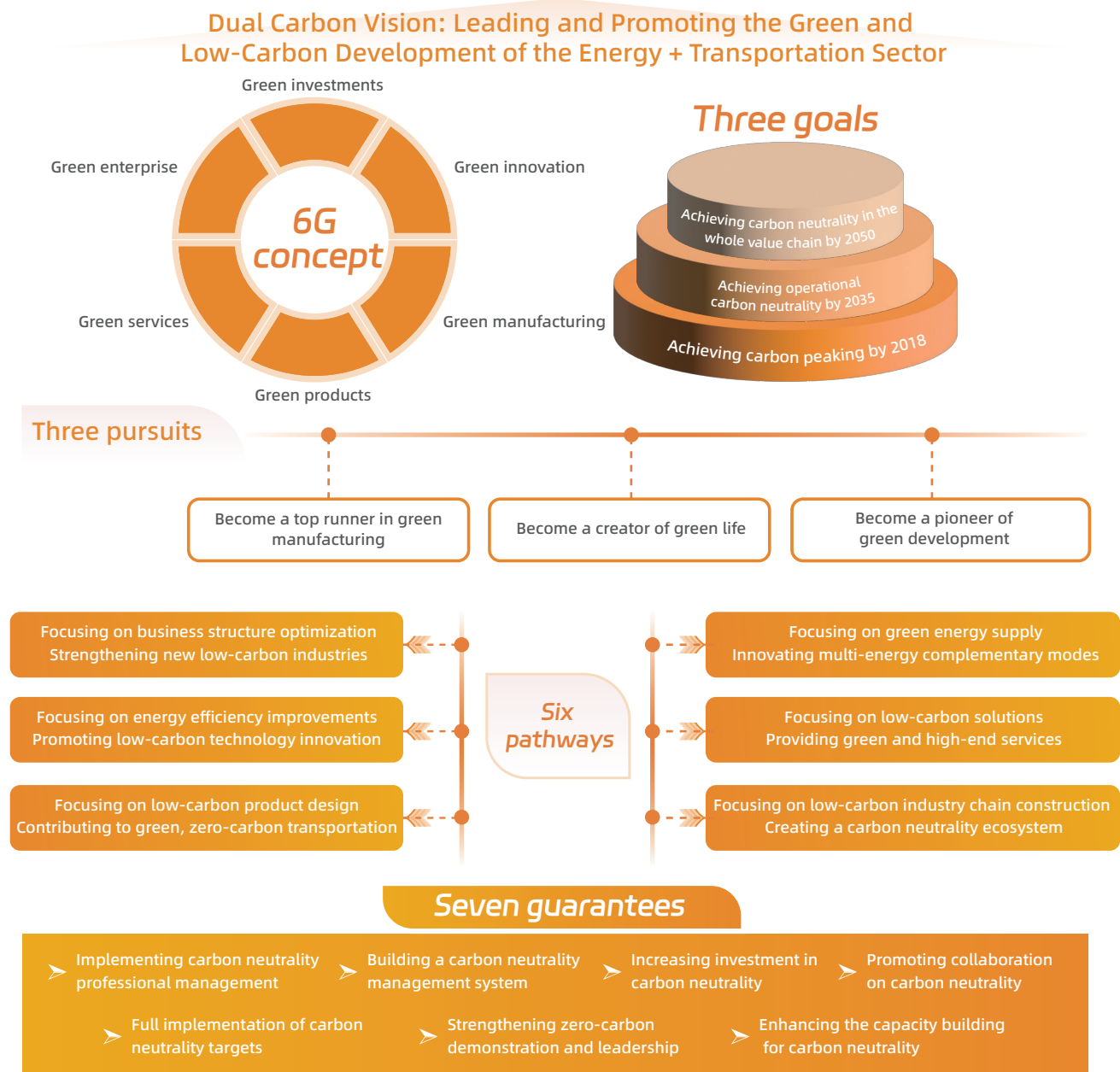
## National Business Card, Low-carbon Leadership



As one of the first batches of China's Top Runner for Industrial Carbon Peaking, CRRC has responded quickly to the requirements of the national dual-carbon strategy and accurately implemented the new development concept of innovation, coordination, green, openness and sharing. With the mission of "Connecting the World and Benefiting Mankind" and based on long-term practical exploration, CRRC has analyzed development characteristics and genetic endowments, forming a "6G" green concept of green investment, green innovation, green products, green manufacturing, green services and green enterprises.

### Scientific Top-level Design, Taking the Lead in Carbon Peaking

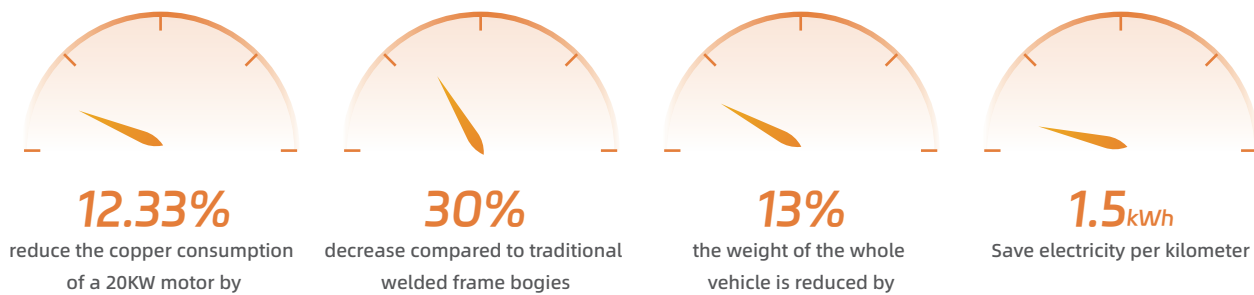
In September 2021, the Company issued the *Action Plan for Carbon Peaking and Carbon Neutrality*, in which a leading and challenging "35-50" carbon neutrality goal was set. In other words, based on achieving operational carbon peaking in 2018, the Company strives to achieve operational carbon neutrality by 2035; at the same time, it actively leads carbon emission reduction in the whole value chain and strives to achieve carbon neutrality in the whole value chain by 2050. In August 2023, the Company issued an *Action Plan for Carbon Peaking and Carbon Neutrality*. The plan aimed to achieve "35-50" carbon neutrality, follow the 16346 working policy, implement the 58381 action project, and forge green and low-carbon competitiveness in 10 aspects.





## Continuing to Take the Lead in Innovation and Revitalizing Low-carbon Transportation

The Company deeply implements the "Dual Carbon" strategy and the strategy of building a powerful country in transportation, and takes independent R&D and innovation as an important way to engrave green and low-carbon into its products. The Company fully reserves cutting-edge technologies based on the path of "equipping and researching this generation of products while pre-researching and exploring the next generation of products". The "super copper" composite material jointly developed with universities can reduce the copper consumption of a 20KW motor by 12.33%. The rail vehicle pantograph bogie product is a world leader in weight reduction, with a 30% decrease compared to traditional welded frame bogies. Additionally, this product eliminates carbon emissions from welding, painting, and other manufacturing processes. The Company has launched the next generation of carbon fiber metro trains, realizing the large-scale application of carbon fiber materials in the main bearing structure of vehicles such as car bodies, bogie frames and cabs. Compared with traditional metal metro trains, the weight of the whole vehicle is reduced by 13%, which can save 1.5 kWh per kilometer. The high-speed maglev train with a speed of 600 km/h will become a better choice for low-carbon and zero-carbon rail transit in the future due to its advantages such as no friction and low noise.



600 km/h High-speed Maglev Train

Based on the users' low-carbon requirements for more energy-saving and economical products in operation and service, the Company has put forward an integrated transportation solution of "product +" and "system +" with low-carbon green concept and carried out practice. The TACS system transformation implemented for the Qingdao Metro Line is representative of CRRC's "product +" business model, realizing more intelligent "independent operation" and more obvious green and low-carbon demonstration effect. Wuhu Project in Anhui Province is a classic project to provide customers with an integrated system solution of investment, construction and operation. The vehicles are equipped with automatic regenerative energy feedback systems and the solar energy on the roof of the station is used to "feed back" rail transit operations. The overall modernization renovation project of Metro Line 1 of Mexico City reduces energy consumption by 35% compared with the original operation line, and is rated as one of the top ten classic PPP projects in the world for its high social and environmental benefits. The "Urban Rail Cloud Platform", "Vehicle Intelligent Maintenance System" and other integrated "Smart Train" life cycle service systems displayed at Brazil International Railway Equipment Exhibition are the concrete presentation of the service concept of intelligent, green and integrated rail transit system solutions.

## Concentric and Diversified Development, Racing on the Track of Zero Carbon

Based on its core rail transit technology and experience in high-speed railway development, the Company has established dual tracks and transportation + energy industrial clusters to achieve "concentric and diversified" development.

In the field of wind power equipment, the Company has established a comprehensive industrial chain, technology chain, and platform-based and pedigree-oriented WTGs products. The Company has conducted research and development on digital, intelligent, low-carbon onshore WTGs with a capacity of 8-10MW and deep-sea complete WTGs with a capacity of 15-20MW. The Company has also launched research and development on a 20MW-class floating WTG system and floating platform. Additionally, it has built the world's only testing center capable of conducting full-scale structural tests on 160-meter blades. With the help of high-speed railway technology, the Company has solved key technical problems in WTG system master control systems and blade deicing technology. The self-developed semi-direct drive permanent magnet wind power with the world's highest power of 20MW was successfully rolled off the line, and the generating capacity of the first 8MW+ wind power unit was 18% higher than that of 6.25MW units. The longest 112m onshore wind turbine blade in the world was installed and applied, the world's first recyclable thermosetting resin blade was developed, and the first triangular truss tower WTG system in China was successfully connected to the grid. During the Beijing Winter Olympics, CRRC provided wind turbines to Zhangbei, contributing 100 million degrees of zero-carbon electricity and reducing 80,000 tons of carbon dioxide.



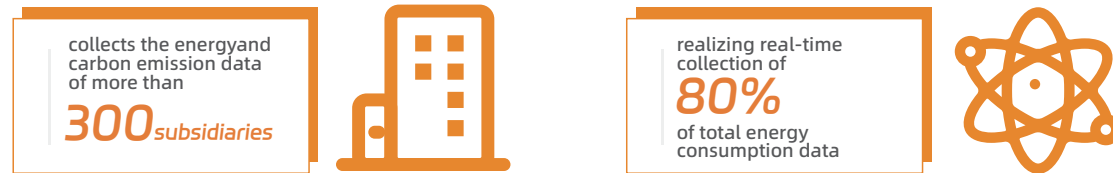
CRRC Wind Turbine Generators at the Top of Snow Mountain

In the field of energy storage, the Company has a whole industrial chain and domestic supply chain of "chips-devices-devices-systems", and has developed products such as converters, battery packs, battery clusters, outdoor converter and booster integrated machines, battery management systems (BMS), energy management systems (EMS) and comprehensive energy storage systems and system solutions for energy storage power stations. The Company provides a complete set of energy storage system integration equipment for the largest electrochemical energy storage power station in China. According to the daily charging and discharging, the Company can generate 292 million kWh of electricity every year and reduce carbon dioxide emissions by 230,000 tons.



## Comprehensive Green Upgrading, Accurate Digital and Intelligent Carbon Control

The Energy-Carbon Intelligent Cloud Management and Control Platform independently developed by the Company has been running stably since its launch. It offers six functions: real-time monitoring, online display, intelligent statistics, benchmarking analysis, feedback and early warning and resource sharing. The platform collects the energy and carbon emission data of more than 300 subsidiaries, realizing real-time collection of 80% of total energy consumption data and online accounting of carbon emission data. It has established equivalent product standards and calculation models to realize online benchmarking between energy consumption and carbon consumption per unit product output value.



CRRC Energy-Carbon Intelligent Cloud Management and Control Platform

Relying on the Energy-Carbon Intelligent Cloud Management and Control Platform, the energy management and control and key equipment efficiency monitoring system has been deeply applied in 30 subsidiaries. Through online diagnosis of key equipment, key unit consumption, process production line, station building control, fine management and control, environmental energy integration, etc., it realizes optimization of the management process, exploitation of energy conservation potential, reduction of production cost, improvement of equipment efficiency, improvement of process technology, improvement of product quality, as well as enhancement of the digital level of energy and carbon emission management.

## Deepening Full-chain Collaboration and Creating a Low-carbon Ecology

The Company has taken the initiative to implement the five key tasks of consolidating, supplementing, strengthening, shaping and optimizing the ecosystem, actively explored the construction of a green and low-carbon coordination mechanism for upstream and downstream alliances in the whole industrial chain, and led the carbon reduction in the whole value chain. In the supplier access link, environmental management and social responsibility performance are included in the scope of investigation. It is required that Class AB components of on-board products must pass the energy system certification, 14001 environmental management system certification and 45001 occupational health management system certification.

Building an upstream guidance mechanism and cultivating green and low-carbon suppliers. CRRC has built a collaboration platform for the industrial chain and supply chain, issued the *Supplier Management Measures*, and incorporated green and low-carbon contents into supplier evaluation. The Company has prepared suppliers' carbon emission accounting methods and green and low-carbon supplier rating evaluation standards, and given full play to the leading and synergistic role in supplier carbon reduction. Six subsidiaries have become national green supply chain management enterprises.

Building a downstream enabling mechanism and providing low-carbon solutions. CRRC pays close attention to product carbon footprint, studies typical product carbon footprint accounting methods, and provides data support for product upgrading and iterative carbon reduction. The Company has promoted ecological design and incorporated low-carbon, zero-carbon and negative-carbon technical indicators into the product development and technological innovation evaluation system. It has promoted energy conservation and carbon reduction of products, jointly developed the first domestic full silicon carbide traction inverter for metro trains with Shenzhen Metro Group, and reduced the comprehensive energy consumption of trains by more than 10%.

Building an alliance sharing mechanism and creating a carbon neutrality ecosystem. CRRC has deepened exchanges and cooperation with upstream and downstream enterprises, local governments, colleges and universities, and scientific research institutions in carbon peaking and carbon neutrality, gathering to form a carbon reduction alliance that closely integrates "industry-university-research-financial-government-user-publicity". The Company has built an open, collaborative and integrated ecosystem for sci-tech innovation with a global layout. It has signed strategic cooperation agreements with hundreds of units to realize the development and application of many low-carbon technologies such as hydrogen energy power sources, supercapacitor energy storage and permanent magnet motors, promote the recycling logistics mode, replace wooden boxes with recycling shared packaging, and promote efficient carbon reduction.



CRRC Green Circular Economy Trading E-commerce Platform (yqp-crrc.com)

Under the guidance of the national "Dual Carbon" strategic goal, CRRC will take the initiative to shoulder its mission and responsibility, give full play to its core advantages, continue to deepen the practice of low-carbon and zero-carbon, and regard "zero-carbon energy lights up life, zero-carbon transportation connects the world" as the dream pursuit of the two carbon goals, which will be unwaveringly pursued.





# Green CRRC

Deeply aware of the importance of energy conservation, consumption reduction and ecological environmental protection, CRRC unwaveringly promotes various measures for resource and energy conservation and ecological environmental protection, actively responds to climate change challenges, and strives to achieve efficient utilization of resources and energy. It is committed to creating a more beautiful ecological environment jointly with all parties by implementing pollution prevention and control, developing environmentally friendly products and promoting the development of the environmental protection industry.

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## Ecological Environment



### Top-level Design

The Company has formulated and issued strict energy conservation and ecological environmental protection control indicators, and signed target responsibility statements with all first-level subsidiaries, which have been incorporated into organizational performance management. Each subsidiary further develops internal control objectives and indicators by classification. In 2023, the Company issued four management systems: *Regulations on Energy Conservation and Ecological Environmental Protection Management*, *Responsibility System for Energy Conservation and Ecological Environmental Protection*, *Detailed Rules for Assessment of Energy Conservation and Ecological Environmental Protection*, and *Measures for Monitoring and Evaluation of Energy Conservation and Ecological Environmental Protection Operation*. These systems form an energy conservation and environmental protection system with a unified regulation, responsibility, assessment rules, and evaluation method. The institutional system is mature and finalized. The Company has established a leading organization for energy conservation and ecological environmental protection, with the main person in charge taking overall responsibility for this work, and set up relevant working organizations whose offices are located in the Operation and Safety Technology and Environmental Protection Department. The Company has established a responsibility system for energy conservation and ecological environmental protection, clarified the responsibilities and division of labor of personnel at all levels, and incorporated the objectives of energy conservation and ecological environmental protection into the annual and term business performance evaluation and assessment system. On this basis, subsidiaries at all levels have formulated their own energy conservation and environmental protection management systems to strengthen management layer by layer and promote the full-staff, whole-process and full-coverage control of energy conservation and ecological environmental protection management.

### Implementation at the Grassroots Level

To promote the integrated improvement of ecological environmental protection management work of subsidiaries at all levels, the Company has organized the preparation of packaged and customized *Guidelines for Supporting, Management and Services in Ecological Environmental Protection Management* from ten aspects: overall requirements, basic management, construction project environmental impact assessment and "three simultaneities" management, pollution prevention and control, solid waste management, environmental monitoring, pollutant discharge permit management, environmental information disclosure, environmental emergency management, inspection and supervision. It has provided refined and professional guidance for the ecological environmental protection management of subsidiaries at all levels by elaborating on the requirements of laws, regulations and standards, listing key concerns and warning typical cases. In August, CRRC held two ecological environmental management training courses to conduct all-round training for 314 environmental protection managers of the Company, so as to enhance the penetration of environmental protection management and promote the smooth and orderly progress of various ecological environmental protection management work.

### Inspection and Supervision

The Company has organized and carried out the special rectification of environmental protection equipment and facilities safety, the special rectification action of ecological environmental protection for enterprises in the Yangtze River and Yellow River basins, and the supervision action of ecological environmental protection for key enterprises. Subsidiaries at all levels actively carry out self-inspection and self-evaluation, and conduct normalized self-inspection and self-correction to ensure compliance; install wastewater and exhaust gas online monitoring systems according to the requirements of local governments, which are networked with environmental protection departments to realize real-time monitoring of pollutant emissions; formulate an environmental self-monitoring plan, regularly carry out environmental monitoring, incorporate it into normal supervision and inspection, and disclose environmental information to the public promptly; strictly based on the management requirements of pollutant discharge permits, all manufacturing subsidiaries regularly entrust third-party environmental testing agencies to monitor pollutants such as waste gas, wastewater and noise, covering all production processes. Third-party certification agencies are hired every year to audit the ISO 14001 environmental management system and compliance with environmental laws and regulations. During the reporting period, there are no administrative penalties due to environmental problems.

## Emissions

The Company comprehensively manages pollutant emissions and issues emission targets to its manufacturing subsidiaries. The key subsidiaries have revised the emission management system and emission reduction policy, covering the whole business process, such as the *Water Pollution Control System*, *Air Pollution Control System*, *Waste Management System* and *Hazardous Waste Management System* of CRRC Changchun Railway Vehicles Co., Ltd., and *Regulations on Wastewater Control Management*, *Regulations on Exhaust Gas Control Management* and *Regulations on Solid Waste Control Management* of CRRC Zhuzhou Locomotive Co., Ltd. All subsidiaries have completed the emission reduction targets.

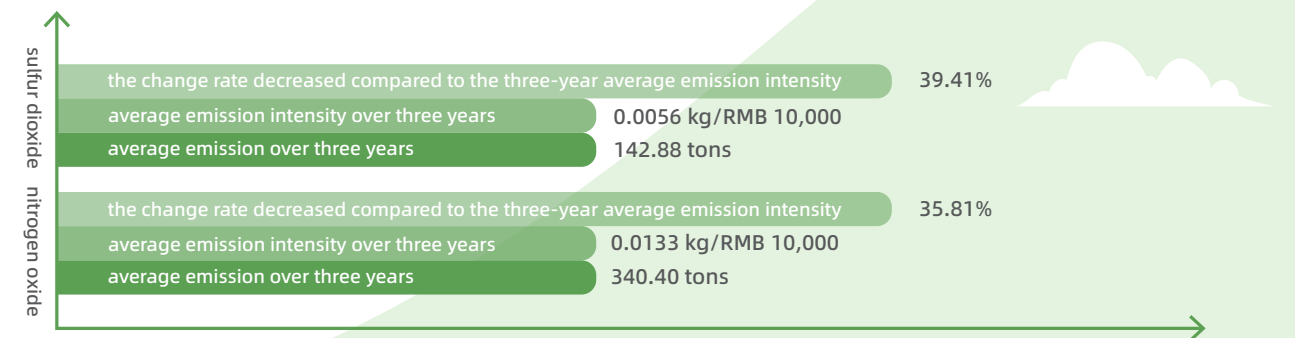
The Company invested

**RMB 469,135,100**

in environmental protection throughout the year

### Waste Gas

The waste gases emitted during the production process of the Company mainly include boiler smoke, painting waste gas, heat treatment waste gas, and welding smoke. These gases contain pollutants such as sulfur dioxide, nitrogen oxides, and VOCs. The average sulfur dioxide emission over three years was 142.88 tons, with an average emission intensity of 0.0056 kg/RMB 10,000. In the reporting period, the change rate decreased by 39.41% compared to the three-year average emission intensity. The average nitrogen oxide emission over three years was 340.40 tons, with an average emission intensity of 0.0133 kg/RMB 10,000. The change rate in the reporting period was 35.81% lower than the three-year average. At present, all the coal-fired boilers and kilns have been replaced by natural gas boilers and kilns. The Company has vigorously promoted the application of waterborne coatings and adopted the treatment process of "filter cotton + activated carbon adsorption + catalytic combustion or zeolite rotor" for organic waste gas from the coating. Filter cartridges, cloth bags, or electrostatic dust removal measures shall be employed for smoke and dust control. The emission of various pollutants meets the standard and is gradually reduced.



2023

Type of air pollutants	Unit	2023
Sulfur dioxide	t	86.50
Nitric oxides	t	217.63
VOCs <sup>1</sup>	t	3,101.41
Mercury	t	0
Heavy metals	t	0
Dioxin	t	0

1.The calculation of volatile organic compounds (VOCs) emissions follows the full-process material balance method:  $E_{total} = E_{material} - E_{recycle} - E_{remove}$   
 Where:  
 $E_{total}$  - VOC emissions in the reporting period, in tons;  $E_{material}$  - The total amount of volatile organic compounds in all materials used during the reporting period, in tons;  
 $E_{recycle}$  - The amount of volatile organic compounds recycle from solvents used or wastes during the reporting period, in tons.  
 $E_{remove}$  - The amount of volatile organic compounds removed through pollution control measures during the reporting period, in tons.

## Wastewater

The wastewater of the Company is mainly from machining oily wastewater, heat treatment cleaning wastewater, cooling water and domestic wastewater in the plant area generated during production. The main pollutants present in the wastewater are COD, petroleum, and suspended solids. The Company implements rainwater and sewage diversion, and the sewage is discharged into municipal sewage treatment facilities after reaching the standard through physical and chemical or biochemical treatment. All key pollution discharge subsidiaries are equipped with wastewater online monitoring systems, which are networked with the monitoring equipment of local ecological environmental protection authorities. All sewage outlets have been managed in a normalized and standardized manner. The Company vigorously promotes cleaner production, develops a circular economy and promotes the reuse of reclaimed water to maximize the utilization rate of water resources.

Types of wastewater pollutants	Unit	2023
Total wastewater discharge	10,000t	929.16
COD	t	371.15
Ammonia nitrogen	t	34.92

## Solid Waste

The Company has continuously promoted the standardization, reduction, recycling and harmless management of solid wastes, issued *Guidelines for Hazardous Waste Management* and *Guidelines for General Industrial Solid Waste and Domestic Garbage Management* to carry out standardized and normalized management on the generation, classified collection, storage, transfer, disposal and utilization of hazardous wastes, general solid wastes and domestic garbage. The Company has implemented the standardization and benchmarking rectification of solid waste storage sites, built and promoted demonstration sites for domestic waste classification management, adopted integrated logistics storage and transportation devices to reduce disposable packaging waste, and used the "yqp-crrc.com" green recycling trading platform to build a waste recycling system, so as to ensure that the whole process of solid waste management complies with laws and regulations and promote the resource utilization of waste. All subsidiaries have formulated a responsibility system for the prevention and control of environmental pollution by solid waste, an emergency plan for hazardous waste emergencies and relevant management systems, and strengthened regular drills and formalized training.

Indicator	Unit	2023
Hazardous waste generation	t	24,013.80
Generation of hazardous wastes per RMB 10,000 output value	t/RMB 10,000	0.0009
Non-hazardous waste generation	t	507,057.41
Generation of non-hazardous wastes per RMB 10,000 output value	t/RMB 10,000	0.0199
High-radiation waste	t	0

## Greenhouse Gas

Among the greenhouse gas emissions of the Company, Scope I mainly comes from the combustion emissions of fossil fuels such as natural gas, gasoline and diesel, as well as CO2 emissions from gas-shielded welding in the production process, fugitive emissions from sewage treatment and other processes; scope II mainly comes from indirect emissions from purchased electricity and heat consumption.

Indicator	Unit	2023
Total greenhouse gas emissions	t CO2eq	2,008,714.44
Greenhouse gas emissions(scope I) <sup>2</sup>	t CO2eq	305,114.60
Greenhouse gas emissions (scope II) <sup>3</sup>	t CO2eq	1,703,599.84
Reduction of greenhouse gas emissions	t CO2eq	95,048.29
Greenhouse gas emissions intensity	t CO2eq/RMB 10,000 output value	0.0788

2.The calculation of greenhouse gas emissions is based on the GB/T 32150-2015 General Principles for Greenhouse Gas Emissions Accounting and Reporting of Industrial Enterprises, and the formula is as follows:

$$E = E_{\text{combustion}} + E_{\text{process}} + E_{\text{purchased electricity}} - E_{\text{transmitted electricity}} + E_{\text{purchased heat}} - E_{\text{transmitted heat}} - E_{\text{recycle}}$$

- Where:
- E - Total greenhouse gas emissions, in tCO<sub>2</sub>eq;
  - E<sub>combustion</sub> - Total amount of greenhouse gas emissions generated by fuel combustion, in tCO<sub>2</sub>eq;
  - E<sub>process</sub> - Sum of process greenhouse gas emissions, in tCO<sub>2</sub>eq;
  - E<sub>purchased electricity</sub> - CO<sub>2</sub>emissions from purchased electricity, in tCO<sub>2</sub>eq;
  - E<sub>transmitted electricity</sub> - CO<sub>2</sub>emissions from transmitted electricity, in tCO<sub>2</sub>eq;
  - E<sub>purchased heat</sub> - CO<sub>2</sub>emissions from purchased heating power, in tCO<sub>2</sub>eq;
  - E<sub>transmitted heat</sub> - CO<sub>2</sub>emissions from transmitted heating power, in tCO<sub>2</sub>eq;
  - E<sub>recycle</sub> - The greenhouse gas emissions generated by fuel combustion and process operations, which are recycled as production materials for self-use or provided as products for external supply, in tCO<sub>2</sub>eq.

3.The power emission factor is calculated on a regional basis in accordance with the Guidelines on Accounting and Reporting Greenhouse Gas Emissions Guidelines for Machinery and Equipment Manufacturing Enterprises (Trial) issued by the National Development and Reform Commission. The data used to calculate the power emission factor in participating regions is derived from the energy balance sheets of each province as reported in the China Energy Statistical Yearbook.

$$EF_{\text{grid},i} = \frac{EM_{\text{grid},i} + \sum_j (EF_{\text{grid},j} \times E_{\text{imp},j,i}) + \sum_k (EF_k \times E_{\text{imp},k,i})}{E_{\text{grid},i} + \sum_j E_{\text{imp},j,i} + \sum_k E_{\text{imp},k,i}}$$

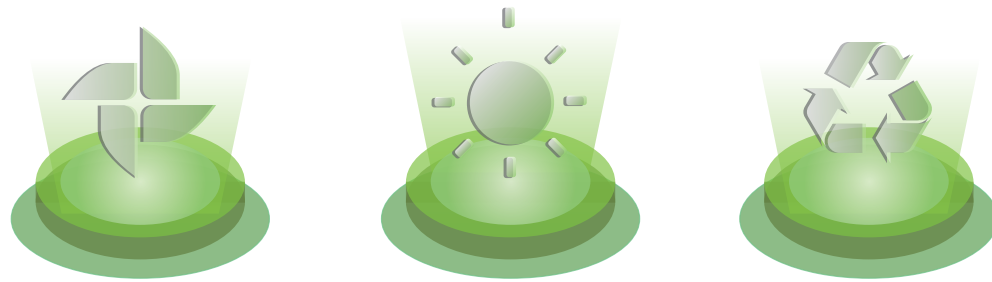
- Where:
- EF<sub>grid,i</sub> - Average CO<sub>2</sub> emission factor of the regional grid i, kgCO<sub>2</sub>/kWh;
  - EM<sub>grid,i</sub> - Direct CO<sub>2</sub> emissions from power generation within the geographic area covered by the regional grid i, tCO<sub>2</sub>;
  - EF<sub>grid,j</sub> - Average CO<sub>2</sub> emission factor of the regional grid j that transmits net power to the regional grid i, kgCO<sub>2</sub>/kWh;
  - E<sub>imp,j,i</sub> - Net power transmitted from the regional grid j to the regional grid i, Mwh;
  - EF<sub>k</sub> - Average emission factor of power generation in the country k that exports net power to the regional grid i, kgCO<sub>2</sub>/kWh;
  - E<sub>imp,k,i</sub> - Net power exported from country k to the regional grid i, Mwh;
  - E<sub>grid,i</sub> - Total annual power generation within the geographical range covered by regional grid i, Mwh;
  - i - One of the power grids in Northeast China, North China, East China, Central China, Northwest and South China;
  - j - Other regional grids that transmit net power to the regional grid i;
  - k - Other countries that export net power to the regional grid j.

The thermal emission factor is taken as 0.11tCO<sub>2</sub>/GJ according to the Guidelines on Accounting and Reporting Greenhouse Gas Emissions Guidelines for Machinery and Equipment Manufacturing Enterprises (Trial) issued by the National Development and Reform Commission.

# Resource Utilization

The resource utilization of the Company includes energy, water, raw materials and packaging materials.

The energy consumption mainly includes purchased electricity, purchased heat, gasoline and diesel, natural gas, liquefied petroleum gas, coal, coke, etc. The Company actively optimizes the product structure and energy consumption structure, scientifically and orderly promotes the development and utilization of renewable energy such as wind energy and solar energy, and improves the comprehensive utilization efficiency of energy and the proportion of green energy. The annual comprehensive energy consumption indicator of RMB 10,000 output value was issued to each subsidiary, and the energy efficiency benchmarking of each sector was carried out to promote overall energy conservation and consumption reduction. Each subsidiary has established an energy management system according to the requirements, and formulated energy conservation management systems such as *Management Measures for Energy Conservation and Ecological Environmental Protection*, to make clear provisions on energy management. They have continuously optimized production technology and process, eliminated production technologies and processes with high pollution, high energy consumption and low level, and actively carried out research and application of energy conservation technologies.



scientifically and orderly promotes the development and utilization of renewable energy such as wind energy and solar energy

## Case: Optimizing Energy Consumption Structure

CRRC Changchun Railway Vehicles Co., Ltd. carried out the transformation of boiler coal to gas. After the transformation, the raw coal consumption was reduced by about 100 kt/a and the electricity consumption was saved by 3 million kWh/year. CRRC Harbin Rolling Stock Co., Ltd. launched a zero-carbon heat supply project and completely canceled coal-fired boilers. CRRC Dalian Co., Ltd. completely eliminated high energy-consuming equipment such as heavy oil chamber heating furnaces, liquefied petroleum gas furnaces and diesel heat treatment furnaces in the Casting and Forging Branch, and replaced them with electricity, natural gas and other energy sources.

**100 kt/a**  
reduced raw coal consumption

**300 million kWh/a**  
saved energy consumption

## Case: Technical Energy Conservation Transformation

CRRC Tangshan Co., Ltd. carried out a number of energy conservation renovations, such as joint control of air compressors in Level 4 and Level 5 dynamic inspection repairs, joint control of bogie material preparation and assembly of air compressors. When there were few production tasks, the air was supplied from one side to reduce power consumption. Tangshan Company completed the energy conservation renovation of the heating system in the eastern zone to adjust the heating curve according to outdoor temperature changes. It also completed the change from steam drying to electric drying on the bogie painting line to reduce the pipeline loss of heat supply from the main plant building to the eastern zone.

Water utilization includes production water and domestic use. Among them, production water is mainly used for cleaning, testing, cooling, etc.; domestic water is mainly used for offices, cafeterias, bathrooms and so on. The Company sets up performance indicators such as "reuse water rate", "water resources yield" and "wastewater reuse rate" to encourage subsidiaries to use circulating water, carry out reclaimed water reuse and improve the utilization rate of water resources.

## Case: Improving the Utilization Rate of Reclaimed Water

CRRC Shenyang Co., Ltd. fully uses reclaimed water for greening, fire fighting, toilets, mop pools and other places to reduce the use of freshwater; strengthens the maintenance of the Company's sewage treatment station and regularly tests it to improve the operation efficiency of sewage treatment equipment and facilities. The Company comprehensively investigates water consumption points, carries out in-depth research, transforms water consumption points and increases the proportion of reclaimed water utilization.



Indicator	Unit	2023
Total energy consumption <sup>4</sup>	tce	587,946.57
Fossil energy consumption (direct)	tce	180,267.96
Non-fossil energy consumption (direct)	tce	10,020.94
Purchased energy (indirect)	tce	397,657.67
Total water consumption	t	68,009,766.00
Fresh water consumption	t	15,596,741.00
Circulating water consumption	t	52,413,025.00

4. The comprehensive energy consumption is calculated according to the General Rules for Calculation of Comprehensive Energy Consumption (GB/T 2589-2020), with the formula as follows:

$$E = \sum_{i=1}^n (E_i \times k_i)$$

Where:

- E – Comprehensive energy consumption;
- E<sub>i</sub> – The amount of energy type i actually consumed in production and/or service activities (including the energy consumed by energy-consuming working medium);
- n – Number of types of energy consumed;
- k<sub>i</sub> – Coefficient of conversion to standard coal equivalent for energy source type i.

All types of energy sources shall be converted to standard coal when calculating total energy consumption. The actual consumed fuel energy shall be converted into standard coal based on its net calorific value as received basis. According to the international steam table card of GB/T 3102.4, the fuel with a net calorific value equal to 29,307.6 kJ [7,000 kcal] is called 1 kg standard coal(1 kgce).



Steel, aluminum, stainless steel and surface coatings are the main raw materials used. The Company sets up performance indicators such as "utilization rate of green materials", "utilization rate of main raw material for unit product" and "product recoverability rate" to encourage subsidiaries to purchase recyclable, low-carbon and environment-friendly green materials from the manufacturing source. The Company takes "the use proportion of waterborne coatings  $\geq$  30%" as a "one-vote veto item" for CRRC's green factory evaluation, strengthens the promotion of waterborne coatings, and reduces the emission of toxic and harmful substances.



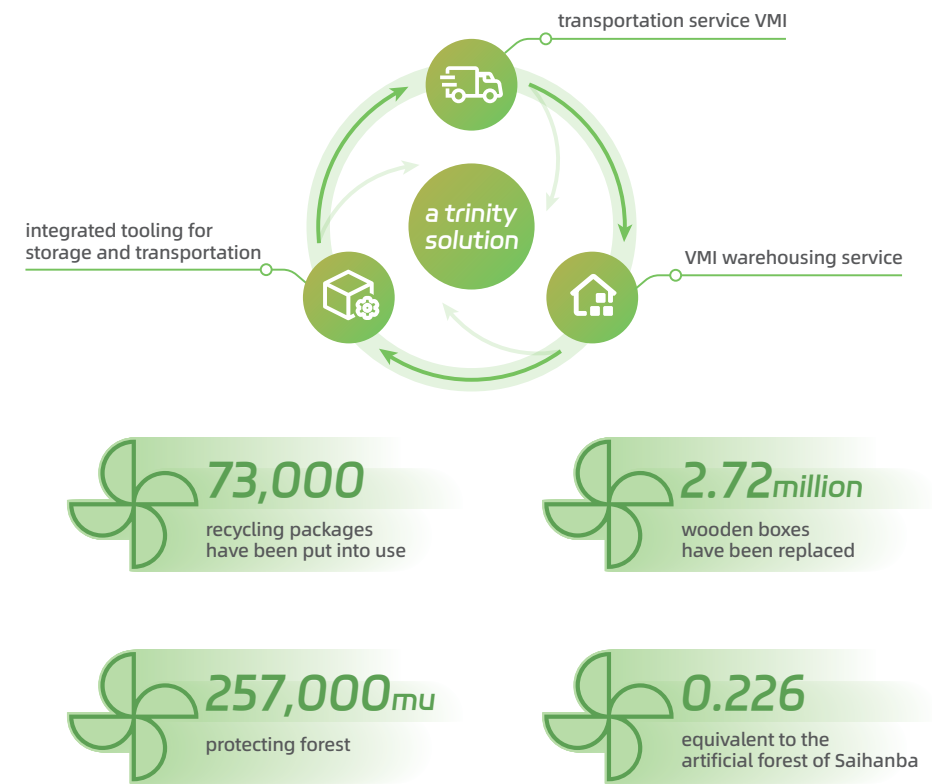
**Case: Vigorously Apply Waterborne Coatings**

Based on using waterborne coatings for all national railway wagons and main parts, CRRC Changji-ang Co., Ltd. adheres to green marketing and has made a breakthrough in the application of waterborne coatings for export products. Waterborne coatings are used in many export projects such as Angolan vehicles, Australia container flat wagons and Saudi Arabia double-deck container flat wagons. The annual use of waterborne coatings accounted for 91.38%, and the VOC emission decreased by 7.25% year on year.

**91.38%**  
annual use of waterborne coatings accounted for

**7.25%**  
VOC emission decreased by

In terms of packaging materials, the Company continues to promote recyclable packaging services in the rail transit industry chain. Through incentives such as policy preference, technical support and project support, the Company continuously expands the application of recyclable shared packaging in the industrial chain. By building a trinity solution of "transportation service + VMI warehousing service + integrated tooling for storage and transportation", the Company develops the intelligent logistics service industry of the CRRC industry and supports lean manufacturing of enterprises in the industrial chain. A total of 73,000 recycling packages have been put into use, replacing 2.72 million wooden boxes and protecting 257,000 mu of forest, which is equivalent to 0.226 times the artificial forest of Saihanba.



**Case: Promote Recycling by Using Green Packaging**

CRRC Shandong Wind Power Co., Ltd. follows the principles of environmental protection and recyclability in the packaging and delivery of WTGs and tower projects to reduce the use of packaging and delivery materials. The Company uses wooden packing boxes and recycled tarpaulins. For outsourced parts, it adopts a galvanizing process instead of packaging materials and fixes them directly with tightening bands to reduce the consumption of packaging materials and promote recycling.

# Climate Change

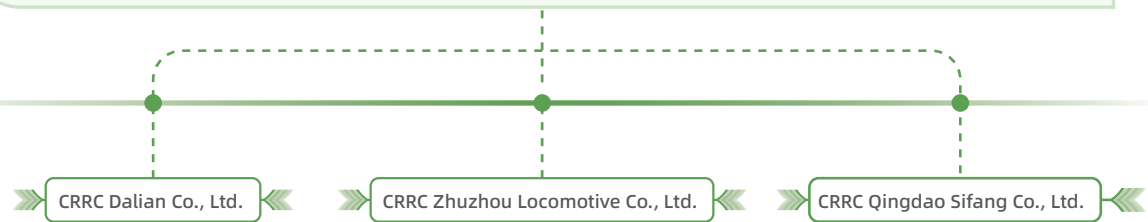
In November 2023, the 28th Conference of the Parties to the *United Nations Framework Convention on Climate Change* (COP28) was successfully held, which comprehensively "assessed" the progress and gaps in global implementation of the *Paris Agreement*. In implementing its national strategy to actively address climate change, China has not only done excellent work at home, but has also made important contributions to the development of clean energy technologies and the reduction of technological costs, demonstrating to the international community its firm will to achieve the goals of carbon peaking and carbon neutrality. As a "Gold Brand" of China's enterprises going global, CRRC has always been a practitioner in promoting ecological civilization and committed to making contributions to coping with climate change.

In August 2023, the *Action Plan for Carbon Peaking and Carbon Neutrality* was released. Guided by the 6G concept of "green investment, green innovation, green manufacturing, green products, green services and green enterprises", the plan focuses on "the whole value chain, the whole life cycle and the whole process", runs through the four processes of "product and technology innovation, industrial chain and supply chain construction, production and operation control, and product service", and focuses on carbon emissions in the whole value chain. In this plan, a "dual carbon" indicator system, 58 quantitative indicators and 81 key projects were formulated to forge green and low-carbon competitiveness from 10 aspects, including industry, technology, manufacturing, green power, supply chain, carbon footprint, digitalization, standard system, typical benchmarking and brand.

The Company has formulated the *Measures for Management and Assessment of Carbon Emission Indicators* to incorporate carbon emission indicators into the enterprise assessment system. The Company has comprehensively and independently carried out the application of zero-carbon rooftop solar power. Throughout the year, the Company added 30.9 MW of newly installed capacity of rooftop solar power, consumed 79 million degrees of green electricity and contributed 51,000 tons of carbon dioxide emission reduction. CRRC Harbin Rolling Stock Co., Ltd. uses industrial waste heat to replace coal-fired boilers for heating, achieving zero carbon heat. Three subsidiaries of CRRC Dalian Co., Ltd., CRRC Zhuzhou Locomotive Co., Ltd. and CRRC Qingdao Sifang Co., Ltd. were selected as China's Top Runner for Industrial Carbon Peaking in 2023.



## China's Top Runner for Industrial Carbon Peaking in 2023



The Company actively promotes the evaluation and inspection of energy environmental protection, continuously standardizes management activities, and identifies and eliminates risks in a timely manner. The Company has implemented methods for evaluating and inspecting energy and environmental protection, including the issuance of standards and the establishment of a professional team. Environmental protection supervision and key assistance have been provided to subsidiaries with low green development indexes, relatively weak management levels, and located in key areas. This is done through a three-year full coverage method to discover and resolve risks promptly and better cope with climate change.

In the future, the Company will continue to pay attention to climate change risks, identify and assess potential risks, take preventive measures, formulate response strategies, and integrate climate change measures into development plans, to make positive contributions to China's goal of "carbon peaking and carbon neutrality".

Climate-related risks		Solutions	
Physical risks	Acute risks: Extreme weather	<ul style="list-style-type: none"> <li>Factories, workshops, office buildings and equipment may be damaged, resulting in asset losses and even safety accidents of employees;</li> <li>Equipment damage, service interruption or major equipment damage may directly or indirectly impair the continuity of business operations and economic interests.</li> </ul>	<ul style="list-style-type: none"> <li>Strengthen the system concept and bottom-line thinking, and give priority to preventing and resolving major risks;</li> <li>Formulate emergency plans, strengthen emergency drills and improve the emergency management ability to deal with environmental risks;</li> <li>Quick response in case of extreme weather, efficient communication and cooperation to reduce losses.</li> </ul>
	Chronic risks: Continuous high temperature, drought, etc.	<ul style="list-style-type: none"> <li>Increasing temperatures may result in additional refrigeration equipment and maintenance costs, increasing operating costs.</li> </ul>	<ul style="list-style-type: none"> <li>Improve the energy efficiency of equipment, save energy and reduce carbon;</li> <li>Adopt advanced technologies, such as carbon dioxide air conditioners, to replace traditional air conditioners.</li> </ul>
	Policy and regulation risks	<ul style="list-style-type: none"> <li>The increase in policies and regulations on greenhouse gas emissions may increase the compliance operation cost of companies, and related lawsuits or claims may increase.</li> </ul>	<ul style="list-style-type: none"> <li>Pay close attention to the changes in regulations and policies related to dual carbon, fully implement the CRRC Dual Carbon Action Plan, accelerate the research and development of low-carbon technologies, and layout green and low-carbon industries.</li> </ul>
Transformation risks	Technical risks	<ul style="list-style-type: none"> <li>Failure to identify and apply low-carbon technologies, clean technologies, etc. in a timely manner, resulting in probably lead to greater climate-related risks in operations.</li> </ul>	<ul style="list-style-type: none"> <li>Innovate energy conservation and low-carbon technologies and develop green and low-carbon products;</li> <li>Accelerate the adjustment of energy structure and implement technological transformation for energy conservation and carbon reduction.</li> </ul>
	Market risks	<ul style="list-style-type: none"> <li>Changes in upstream and downstream supply chains and customer preferences may increase attention to green and low-carbon products.</li> </ul>	<ul style="list-style-type: none"> <li>Implement green supplier management, establish the concept of green procurement, continuously improve and perfect procurement standards and systems, and promote the green transformation of the supply chain.</li> </ul>
	Reputation risk	<ul style="list-style-type: none"> <li>Negative feedback from stakeholders due to poor performance in addressing climate change and sustainability.</li> </ul>	<ul style="list-style-type: none"> <li>Integrate the concept of sustainable development into the core value of corporate governance, actively assume social responsibility, and enhance the green image of the Company;</li> <li>Communicate smoothly with stakeholders, revise major ESG issues in a timely manner and integrate them into the company strategy;</li> <li>Regularly publish the Company's ESG reports, focusing on disclosing the key work of the Company's "dual carbon" action and ESG action.</li> </ul>
	Economic fluctuation risks	<ul style="list-style-type: none"> <li>Decreased global market demand and intensified competition in export markets;</li> <li>Raw material price fluctuations may affect cost control and profit margin;</li> <li>Fierce market competition may lead to increased price pressure and affect product profits.</li> </ul>	<ul style="list-style-type: none"> <li>Carry out in-depth quality and efficiency improvement activities to ensure effective qualitative improvement and reasonable quantitative growth of operating benefits;</li> <li>Promote centralized procurement in all fields of materials, services, information software and hardware as well as tooling equipment engineering to reduce procurement costs;</li> <li>Intensify the disposal of non-performing assets, innovate means to revitalize idle assets and improve asset utilization.</li> </ul>
	Reputation risk	<ul style="list-style-type: none"> <li>Negative feedback from stakeholders due to poor performance in addressing climate change and sustainability.</li> </ul>	<ul style="list-style-type: none"> <li>Integrate the concept of sustainable development into the core value of corporate governance, actively assume social responsibility, and enhance the green image of the Company;</li> <li>Communicate smoothly with stakeholders, revise major ESG issues in a timely manner and integrate them into the company strategy;</li> <li>Regularly publish the Company's ESG reports, focusing on disclosing the key work of the Company's "dual carbon" action and ESG action.</li> </ul>

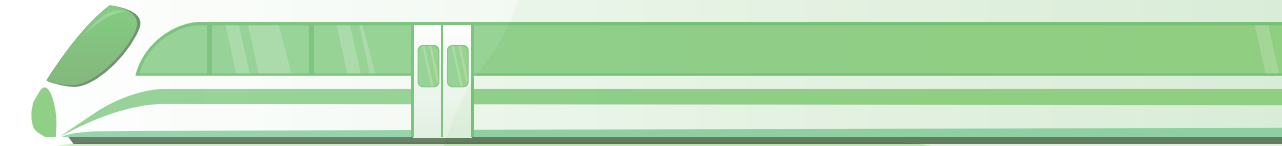


## Green Development

To promote the construction of green manufacturing systems and create advanced models, the Company will implement the concept of green manufacturing in the overall situation, continue to carry out the construction of green factories, green supply chains and green products, and promote green development in all aspects. The investment this year in clean energy industries such as energy conservation and environmental protection, new energy, new materials and new energy vehicles accounted for 57% of the annual investment. The growth rate of the investment scale was 10 percentage points higher than the Company's average investment growth rate, hitting a record high. The investment work has promoted resources to be tilted towards enterprises and businesses with high operation efficiency and high investment returns, as well as clean energy equipment, "product+" and "system+" business, technological innovation, digital intelligence and greening. The Company issued the Evaluation Guideline for Green Factory of the Rail Transit Equipment Manufacturing Industry to encourage manufacturing subsidiaries to realize intensive land use, raw material harmless treatment, clean production, waste recycling, energy low-carbon development and high-efficiency resource utilization. By the end of 2023, 31 subsidiaries have been rated as national green factories, 6 subsidiaries as national green supply chain management enterprises, 1 subsidiary as national-level industrial product green design demonstration enterprise, and permanent magnet synchronous motors as national "green design products". All manufacturing subsidiaries have obtained ISO 14001 certification.



The Company adheres to the concept of green and low-carbon development and continuously explores a new development model of environmental protection, energy conservation and low carbon. With green technology innovation as the core driving force, the Company widely applies low-carbon, zero-carbon and negative-carbon technologies and achievements in technological innovation and product R&D to promote the implementation of a sustainable development strategy.



### Rail Transit Equipment

The Company deeply implements the "Dual Carbon" Initiative, focuses on ecological priority and promotes the green upgrading of rail transit. CRRC has focused on the research and development of several strategic projects such as CR450 EMUs, Hungary-Serbia EMUs, standard intercity trains and a new generation of normal conduction high-speed maglev with a speed of 600 km/h. The hydrogen energy intercity EMUs and the new generation of straddle monorail prototypes have been successfully rolled off the line, maintaining the leading advantages in technology and products in the industry.

### Clean Energy Equipment

The Company has been deeply engaged in the field of wind energy for 23 years and has created systematic solutions covering large bases, mountainous areas, high altitudes, and distributed and offshore wind power scenarios. It continues to innovate the development mode of the wind power industry, promote the construction of the "product +" model, and build a whole industrial chain of wind power. The Company realized sustained growth of WTGs in 2023, and made breakthroughs in offshore wind power and overseas markets. Solar power inverters, large-scale energy storage systems, electric drives for passenger cars, etc., ranked steadily at the forefront of the industry. Industrial and commercial energy storage, comprehensive energy, ship electric drives, central air conditioning frequency conversion and other businesses have grown steadily.





# People-oriented CRRC

CRRC is committed to realizing the grand mission of "Connecting the World and Benefiting Mankind", adhering to the enterprise concept of "Observing Peace and Being Virtuous", continuously promoting global connectivity and contributing to global sustainable development. The Company insists on sharing its development achievements with society, and safeguarding and improving people's well-being while promoting its own development. Through active community participation and the organization of charity activities, we spare no effort to give back to society and demonstrate our social responsibility and humanistic care.

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### Contributions to SDGs:





# People-oriented CRRC

## Employment

Adhering to the people-oriented concept, the Company is committed to building an equal, fair and just employment environment for employees, providing a development platform with rich resources and broad prospects, creating a positive, diversified and inclusive workplace, allowing employees to grow up in happiness, and striving to become an excellent employer who creates value, is full of responsibility and is highly respected. The Company fully protects human rights and supports international human rights conventions such as the core conventions of the International Labour Organization and the *Universal Declaration of Human Rights*, as well as labor protection mechanisms.

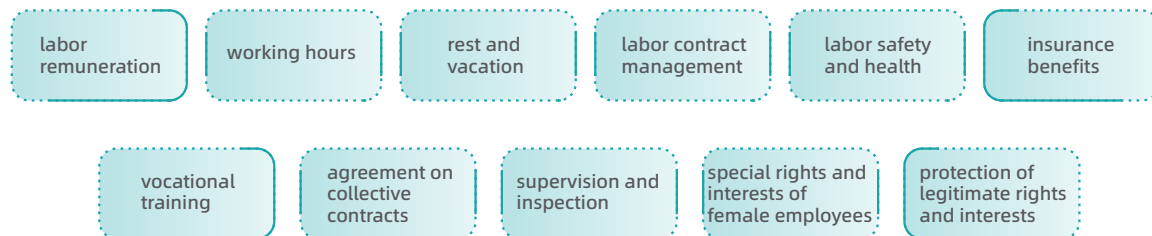
### Safeguarding Employees' Interests

The Company continues to promote democratic management of employees. With the Employees' Congress as the core, the Company has implemented a comprehensive democratic management policy and created a harmonious and progressive development environment by establishing and improving the congress system. In addition, as the daily working organ of the Employees' Congress, the Labor Union actively participates in the democratic procedures in the reform and restructuring, timely reflects the reasonable demands of employees, prevents and resolves labor disputes in advance, strengthens the functions and powers of democratic supervision, and ensures the stable development of the Company.

In January 2023, the Company organized the third session of CRRC's second Employees' Congress. 244 employee representatives deliberated and approved the *Business Work Report, Implementation Plan of Employees' Congress* and other proposals highly related to the protection of employees' rights and interests. A new round of *Collective Contracts* and *Special Collective Contract for the Protection of Rights and Interests of Female Employees* were signed on site, covering labor remuneration, working hours, rest and vacation, labor contract management, labor safety and health, insurance benefits, vocational training, agreement on collective contracts, supervision and inspection, as well as protection of legitimate rights and interests and special rights and interests of female employees.

**244**  
employee representatives deliberated and approved proposals

#### Protection of Rights and Interests of Employees



In the process of reform and restructuring such as "Double Hundred", "Mixed Reform", "Scientific and Technological System Reform" and "Large-scale Collective Reform", the Company guides its affiliated units to improve the democratic management system based on the Employees' Congress, promote the standardized management of public factory affairs, insist on taking collective negotiation as an important means to coordinate and stabilize labor relations, standardize the performance of democratic procedures, reflect the demands of employees and promote team stability.

In strict accordance with the requirements of national and local policies, all employees are involved in social insurance management for local urban workers. Qualified subsidiaries have established and implemented enterprise annuities upon approval, forming a comprehensive welfare guarantee for employees. All employees are entitled to paid annual leave, home leave, marriage and funeral leave, maternity leave and other leaves in accordance with the law. In addition to statutory welfare, each subsidiary provides employees with non-remunerated welfare such as supplementary commercial insurance, supplementary medical insurance and enterprise annuity based on operating benefits.

## Attaching Importance to Employee Care

The Company pays attention to the well-being of employees, improves the care mechanism, enhances employees' sense of identity, belonging and happiness, respects freedom of association and promotes the harmonious development of enterprises. The Company regularly carries out activities such as greetings and support for dispatched employees and domestic family members, heatstroke prevention and cooling, flood control and disaster relief, and autumn school aid, and invests funds to promote the care and assistance of employees. At the same time, the Company has organized care activities on Women's Day and Children's Day, carried out the quality improvement construction of "new small home" and "love house", and demonstrated all-around care for employees, women and children. The Company carried out the "Two Festivals" warm-hearted activities, and raised more than RMB 40 million to express greetings and support for 54,800 employees and 1,281 teams.



### Case: General Survey and Treatment of Gynecological Diseases among Female Employees

In December 2023, the Company implemented the relevant requirements of the *Collective Contract for 2023-2025*, organized female employees to carry out gynecological disease general surveys and treatment and gynecological physical examination.

### Case: Creating Characteristic "Family Culture"

CRRC Shenyang Co., Ltd. insists on creating a characteristic "family culture". Relying on the activity station during work breaks, "Staff Home" and "Staff Small Family", it carries out special activities to care for employees, delivers coolness to front-line production units, and sets up "Employee Medicine Chests" in 6 front-line production units and 5 departments.





### Case: Making Friends through Football Matches to Promote Friendship

In 2023, CRRC Zhuzhou Locomotive Co., Ltd. successfully hosted the "Football League of Metro Line 1 of Mexico City", caring for employees' physical and mental health, promoting exchanges between Chinese and Mexican employees, enhancing team cohesion, deepening friendship with partners, and showing a good brand image of CRRC.



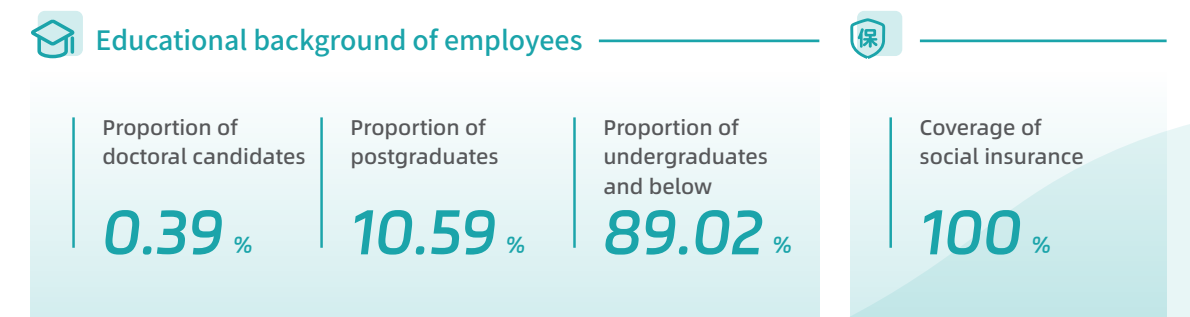
### Equal and Diversified Recruitment >

The Company creates an inclusive, equal and diversified atmosphere so that each employee can fully present himself/herself, give full play to his/her motivation and provide a broad stage for employees.

Based on the principle of "strategic guidance, hierarchical classification, integrated promotion, applicant-oriented and result-oriented", we have formulated and implemented a graduate recruitment reform plan in 2023, developed and applied an integrated "CRRC Recruitment Cloud Platform". The Company has explored and implemented the "HTP" ("100 Outstanding Masters and Doctors from Top Universities") program, and optimized the construction of a reserve talent team for "Scientific and Technological Talents". In 2023, the Company won the "Best Employer" award from 51job, a leading human resources service organization in China.

By the end of 2023, the Company had a total of 154,292 full-time employees, including 6,896 new employees in 2023, building a high-quality platform for stabilizing and promoting employment. According to the age structure, employees under 30 years old (inclusive) accounted for 16.83%, and employees aged 30-50 years old (inclusive) accounted for 63.86%. According to the educational background, doctoral candidates accounted for 0.39%, and postgraduates accounted for 10.59%. The employment structures are appropriate and sustainable. In 2023, the employee turnover of the Company was 1.53%.

As of December 31, 2023, the Company's employees were as follows:



## Health and Safety

The Company adheres to the requirements of relevant laws and regulations such as the *Work Safety Law* and the *Law on the Prevention and Control of Occupational Diseases*, builds a CRRC safety system with a unique logo, and optimizes occupational health and safety management. All manufacturing subsidiaries have obtained ISO 45001:2018 occupational health and safety management system certification. The business coverage rate of "Health Demonstration Enterprise" in the whole company was 83.29%. The Company actively carries out the research and development of a health management model and creates the "Health Tree" model to fully ensure the health and safety of employees. The Company has established a sound safety management system and supervision & guidance system, regularly carries out work safety grade evaluation for sub-subsidiaries at all levels, implements closed-loop management for problems found, and supervises the handling when necessary to ensure effective coverage and implementation of policies.

The Company has formulated the *Responsibility System for Work Safety*, and implemented "centralized management" of health and safety performance. The Company has established a work safety responsibility system with the Work Safety Committee as the highest leading organization for work safety and the main person in charge as the first responsible person. It has set up the safety director, safety management department and full-time safety management personnel, clarified the work safety responsibilities of each institution and incorporated them into the assessment standards for each subsidiary. It has specified the strategy and performance management mechanism led by the Strategy and Performance Management Department and implemented by the Safety Management Department. The Company has formulated the *Measures for Rewards and Punishments in Work Safety*, which links the remuneration of main safety directors with health and safety performance to promote the effective implementation of work safety entity responsibility and the overall improvement of work safety performance. The safety policies have been reviewed by relevant units and the "Three-important and One-major" decision-making has been made. If necessary, third-party organizations (such as safety management agreements with interested parties) are invited to provide professional support to ensure policy norms and procedural justice.

### Implementing the Entity Responsibility

The Company promotes and implements classified management, the application of "three platforms" and the implementation of "three actions", so as to achieve "three zero" goals of responsible fatal accidents, Class I fire accidents and new on-post occupational diseases.



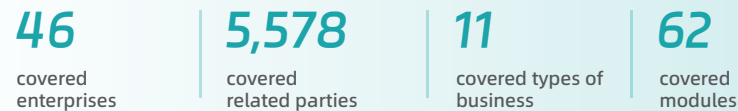
**Classified management**

Related parties are classified using A/B classification management based on their business correlation. Class A related parties strongly related to the Company's production and operation, including dispatched workers, are regarded as regular employees for integrated management. Other Class B related parties are strictly managed in the whole process of access, examination, filing and supervision, and the responsibilities of related parties, contract awarding units, territorial units and safety departments are implemented. At the same time, work safety accidents of personnel from relevant parties are included in the unit for statistics and treatment to continuously improve the overall safety recognition of CRRC.




**"Three platforms"**

The Company has strengthened intelligent management and control in 8 pilot units through the "safety network" digital intelligence management and control platform, and has realized efficient risk identification and management in 37 key scenarios. It has established a global emergency command center platform, strengthened the overseas security early warning mechanism, and successfully responded to foreign emergencies. The security building operation platform was fully applied, and a series of security standards were issued, covering a wide range of businesses and modules. At present, the platform has covered 46 enterprises and 5,578 related parties, covering 11 types of business and 62 modules such as related party management and hazardous operations.




**"Three actions"**

The Company has carried out special investigation and rectification actions for major accident hidden dangers, conducted in-depth self-inspection and supervision of on-site hidden dangers and improved the completion rate of hidden danger rectification. It has carried out the "Year of Strengthening Safety Management", selected experts, and carried out training and emergency drills. The Company has carried out actions to create healthy enterprises, established health models, issued construction guidelines, held sports events, etc., and enhanced employees' health awareness and participation.






**"Three Zero" goals**

The Company has achieved the "three zero" goals of work safety in four consecutive years, i.e. zero death accidents, zero Class I fire accidents and zero new occupational diseases on duty. The Company formulated *Regulations on the Management of Work Safety Accidents* to clarify the reporting procedures and statistical rules of accidents. The Company has carried out accident information statistics at all levels every year, and made detailed regulations on the shift handover of accidents to ensure the effective closed loop of accidents and the continuous improvement of intrinsic safety. The work safety performance is far ahead in the same scale and type of industry in China. The Company puts forward the work objective of "starting from zero to strive for zero", and carries out key work according to this requirement to ensure the continuous realization of future objectives.

### Building a Solid Foundation for Safety

The Company has released the *Innovative Practice Examples of Enterprise Leadership Contracting and Guarantee* and the *Operation Instructions for Leadership Contracting and Guarantee Inspection* to share experience and guide in-depth practice. The Company has organized enterprises to carry out safety contracting and guarantee inspections at multiple levels regularly. On the basis of self-inspection, the Company organized 7 inspection teams to supervise 42 units on site. In view of the potential safety hazards found, the Company formulated a standing book and followed up and solved them item by item.



-  The Company has carried out special investigation and management of major potential safety hazards such as the safety of environmental protection equipment and facilities, fire safety of high-rise buildings, leased assets safety, gas safety and hot work safety.
-  The Company has finished building safe operation application scenarios and researching application scenarios for digital intelligence technology control of important hazard sources and risk points, in accordance with the "safety network" construction and pilot enterprise promotion plan.
-  The Company has initially completed the construction of the operation and management cockpit-safe, environmental-friendly, energy-carbon system cockpit, which uses data to empower daily control.



## Paying Attention to Occupational Health

The subsidiaries have, according to their own actual conditions, formulated a series of rules and regulations such as the *Occupational Disease Prevention and Control Procedure* and the *Regulations on the Prevention and Control of Occupational Hazards*, to strengthen the management of occupational disease prevention and control, effectively prevent, control and eliminate occupational disease hazards in the working environment. These measures aim to guarantee the health and safety of workers during the labor process and protect their occupational health. In 2023, the Company invested RMB 152,514,600 in occupational hazard protection facilities. No work-related deaths occurred and all work-related injuries were properly handled. The accident rate per thousand workers was 11.02%, and the total number of occupational health examinations was 42,769.

**11.02%**  
accident rate per thousand workers

**42,769**  
total number of occupational health examinations



## Maintaining Information Security

The Company formulated the *Network Management Measures*, *Data Security Management Measures* and *Data Management Measures* to standardize internal data management activities, improve data quality and security, and effectively protect customer and employee information security. The Company has established a unified data architecture and strengthened the management of data asset catalogs, standards, models and distribution. It has paid attention to the training of employees' network security awareness, improved their network security self-protection ability, and established an emergency response mechanism for information security incidents to ensure that actions can be taken quickly in case of network security incidents, reduce losses and resume normal operation as soon as possible.



## Development and Training

### Systematic Cultivation and Comprehensive Development

The Company has opened up the career development channels for employees, realized the orderly flow and reasonable allocation of human resources, improved the talent training system, and enabled employees to display their talents on CRRC's stage.

#### Opening up development channels for employees

In alignment with national and regional systems and considering the enterprise's actual conditions, the Company has established the *Core Talent Management Measures*, *Core Technology Leading Talent Management Measures*, and other relevant policies. It has solidly advanced a dynamic management mechanism for its core talents and systematically categorized them into five tiers: "CRRC Chief Scientist, CRRC Scientist, CRRC Chief Expert, CRRC Senior Expert, and CRRC Expert" to enhance the enterprise's core competitiveness.

The Company offers transparent promotion channels and support measures, implementing a dynamic management principle for position changes and internal transfers. Core talents are allowed to apply for promotion or renewal based on their assessment results and performance contributions during their employment period. The Company supports employees' career planning and position changes by opening up career development channels for core talents, providing development support, and offering competitive salaries.

#### Case: Women's Sci-tech Innovation Studio

In 2023, CRRC Zhuzhou Institute established the first women's sci-tech innovation studio to continuously strengthen the subject consciousness of women's sci-tech innovation, striving to build a characteristic brand of women's sci-tech innovation, and constantly condense the strong synergy of women's sci-tech innovation.





### Strengthening vocational training for employees

The Company has deeply implemented the strategy of strengthening the country and enterprise with talents, and thoroughly practiced the talent concept of "leading and putting talent first". It has coordinated and promoted the training and development of all kinds of talents, and issued and implemented the *Key Points and Training Plan for Human Resources Work in 2023*. The Company has continuously strengthened the construction of the training management system. It has revised and upgraded the "CRRC Learning Cloud Platform", and established 18 series course libraries, covering more than 2,000 video courses including 40 management practice courses. It is committed to improving the comprehensive quality ability, management practice ability, digital management ability and sci-tech innovation ability of employees at all levels, organizing and carrying out training on industrial change logic, enterprise growth path.

**18 series** established course libraries | **40** management practice courses | **more than 2,000** management practice courses

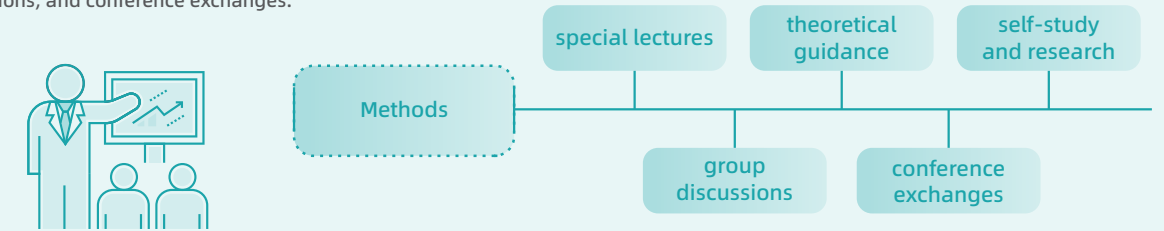


The Company pays attention to the leadership training of employees. It formulates a standard system for high-quality professional enterprise leaders of "politician + specialist", and establishes and implements a four-level stepped leadership training development system of "foundation, development, excellence and super-excellence". The Company conducts precise training for employees of middle management personnel, deputy reserve, current deputy position and current principal position in first-tier subsidiaries respectively.

### Case: Conducting Leadership Training Sessions

The Company conducted 3 leadership training sessions, each comprising 10 sessions, for over 1,200 cadres at various levels. The training covers management, branding, digitalization, finance, compliance, strategy, and human resources. It aims to improve comprehensive quality and abilities in an all-round way and address reform and development challenges through special lectures, theoretical guidance, self-study and research, group discussions, and conference exchanges.

**3** leadership training sessions  
**comprising 10** sessions  
**over 1,200** cadres at various levels



### Case: "Sci-Tech Innovation · Women's Action" Symposium for Female Scientific and Technical Workers

The Company has made every effort to promote the team construction of female scientific and technical workers, formulated and implemented the *Implementation Plan for Sci-Tech Innovation · Women's Action*, and comprehensively improved the level of quality and professional ability of female scientific and technical workers. At the first symposium, representatives of women scientists and engineers had in-depth exchanges on topics such as career development and family-career balance.



### School-enterprise Cooperation and Industry-education Integration

The Company has cooperated with Zhejiang University, Chongqing University, Harbin Institute of Technology, Huazhong University of Science and Technology, Southeast University and Beijing Jiaotong University to train masters and doctors of engineering. It has made solid progress in the school-enterprise joint training of 2022 and 2023 masters and doctors of engineering and the selection of 2024 masters and doctors of engineering, continuously building an excellent engineering team. The Company and the Ministry of Education have jointly organized the inaugural ceremony for the Industry-Education Integration Community in the National Rail Transit Equipment Industry. As one of the first batches of members of this community, the Company joined hands with 9 colleges and universities, 34 vocational schools and education administrative departments in 5 industrial agglomeration areas in more than 20 provinces across China to implement the overall work layout of "Laying Foundation, Establishing Mechanism, Strengthening Functions, Making Achievements, Promoting Innovation and Setting Benchmarks" in three steps. The Company has promoted the construction of training bases, school-enterprise cooperation to "go global", textbook development and other key work, accelerated the construction of a new ecology of industry-education integration and jointly promoted the high-quality development of industry-education integration in vocational education.

**9** joined hands with colleges and universities  
**34** joined hands with vocational schools  
**5** joined hands with education administrative departments

### Case: Holding ESG Training Sessions

In December 2023, the Company held an ESG training session for all departments of the headquarters and subsidiaries. The training contents included ESG-related concepts, interpretation of ESG key work, etc. Employees attending the training exchanged views on report preparation and management improvement practices in combination with advanced ESG practical cases at home and abroad.



## Labor Standards

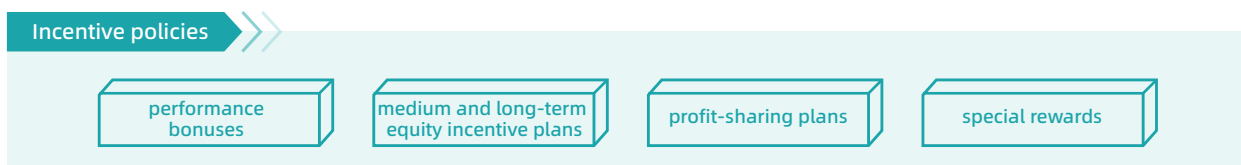
### Employment in Compliance with Laws and Regulations

The Company strictly abides by the *Civil Code of the People's Republic of China*, *Labor Law of the People's Republic of China*, *Labor Contract Law of the People's Republic of China*, *Social Insurance Law of the People's Republic of China* and other relevant laws and regulations, and formulates and issues the *Interim Measures for Management of Labor Employment*. The Company establishes labor relations with employees in accordance with laws and regulations based on the principles of fairness, impartiality and openness.

The Company strictly abides by the *Law of the People's Republic of China on the Guarantee of the Rights and Interests of Women*, the *Trade Union Law of the People's Republic of China* and other laws and regulations to eliminate discrimination against women in employment and protect the rights and interests of female employees. The Company strictly abides by the *Provisions on Prohibition of Child Labor*, and makes it clear that the sources of skilled operators recruited by enterprises are limited to technical schools, colleges and universities and certified skilled personnel in society. The Company objects to forced labor and follows the principles of legality, fairness, equality and voluntariness, consensus through consultation, honesty and credibility. Before entering into a labor contract with a new employee, both Parties will fully negotiate on matters such as the terms of the labor contract, work content and place, working conditions, working hours, rest and vacation, labor remuneration, social insurance, labor protection, working conditions and occupational hazard prevention.

### Diversified Remuneration Incentives

The Company adheres to the people-oriented principle, formulates the *Remuneration Management Measures* and establishes a perfect remuneration system. In addition to providing employees with competitive basic remuneration, the Company has set up a number of incentive policies such as performance bonuses, medium and long-term equity incentive plans, profit-sharing plans and special rewards. The Company has improved the remuneration growth mechanism according to factors such as human resources allocation strategy and market remuneration level, and pay remuneration according to post responsibilities and performance appraisal results. In addition, core talents enjoy remuneration matching their job responsibilities. In principle, the annual remuneration level of the Chief Scientist shall not be lower than that of the members of the enterprise team.



The Company has formulated and implemented a three-year action plan for medium and long-term incentives, adhered to one policy for one enterprise, guided qualified subsidiaries to implement employee equity incentives, and further enhanced the sense of belonging and motivation of core talents. By the end of 2023, a total of 10 equity incentive plans had been approved and implemented, covering various incentive tools such as equity incentives for employees of technology-based enterprises, employee stock ownership in mixed-ownership reform enterprises, equity incentive for listed companies and strategic placement for listing on SSE STAR Market, involving 42 subsidiaries at all levels with more than 2,200 people, holding a total of 1.297 billion shares.

approved and implemented equity incentive plans	involved subsidiaries	involved all levels people	held shares
10	42	more than 2,200	1.297 billion

## Social Welfare

As a leading central enterprise in the high-end manufacturing industry, the Company is committed to promoting sustainable social and economic development. The Company insists on sharing the fruits of development with society. While promoting its own development, the Company safeguards and enhances people's well-being. By actively promoting rural revitalization, organizing community public welfare activities and carrying out disaster assistance, the Company strives to achieve the grand mission of "Connecting the World and Benefiting Mankind".

In 2023, the Company directly invested RMB 19,708,800 in assistance funds and introduced RMB 21,100,500 in assistance funds, highlighting "CRRC Responsibility" and "CRRC Care".

**RMB 19,708,800**  
directly invested in assistance funds

**RMB 21,100,500**  
introduced in assistance funds

### Rural Revitalization

The Company adheres to the idea of "industry-leading, coordinated development and shortcoming improvement", deepens and improves the assistance mode of "three-dimensional assistance and all-round efforts" and solidly promotes the five major aspects of revitalization. Throughout the year, the Company implemented 12 assistance projects, introduced 1 project, supported 2 leading enterprises and 4 rural cooperatives, and helped 192 people out of poverty to transfer employment. Throughout the year, the Company purchased and helped sell agricultural products worth RMB 39,767,900 from designated poverty-stricken counties and RMB 672,000 from other areas that have been lifted out of poverty. The Company actively organized and participated in the "Central Enterprises Consumption Assistance" and sold agricultural products worth RMB 9,906,900.

**12**  
implemented assistance projects

**1**  
introduced project

**2**  
supported leading enterprises

**4**  
supported rural cooperatives

- 192** helped people out of poverty to transfer employment
- RMB 39,767,900** purchased and helped sell agricultural products from designated poverty-stricken counties
- RMB 672,000** purchased and helped sell agricultural products from other areas
- RMB 9,906,900** sold agricultural products in the "Central Enterprises Consumption Assistance"

### Case: Promoting Industrial Revitalization

The Company has supported the cherry tree planting project in Guchuan Village and the rural tourism project in Waquanyu Village in Gangu County, thereby boosting local employment and income; invested in the construction of a pepper planting base and the renovation of agricultural products processing facilities in Xiaoguola Village in Napo County; invested in Kangcheng Community Cooperative and Guangkang Food Company in Jingxi City to solve the employment problem of relocated households.



**Case: Promoting Talent Revitalization**

The Company held the sixth session of "Swan Plan" to help local grass-roots cadres in leadership improvement training, and invited relevant experts to carry out technical training on site by using high technology and management advantages to strengthen the training of grass-roots talents. A total of 1,908 grass-roots cadres were trained throughout the year.

**1,908**

trained grass-roots cadres



**Case: Promoting Cultural Revitalization**

The Company invested RMB 390,000 to order 1,500 copies of *Truth Seeking* magazines throughout the year and distribute them to village-level Party branches in 4 counties in assistance areas. The Company also invested RMB 2 million to build 33 "CRRC Bookstores" to enrich the cultural activities of the masses and the spiritual world of students.

**RMB 390,000**  
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**1,500** copies  
order *Truth Seeking*  
magazines

**RMB 2 million**  
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"CRRC Bookstores"

**33**  
built "CRRC  
Bookstores"

**Case: Promoting Ecological Revitalization**



The Company has invested in the comprehensive environmental management of Waquanyu Village and Guoping Village, significantly improving the village's appearance and striving to build a strong tourism village. Among them, Waquanyu Village has been rated as a "National Forest Village", "Provincial Rural Tourism Demonstration Village" and "Provincial Cultural Tourism Revitalization Model Village".

**Case: Promoting Organizational Revitalization**

The Company actively promoted rural organizations revitalization through mutual assistance, co-construction and joint construction. CRRC Xi'an Yonge Electric Co., Ltd., Hurun Town and Jingxi Base of Xiangtan Electrochemical Scientific Co., Ltd. joined hands to enhance the image of grass-roots party organizations in the border area. In terms of subsidizing freshmen in rural universities, equipping fire fighting facilities and purchasing agricultural products, the Company gave full play to the strength of grass-roots party organizations and party members to add luster to the "Golden Business Card" of CRRC Party building.



**Public Welfare Education**

**Case: Going out of the Mountains and Seeing the High-speed Railway**

The Company held the CRRC study tour project of "Going out of the Mountains and Seeing High-speed Railway", providing 35 students in the assistance areas with study tour opportunities to experience the vigorous development of China's high-speed railway industry.



**Case: High-speed Railway Lecture on Campus**

In October 2023, CRRC donated computers, audio systems and other teaching materials to Bandung Kanpura 3 National Junior High School, and brought high-speed rail science popularization courses to local students in Indonesian campuses, leading Indonesian teenagers to feel the charm of "China Speed".

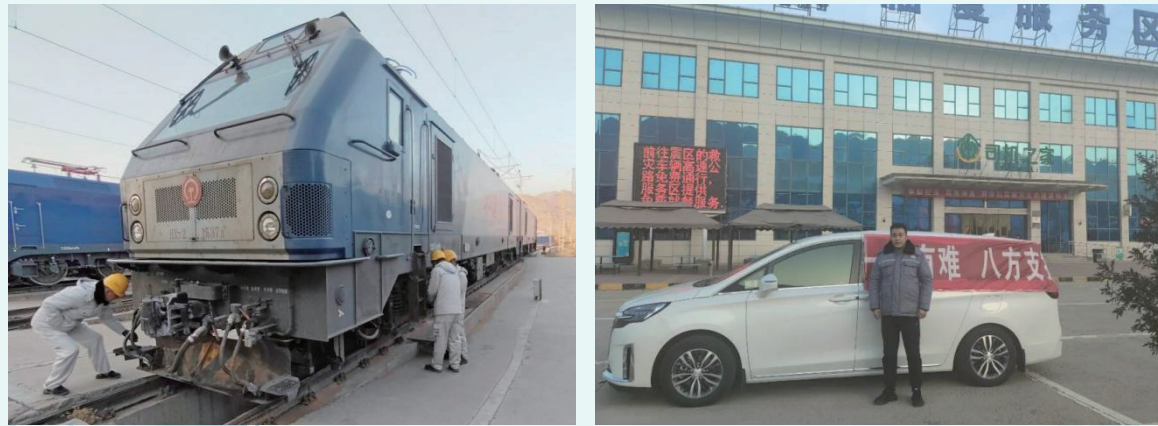




## Rescue Assistance >

### Case: Carrying out Domestic Disaster Prevention Guarantee and Hidden Danger Investigation

After the 6.2-magnitude earthquake occurred in Jishishan County, Linxia, Gansu Province, CRRC responded quickly and actively carried out disaster prevention support and hidden danger identification. By fully guaranteeing the stability of railway transportation, CRRC ensured the smooth transportation of important materials and directly participated in disaster relief through employee volunteers.



### Case: Facilitating International Earthquake Rescue and Emergency Assistance

After the strong earthquake in southeast Turkey, CRRC actively responded to the rescue and assistance initiatives. Local employees made donations and actively participated in blood donations to provide practical help for the people in the disaster area, and provided a guarantee for the 24-hour operation of metro vehicles on the Istanbul 176 Project to ensure unimpeded rescue passages.



## Youth Volunteer Activities >

The Company provides public welfare services such as elderly assistance, community cleaning, and caring for left behind children, actively fulfilling social responsibilities. Organized young volunteers to participate in more than 80 voluntary services such as various large-scale competitions and ceremonies, with more than 5,700 participants and a total service time of about 185,000 hours.

### Actively Fulfilling Social Responsibilities







# Win-win CRRC

CRRC has always regarded product quality as the cornerstone of enterprise development, and technological innovation as the core driving force for the Company's sustainable development. Through continuous R&D investment and technological innovation, and continuous improvement of product performance and service level, CRRC maintains a leading position in the field of rail transit, ensures the provision of high-standard and high-quality rail transit equipment to the market, provides intelligent and green transportation solutions for global customers, and promotes sustainable development of the industry.

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### Contributions to SDGs:





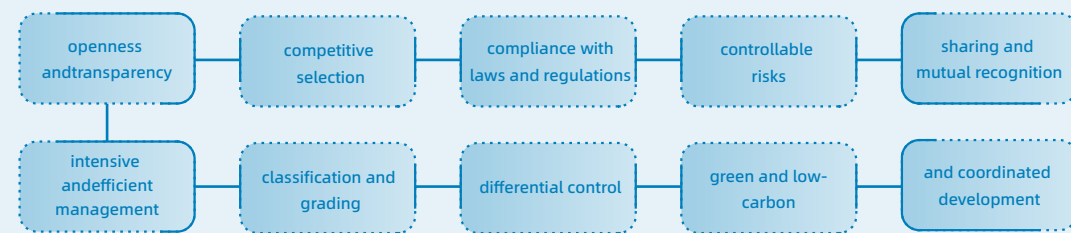
# Win-win CRRC

## Supply Chain Management

### Refining Supply Chain Layout

The Company has issued the *Supplier Management Measures* and *Management Measures for Supplier Misconduct and Blacklist*, which clarify the supplier admission process and criteria, attach importance to sustainability and safety, and achieve green procurement. In terms of management, the Company has developed a list of qualified suppliers, unified the classification standards, standardized full lifecycle management, and set up a performance evaluation system. Based on the evaluation results, the Company has established long-term cooperative relationships with outstanding suppliers and adjusted the supply layout according to the market conditions. The Company promotes automation, reduces human dependence and comprehensively upgrades the supply ecosystem. The Company adheres to the principles of "openness and transparency, competitive selection, compliance with laws and regulations, controllable risks, sharing and mutual recognition, intensive and efficient management, classification and grading, differential control, green and low-carbon, and coordinated development" in supplier selection. In strict accordance with the management system, suppliers must pass the qualification assessment before being included in the management, so as to ensure integrity and discipline. The Company conducts random integrity inspections on the selection of suppliers and continuously monitors the compliance with relevant regulations and environmental requirements.

#### Supplier selection principles



### Centralizing Procurement in the Supply Chain

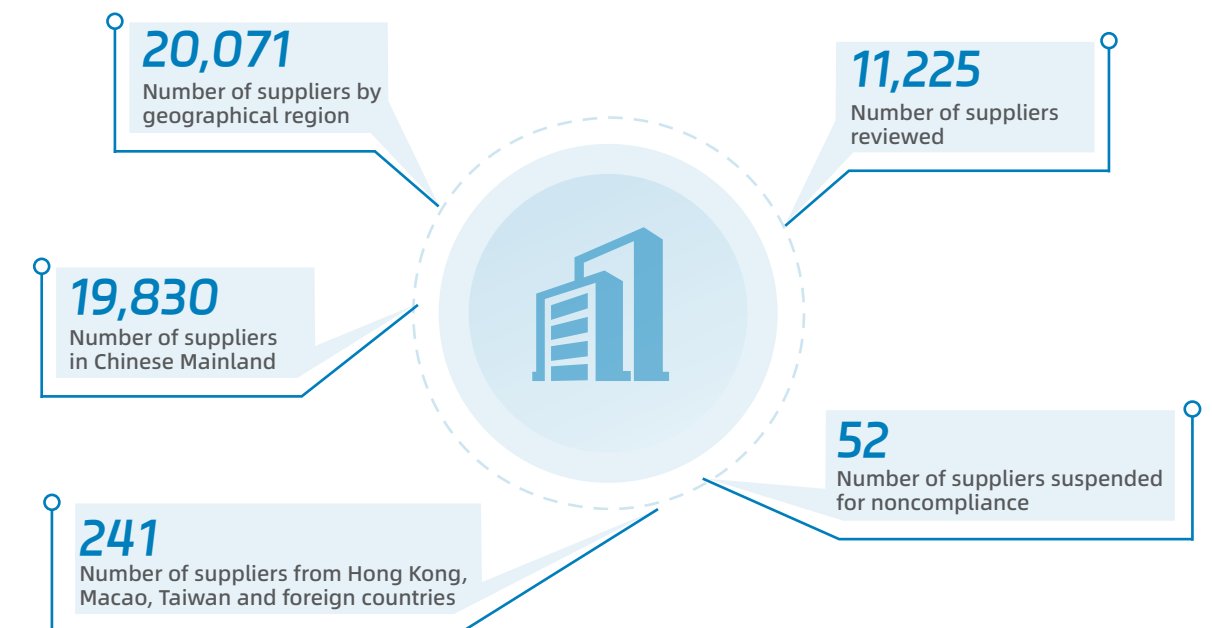
The Company has realized scale procurement and cost optimization through promoting collaborative procurement of bulk, general and standard materials, introducing high-quality suppliers in the industry and removing intermediate links; we have developed and published management systems such as the *Management Measures for Centralized Procurement*, *Guiding Opinions on Promoting Comprehensive Centralized Procurement*, *Management Measures for Procurement of Business Services*, *Management Measures for Engineering Project and Equipment Procurement* and *Supplier Management Measures*, in order to deepen strategic cooperation for key strategic materials and achieve value co-creation, benefit sharing and win-win cooperation.

### Normalizing Capacity-building of Supply Chain

The Company establishes a supplier cultivation mechanism, based on the principle of win-win cooperation and improved overall efficiency of the supply chain, the Company selects suitable suppliers for key cultivation targeting the development opportunities or weak links of the supply chain. Through various methods such as coaching and training, dispatching experts, and specialized cultivation, the Company helps suppliers make improvement and guides them to upgrade actively. Based on the goals and issues of supplier cultivation, the Company determines the content of supplier cultivation and provides relevant resource guarantees. In order to promote the coordinated development of suppliers, the Company actively promotes cooperation between central and local governments, fully leverages its main support and integration role in the "dual track and dual cluster" industrial chain of rail transit equipment and clean energy equipment, drives the coordinated and integrated development of the industrial chain, and establishes a benchmark model for cooperation between central enterprises, industrial clusters and local governments.

### Digitizing Supply Chain Management

As the head of rail transit equipment industrial chain, the Company has built a digital platform of industrial supply chain with digitalization as the core based on the concept of Internet economy. Starting from the application scenarios of supply chain, this platform integrates key businesses such as supplier management, electronic procurement, supply chain collaboration, supply chain finance, e-commerce, supply chain big data analysis, and industrial chain management. It is committed to providing high-quality services and full process, electronic smart supply chain collaboration solutions for upstream and downstream enterprises in the supply chain, and promoting the transformation of supply chain system from traditional integrated one to smart supply chain.



### Case: Co-Industry Chain Action Conference

To actively promote the co-chain development with small and medium-sized enterprises and deepen cross-chain cooperation, the Company held a Co-chain Action Conference in Zhuzhou, Hunan, showcasing the Company's leading role in modern industrial chain construction, and creating a strategic cooperation ecosystem for the industrial chain.



### Case: Supplier Conference

The Company held the Industry Chain & Supply Chain Integration Development Conference and Supplier Conference in Rongcheng, Shandong. More than 160 partners' representatives attended the conference, with a total of over 450 participants. The Company comprehensively introduced the basic situation of "carbon peaking and carbon neutrality" action, industrial chain and supply chain construction, procurement and supply chain management system, and read out the *Proposal for Clean and Honest Co-construction of Supply Chain*.



## Product Liability

Aiming for high-quality products and efficient services, the Company continuously improves product quality in various aspects such as design, manufacturing processes, production and adoption of new technologies and methods, and firmly regards product quality as the lifeline of the enterprise. As one of the earliest mechanical industry enterprises in China to establish a quality management system in accordance with the ISO 9001 standard, the Company has been committed to the construction of a quality management system and continues to optimize and improve the system. All first-tier manufacturing subsidiaries have passed the ISO 9001 quality management system certification.

### Standardization of Quality Management

The Company attaches great importance to the construction of quality management systems, and has formulated multiple management systems such as the *Regulations on Quality Management Work*, *Management Measures for Third Party Audit Witnessing of Quality Management Systems*, and *Emergency Plan for Sudden Quality Accidents*, established a quality management system framework, clarified the quality responsibilities of various levels of organizations, and actively promoted the standardization of quality management work.

### Prevention and Control of Quality Risks

The Company has established a "dual prevention mechanism" for quality and safety risk classification and control, as well as hazard investigation and governance, and has released the *Basic Norms for Quality and Safety Standardization of CRRC Quality Management System* and the *Evaluation Norms for Quality and Safety Standardization of CRRC Quality Management System*, and established a mechanism for quality and safety standardization evaluation. The Company has required subsidiaries to establish a "dual prevention" mechanism, to carry out identification, hierarchical classification, response, early warning and emergency response, communication and training of product quality and safety risks, and to carry out dynamic management and strive to promote the "transformation of quality work from post-disposal to pre-prevention".

### Construction of Quality Standard System

The Company has carried out the construction of the CRRC "Q" quality standard system, creating an industry quality standard group with CRRC characteristics. This system has further clarified the fundamental requirements of quality management, standardized the management framework of subsidiary quality work, systematically evaluated the quality work situation, and provided strong support for promoting the implementation of the "going global" internationalization strategy.

All subsidiaries have actively carried out quality management system construction and certification work. In 2023, many subsidiaries won multiple honors such as the "National Quality Award", "China Quality Award", "Industrial Enterprise Quality Benchmark", and "National Quality Benchmark". In combination with the needs of product quality control, some subsidiaries have obtained multiple certifications, including EN15085 welding system, DIN6701 bonding quality management system, GJB9001 national military standard quality management system, IATF16949 automotive quality management system, etc.



## Protection of Intellectual Property Rights >

The Company actively builds a comprehensive intellectual property protection system, covering all-round application scenarios such as rule and regulation construction, application transformation and routine management, and continuously optimizes the intellectual property protection system. The Company strictly implements its *Intellectual Property Management Measures*, and has formulated and released the *Work Plan for High Quality Development of Intellectual Property*, so as to implement the concept of high-quality development throughout the entire chain of intellectual property creation, protection, management and application. The Company strengthens internal channels for safeguarding rights, enhances employee awareness of intellectual property protection, and cooperates with relevant government departments to address industry rights protection challenges, strengthen infringement crackdowns and advocate an industry environment that respects intellectual property.

## Assurance of Quality >

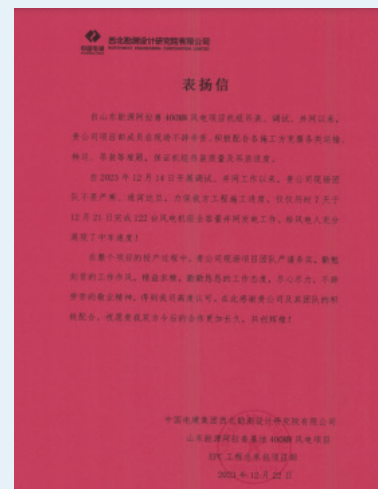
The Company attaches great importance to customer satisfaction and takes multiple measures to ensure that all links from product design, production to delivery can fully meet customer needs. To this end, the Company has established a series of management systems, including the *Management Measures for Recall of Defective Products*, *Management Measures for Handling Failure Problems on Site*, *Nonconforming Product Control Procedure*, etc., to ensure rapid response and effective resolution of product quality issues and reduce the impact on customers.

Positive feedback from customers directly reflects the quality of enterprise services and products. The Company actively communicates with customers through visits and satisfaction surveys, and provides various feedback channels, thereby maintaining over 99% customer satisfaction and gaining widespread recognition from customers worldwide.

over **99%**  
customer satisfaction

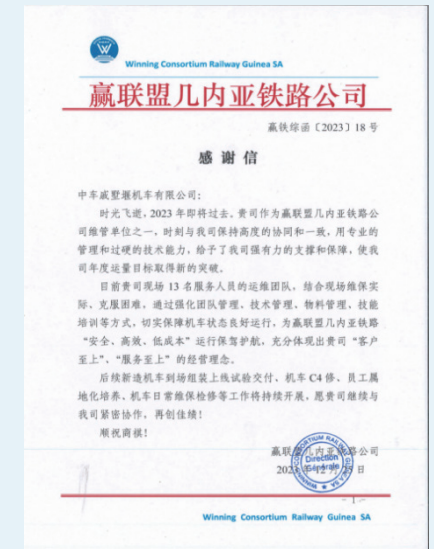
## Case: Gaining Appreciation from Owners for Efficient Work

CRRC Shandong Wind Power Co., Ltd. achieved full capacity grid connection of 122 wind turbine units in just 7 days in the Shandong Energy Alxa 400MW Wind Power Project, winning high praise from the owner. The customer sent a letter of praise, fully affirming the "CRRC speed" and "CRRC service".



## Case: Professional Maintenance Recognized by Customers

During the performance of locomotive maintenance tasks, the maintenance team of CRRC Qishuyan was on standby 24 hours a day to respond to various unexpected situations in a timely manner, while also helping local trainees master the skills of component disassembly and assembly. Winning Consortium Railway Guinea sent a letter of thanks, highly praising Qishuyan Company for its professional management, excellent technology and efforts in ensuring locomotive operation.



## Case: Friendly Exchanges with Overseas Customers

Sun Yongcai, Chairman of CRRC, held talks with government agencies and corporate customers from Malaysia, Kazakhstan, Chile and other countries respectively at the Third "Belt and Road" Forum for International Cooperation. During the communication, the customers highly praised and affirmed the Company's high-quality products and services, and looked forward to achieving greater results in future cooperation.



Communication and exchange between CRRC and EFE Chile

## Scientific & Technological Innovation

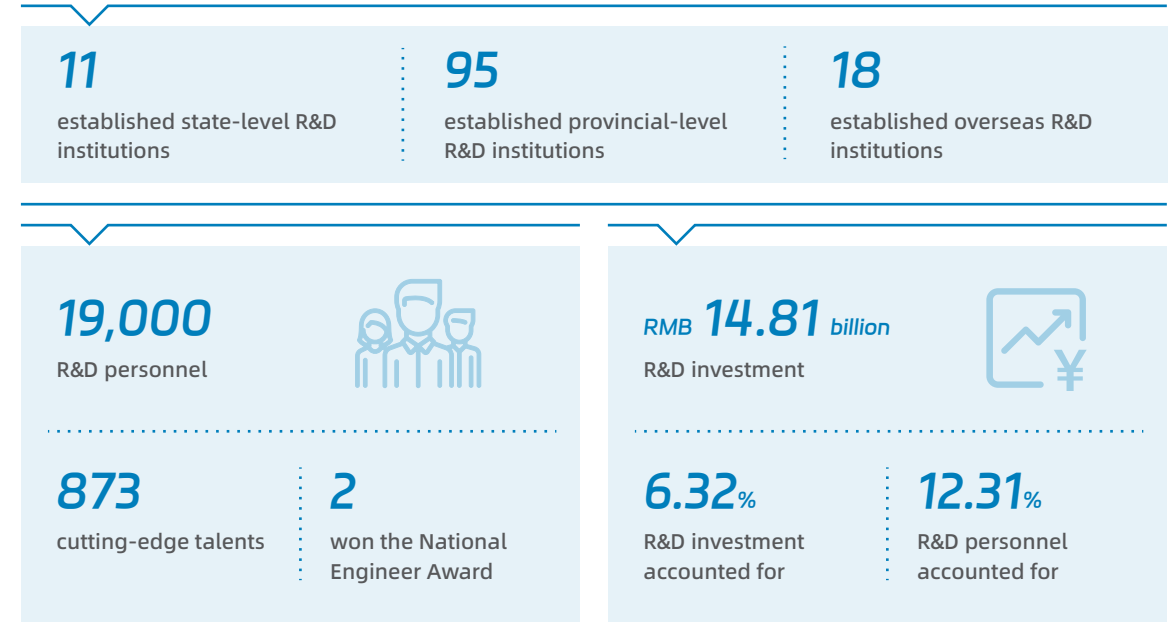
The Company firmly regards technological innovation as its strategic core and is committed to becoming the birthplace of original technologies and the leader of modern industrial chains, meanwhile, the Company presses ahead pilot projects and collaborative development for a strong transportation country in all respects. By deeply integrating the innovation chain, industry chain, capital chain and talent chain, the Company strives to achieve a high level of technological self-reliance and self-improvement, and aspires to become the backbone of national strategic technology.

### Innovative R&D System

The Company has formulated R&D innovation and technology management policies, such as the *Management Measures for Science and Technology Innovation Evaluation*, the *Guiding Opinions on the Reform of the Science and Technology System*, and the *Guidelines and Management Measures for the Construction of Overseas R&D Institutions*, to ensure standardized and systematic management of scientific research project application, new product development and other processes.

The Company has established a scientific and technological innovation system that is suitable for the new development stage, with "two verticals, two horizontals and one through". "Two verticals" refers to optimizing the technology research system and strengthening the product R&D system, promoting the transformation from "product-driven technology to technology-driven products", and continuously leading the development of the industry. "Two horizontals" refers to the establishment and improvement of collaborative innovation mechanisms and the construction of technology market-oriented trading mechanisms, accelerating internal technology transformation and incubation, achieving rapid transformation of technological achievements, industrial structure transformation and upgrading as well as in-depth development. "One through" refers to the construction of a scientific and technological innovation evaluation system, the optimization of innovation resources allocation, the improvement of scientific and technological management level, and the enhancement of the scientific and technological innovation efficiency. Meanwhile, the Company has actively undertaken the pilot tasks of national reform of S&T system and mechanism reform and national key technologies R&D programs, continuously improved the S&T innovation system, intensified its effort in key core technology R&D, accelerated major product research and development, and built an open, shared and win-win S&T innovation ecosystem.

As of the end of 2023, the Company has established 11 state-level R&D institutions, 95 provincial-level R&D institutions and 18 overseas R&D centers, with 19,000 R&D personnel, including 873 cutting-edge talents (including senior and above experts in CRRC Technology series), of which, 2 have won the National Engineer Award. In 2023, R&D investment accounted for 6.32%, R&D personnel accounted for 12.31%, and R&D investment was RMB 14.813392 billion.



## Coordinated Innovation Cooperation

The Company strives to strengthen cooperation with industry partners, builds professional platforms and jointly promotes technological innovation and market expansion. It has successfully signed 26 strategic cooperation agreements (group caliber) and continues to deepen industry exchanges and cooperation. Of which, the Company and China Railway are accelerating the formation of a new industrial development model of "dual track and dual cluster", and will work together to lay a solid foundation for the high-quality development of China's railway industry.

**26**  
signed strategic cooperation agreements

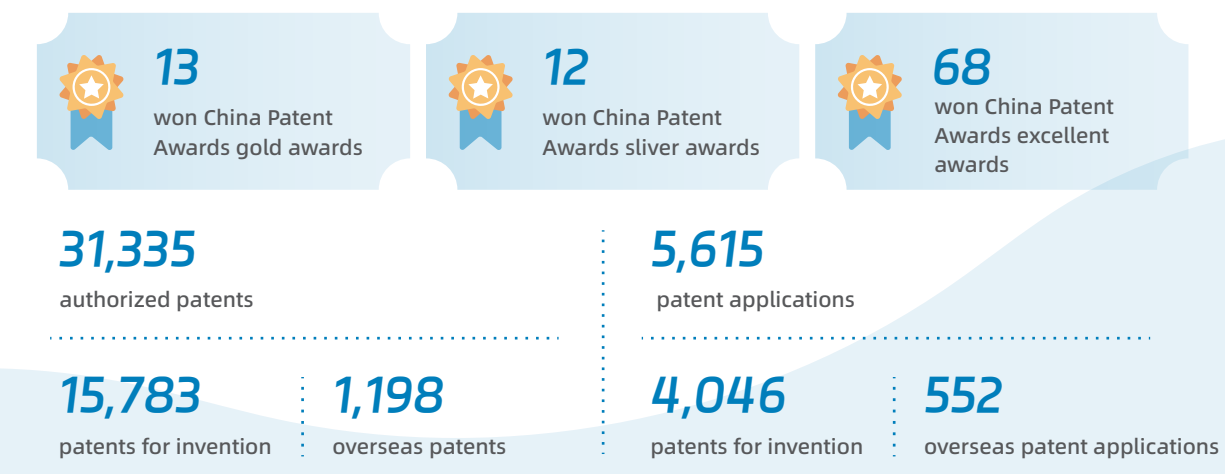
The Company has actively organized and participated in international seminars and exchanges on transportation industry. In September 2023, Sun Yongcai, Chairman of CRRC, attended the Global Sustainable Transport Forum and also attended the side meeting on "Digital Rail Mobility, Sustainable Intelligence Development" hosted by the Company on the same day. Sun Yongcai conducted in-depth discussions and exchanges with participating units around the theme of "assisting the transformation and development of low-carbon, digital and intelligent railways".

At the 15th International Exhibition on Transport Technology & Equipment, the Company showcased advanced transportation technology equipment and the latest innovative achievements, actively participated in platform dialogues, and made efforts to promote global transportation technology exchange and cooperation.

## Innovation Achievements

Led by technological innovation and driven by industrial breakthroughs, the Company has continuously improved its independent R&D and manufacturing capabilities, accelerated product updates and iterations, and sped up the serialization, lineage, standardization and modular research and development of core technologies and key components. By breaking through points and advancing towards system capability improvement, the Company has built a complete industry chain from basic components, core parts to key systems, and then to the entire vehicle.

The Company has been rated as Grade A for four consecutive years in the quality evaluation of state-owned enterprise patents by SASAC. The Company has won a total of 13 gold awards, 12 silver awards and 68 excellence awards in the China Patent Awards, and has won multiple honors such as excellence awards in quality and technology awards, national quality benchmarks, advanced organizations for performance excellence, and silver medals of ISO/TS 22163 certification. As of the end of 2023, the Company has accumulated 31,335 authorized patents, including 15,783 patents for invention and 1,198 overseas patents. There were 5,615 patent applications for this year, including 4,046 patents for invention and 552 overseas patent applications.





**Case : Development of Intelligent New Equipment for High-speed Rail Cleaning**

The Company has successfully developed and industrialized the green and efficient laser cleaning and welding integrated equipment for aluminum alloy car bodies in response to the demand for green and low-carbon development of urban rail transit equipment. The innovative achievements of the project include the scientific representation method of laser cleaning quality, the establishment of laser cleaning threshold model, and the development of integrated cleaning and welding processing heads, achieving stable control of the cleaning process and high-quality welding.



**Case : License Obtained for High Speed Railway Rescue Crane**

The successful acquisition of model qualification certificate and manufacturing license for the NSG1256 high-speed railway rescue crane developed by the Company marked the official launch and operation conditions of China's first rescue crane specifically designed for high-speed railways, solving rescue difficulties in special environments such as high-speed railway bridges and tunnels.



**Case : Chinese Urban Rail Trains Adopted by Portugal**

CRRC Tangshan provided the new urban rail train project to Porto, Portugal, which is a model for China's first export of urban rail trains to EU countries. The train adopts a 100% low floor design, providing a convenient and barrier free environment. Through advanced wireless communication system and passenger counting system, it has achieved intelligent maintenance and precise operation, gaining high praise from local citizens for "Made in China".



**Case : The Ningdong Hydrogen Powered Locomotive was Taken Offline**



The Company has successfully developed a hydrogen powered locomotive, which is currently the hydrogen powered locomotive with the highest installed power of hydrogen fuel cells, and also the first hydrogen powered locomotive in China to be transformed from a diesel locomotive. Its successful delivery marks another peak in hydrogen energy application and conversion technology in China, and also the strength to rebuild "green and intelligent" existing diesel locomotives.



**Case : The Independently Developed Products have Obtained EU TSI Certification**

The Sggns80 'type 80-foot container flat car independently developed by CRRC Shandong has successfully obtained European TSI certification. This model is widely favored by European customers for its light self-weight, diverse loading combinations and leading technical performance, with huge market potential.







# Value CRRC

CRRC China upholds the core values of "Abiding by Integrity and Responsibility, Insisting on Hard Work and Striving for Excellence", adheres to modern corporate legal principles such as the supremacy of law, authority with corresponding responsibility, adherence to procedures, honesty and trustworthiness, fairness and justice, strictly governs enterprises, operates transparently, strengthens institutional enforcement, implements punishment and prevention mechanisms, and builds an efficient, transparent and legal CRRC.

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Safeguarding Rights and Interests --- 70

### Contributions to SDGs:







## Improving the Governance

The Company always adheres to international corporate governance standards and optimizes its corporate governance structure. Pursuant to relevant laws and regulations, the Company has formulated regulations such as the *Articles of Association*, *Notice on Further Regulating the Construction of the Board of Directors of Subsidiaries*, *Interim Measures for the Evaluation of the Construction of the Board of Directors of Subsidiaries*, and *Detailed Rules for the Work of Full time External Directors* to build a modern corporate governance structure represented by "three meetings and one layer", continuously improve the corporate governance system and strengthen communication with regulatory authorities. The Board of Directors consists of 7 members, including 4 executive directors and 3 independent non-executive directors. The Board of Directors and the management are independent.

- 4 executive directors
- 3 independent non-executive directors

The Board of Directors has four specialized committees, namely Strategy, Nomination, Compensation and Audit Risk, all of which are composed of directors. The Company strengthens the system of full-time external directors and enhances communication through regular meetings, and has established a "100 external director pool" and an annual comprehensive evaluation mechanism to strengthen the management of external directors. The Company actively implements a professional manager system and strives to improve the level of corporate governance and operational efficiency.

In terms of performance evaluation for executives, the Company implements an annual performance evaluation mechanism, which includes performance in the assigned work area, individual target behavior, team collaboration, etc. The Company closely links the income of senior executives with the operational efficiency and performance evaluation results of the enterprise, and the evaluation indicators include quality and efficiency indicators, technological innovation indicators, etc. The compensation of senior executives includes basic salary and performance-based salary, which are determined based on the Company's annual performance and personal assessment. For those who violate national laws and regulations, as well as those who fail to perform or correctly perform their duties and cause losses to the Company's assets, the annual performance-based salary of the current year shall be deducted, or part or all of the performance-based annual salary and term incentive income already paid shall be recovered. The Company attaches great importance to cultivating employees' moral literacy and regulating their fulfillment of duties. When conducting routine and annual assessments of employees, the Company not only assesses their job responsibilities and completion of key tasks, but also evaluates their professional ethics and behaviors such as morals, ability, diligence, performance and integrity.

## Compliant Operation

The Company takes the compliance with laws, regulations and social norms as a prerequisite for sustainable development, behaves well as a "corporate citizen", fully implements the "rule of law" construction, builds a compliance management system, and abides by various business ethics & norms.

### Comprehensive Compliance Management Architecture

The Company emphasizes the importance of compliance culture construction, continuously strengthens the employees' concept of honest and compliant performance of duties, actively cultivates a legal culture atmosphere of leader-led, all-involved and proactive compliance, and firmly establishes the idea of "compliance is the core competitiveness".

The Company proposes compliance principles of comprehensive coverage, clear rights and responsibilities, practicality and efficiency, and coordinated linkage, with disciplinary inspection, audit risk and legal compliance as the main focus, so as to establish an all-round and dynamic internal control and compliance management system. The Company has formulated the *Compliance Management Measures* and the *Code of Business Conduct and Employee Integrity Compliance Handbook*, with great importance attached to compliance management and employee compliance training. By establishing a compliance committee, we ensure accurate identification, timely warning and proper response to compliance risks. The Company continuously improves compliance review, reporting, rectification, whistleblowing and accountability mechanisms.

### Tax Management

The Company insists on tax declaration and payment in accordance with the law. The Company focuses on strengthening tax risk management, ensuring that each subsidiary conducts at least one tax risk self-assessment annually, and reflects the self-assessment results and corrective measures in the annual tax summary report for comprehensive review and evaluation. Every year, a third-party organization issues an annual tax declaration audit report for corporate income tax, ensuring the accuracy, transparency and compliance of tax declaration and payment work.

## Risk Control

The Company follows the *Guidelines for Comprehensive Risk Management of Central Enterprises*, *Risk Management and Internal Control Manual*, *Basic Standards for Internal Control of Enterprises* and supporting guidelines, as well as the requirements of SASAC, CSRC, and HKSE for risk management and internal control. It closely adheres to the core of major risk prevention and resolution work, steadily promotes the construction of risk and internal control mechanisms and organizes risk control work.

### Risk Management

The Company has established a comprehensive risk management system, organized annual risk assessments for all departments and subsidiaries, identified five major types of risks: strategic, operational, market, financial and legal risk, and organized responsible units to respond to risks. Based on the annual risk assessment results, the Company has issued the *CRRC Risk Appetite Statement*, which outlines the business bottom line. The Company continuously improves the long-term mechanism of "early detection, early warning and early disposal" for major business risks, and enhances the scientific and precise prevention & control of major business risks. The Company promotes the application and efficiency conversion of the integrated audit risk control system. Based on the online operation of annual risk assessment and internal control evaluation, we gradually realize the online visualization and digitization of functions such as major project risk review, major risk event management and major risk mitigation indicators.



### Internal Audit

According to the *2023 Key Points for Internal Audit, Risk Management and Internal Control Work*, the Company has put forward requirements in actively promoting full coverage of audits, deepening and improving economic responsibility audits, strengthening audit supervision in key areas, increasing internal audit supervision in overseas enterprises, and standardizing and effectively conducting internal control audits. The Company fully implements the five-year audit plan, actively promotes management audits around the Company's development strategy, major initiatives, important projects, major funds, etc., and enhances the effectiveness of internal management operations.

## Strengthening Party Building

The Company closely revolves around "Xi Jinping thought on socialism with Chinese characteristics for a new era", with the learning, promotion and implementation of the spirit of the 20th National Congress of the Communist Party of China as the core, and regards Party building work as the key to leading the high-quality development of the Company. The Company's Party Committee has clearly proposed to take "leading breakthroughs" in Party building as the theme, with the goal of creating a "golden business card" for Party building. The Company fully implements the "Nine Ones" program of the high-speed rail pioneer in new era, systematically optimizes and upgrades the new breakthrough implementation path, comprehensively strengthens and improves Party building, and ensures that the comprehensive leadership of the CPC is upheld and strengthened.

The Company efficiently promotes theme education, ensuring its in-depth development through strict task decomposition and refinement. Through organizing special reading classes, education & training classes and in-depth research, we have strengthened the learning and practice of the CPC's innovation theory. By organizing training courses, conducting assessments and implementing the "Seven Grasp" project, we have strengthened our responsibility for managing and governing the Party, and improved the quality and effectiveness of the Party building work at grassroots level. This year, we held three batches of 10 special training courses to study and implement the Xi Jinping thought on socialism with Chinese characteristics for a new era and the spirit of the 20th National Congress of the Communist Party of China, with a total of more than 1,200 cadres trained in rotation.

more than 1,200  
cadres trained in rotation

## Clean Operation

### Improving Rules and Regulations

The Company strictly complies with relevant laws and regulations such as the *Anti-Corruption Law of the People's Republic of China* and the *Anti-Money Laundering Law of the People's Republic of China*, strengthens employees' awareness of integrity and self-discipline in their work, promotes the continuous deepening of anti-corruption and integrity, and maintains a clean and upright atmosphere in the enterprise. We held meetings on the construction of a clean and honest administration and anti-corruption work. Middle level and above leaders and the leadership teams of subsidiary companies signed a responsibility agreement for the construction of the Party conduct and of an honest and clean government. We also held collective anti-corruption conversations and meetings with leaders to highlight the implementation of the "two responsibilities" and focus on the "key few". The Company attaches great importance to supplier anti-corruption and has formulated relevant policies such as the *Supplier Management Measures* and the *Management Measures for Supplier Misconduct and Blacklist*, covering all suppliers. We have established a hierarchical management mechanism for supplier misconduct, where suppliers involved in corruption issues are blacklisted or identified as having significant misconduct based on their severity. Measures to address this include revoking the qualifications of qualified suppliers, suspending cooperation and prohibiting participation in new project cooperation. Meanwhile, we have required audit departments and disciplinary inspection organizations at all levels to audit and supervise supplier management work in accordance with their responsibilities.

The Company has conscientiously implemented the spirit of the Party's eight-point frugality code, resolutely corrected the "four forms of decadence", and strengthened the integrity and discipline. In accordance with the relevant spiritual requirements of the *Implementation Rules for the Eight-Point Frugality Code of the Central Committee* and the *Implementation Opinions on Strengthening Work Style Construction* issued by the General Office of the Central Committee and the General Office of the State Council, and in combination with practical work, the Company has formulated the *Implementation Rules for Strengthening Work Style Construction*, *Measures for Handling Discipline Inspection and Report Letters and Visits*, *Measures for Discipline Inspection Institutions to Conduct Discipline Inspection and Review Work*, *Measures for the Trial of Cases by Disciplinary Inspection Institutions* and *Measures for Supervision and Management of Disciplinary Inspection Cases*. Specific rules including to improve research methods, reduce meetings and events, reduce issuance of documents and briefings, reasonably arrange temporary outbound visits for official purposes, improve news and publicity work, practice frugality and effectively improve work style.

In 2023, the Company did not have any litigation cases involving corruption, money laundering, monopoly and other business ethics.

### Deepening Education and Training

The Company persistently does a good job in preventing corruption, insists on carrying out activities such as cultivating new trends with positive guidance, deepening warning education at the grassroots level, guides and helps cadres and employees to tighten the string of integrity and self-discipline, without touching the red line or exceeding the bottom line. This year, the Company organized two cadre warning education conferences, and reported by name 18 typical cases of violations against rules, discipline and law, with nearly 12,000 Party members and cadres being educated. The Company has carried out employee training on moral standards in the form of distributing the *Employee Integrity and Compliance Handbook*, covering all employees. The training content covers: good faith and law-abiding, integrity and self-discipline, prohibition of insider trading, avoidance of conflicts of interest, and close attention to the compliance status of business partners.

2  
cadre warning education  
conferences

12,000  
educated Party members  
and cadres

### Implementing Discipline and Accountability in a Strict Manner

The Company focuses on disciplinary accountability in clean management, adheres to case investigation and punishment, promotes reform through cases and governance through cases. The Company conducts precise governance in key areas, key links and key positions, with special supervision as the starting point. It adheres to a high position, zero tolerance, heavy fists and soil removal, and draws lessons from investigated cases to plug management loopholes and improve management functions.

### Smoothing Whistleblowing Channels

The Company, with great importance to the responsibility of anti-corruption and integrity risk prevention & control, has formulated the *Measures for Handling Discipline Inspection and Report Letters and Visits*, established a whistleblower protection mechanism, improved the effectiveness of punishing corruption, strengthened the restraint and supervision of power operation, and actively maintained fair competition in the market. The Company has formulated internal systems such as the *Whistleblowing Management Process* in accordance with the requirements of the national disciplinary inspection and supervision authorities, and standardized the whistleblowing handling process. The Company opens up diversified and continually unblocked whistleblowing channels, builds a smart regulatory platform, and arranges dedicated personnel to handle tip-offs and complaints in a permanent reporting department. The whistleblower can report through email, phone, reporting box or personally visiting the reception room. The company regularly collects and summarizes problem clues, forms a work ledger, and conducts regular analysis and disposal.

## Safeguarding Rights and Interests

### Investor Relations Management

In accordance with the *Company Law of the People's Republic of China*, the *Securities Law of the People's Republic of China*, the *Guidelines on Investor Relations Management of Listed Companies*, *Investor Relationship Management Measures* and other relevant laws, regulations and rules, the Company maintains the fairness, impartiality and openness of information disclosure, and protects the right to information and other legitimate rights and interests of investors. We timely prepared and published daily media monitoring information, daily capital market reports and public relations event analysis, tracked stock price movements and analyzed shareholding structures to provide timely and accurate information support to the Directors, Supervisors and Senior Management. The Company insisted on maximizing the interests of shareholders and protecting the legitimate rights and interests of investors as the core of its investor relations efforts, and continued to improve the quality of information disclosure. We actively engaged in communication and exchanges with investors and potential investors through various means to continuously increase the investors' understanding and recognition of the Company.

The Company adopted diversified performance promotion activities, combined with the characteristics and focus of investor types, and continuously enriched communication forms while conducting regular investor communication activities. The Company completed a series of offline activities for annual and semi-annual performance releases; convened 4 regular performance report phone conferences and 3 performance briefing meetings, interacted with investors through the internet, and responded to the concerns of capital market investors; we continued to implement a dedicated investor communication mechanism, with dedicated personnel responsible for answering investors' phone calls, receiving investors' emails, following investors' inquiries on the e-interactive platform, patiently and promptly responding to investors' concerns, and actively receiving offline visits from various institutional investors.

4  
convened performance  
phone conferences

3  
convened performance  
briefing meetings

In 2023, the Company's investor relationship management work was widely recognized by the capital market, regulatory authorities and professional institutions: we won the "Top 100 Value Listed Companies on the Main Board" award in the 17th China Listed Company Value Selection, the "Tianma Award" for investor relations in the 14th China Listed Companies, and the "Excellent Practice Case" award at the Annual Report Performance Explanation Conference of the China Association for Public Companies.



Case : Holding an Innovative Reverse Roadshow Event

The Company, jointly with its listed subsidiaries, Times New Materials and Times Electric, held a themed reverse roadshow titled "Focusing on New Energy, Insight into Core Opportunities" in Zhuzhou, Hunan. Nearly a hundred investors and securities analysts participated in the event. During the event, the Company's executives delivered a keynote speech on the development of the Company's new industry, providing detailed answers to questions about business development and future plans. They also invited attendees to visit production bases and exhibition centers for wind power and new materials.



Information Disclosure

In strict accordance with relevant laws and regulations such as the *Company Law of the People's Republic of China*, the *Securities Law of the People's Republic of China*, and the *Measures for the Administration of Information Disclosure of Listed Companies*, the Company has revised and improved multiple policies such as the *Measures for the Administration of Information Disclosure*. The Company actively implements the requirements of the government, regulatory agencies, shareholders and other relevant parties for information disclosure, improves the quality and transparency of information disclosure through multiple channels and paths, innovates information disclosure forms, and strictly abides by information disclosure rules to achieve true, accurate, complete, timely and fair information disclosure.

The company has issued more than 300 announcements in the stock market, corporate bonds and interbank markets, including annual reports, semi-annual reports, quarterly reports and related documents, as well as announcements of resolutions of the shareholders' meeting, board of directors and the supervisory board, and other major matters, achieving legal and compliant information disclosure throughout the year.

In 2023, the Company's information disclosure work was widely recognized by the capital market, regulatory authorities and professional institutions. For 8 consecutive years, it was awarded the A-level honor of annual information disclosure work evaluation for listed companies on the Shanghai Stock Exchange, and its information disclosure work cases were selected as the best practice cases in corporate governance by the China Association of Public Companies in 2023. It was also awarded the gold medal of the "Foresight Award" for the 2022 annual report by the American Media Professional Alliance LACP.



Awarded the A-level honor of annual information disclosure work evaluation for listed companies on the SSE for 8 consecutive years



Information disclosure work cases were selected as the best practice cases in corporate governance by the China Association of Public Companies in 2023



awarded the gold medal of the "Foresight Award" for the 2022 annual report by the American Media Professional Alliance LACP

Outlook for the Future

CRRC will strive for innovation with unwavering determination, forge ahead with enterprise and fortitude; keep going without stopping and welcome a promising future. In 2024, CRRC will focus on the long-term, global perspective, innovation and change, continuously promote ESG integrated development, collaborative progress and comprehensive improvement, constantly strengthen value creation, innovation leadership and reform empowerment, and promote the digital, high-end, green, international, collaborative and branding construction. We will perceive trends scientifically, rationally and accurately, and embrace changes bravely, firmly and steadily.

**Enhancing Party building to guarantee high-quality development.** Adhering to the CPC leadership and strengthening Party building is the overall principle for us to do our work well. We adhere to General Secretary Xi Jinping's important ideology on Party building as the guiding principle, take "leading innovation" as the theme and the new breakthrough in the construction of the "golden business card" of Party building as the goal, systematically improving the overall quality of Party building, and providing strong guarantees for accelerating the construction of a world-class CRRC.

**Deepening reform to stimulate development vitality.** We will focus on optimizing governance, enhancing core functions and improving core competitiveness, solidly carry out reform and deepening actions, promote market-oriented operation mechanism reform, and deepen business restructuring and structural adjustment. We will continue to deepen benchmarking and enhance compliance management, accelerate green and low-carbon transformation, promote safe development, and build a solid foundation for development through risk management.

**Creating values to drive market expansion.** We will adhere to strategic leadership, support business layout with resource allocation, firmly establish the concept of "market is king", focus on promoting high-quality development, create value for users, innovate market management models, cultivate the railway equipment market meticulously, consolidate and expand the urban rail transit market, explore new industrial markets, and strengthen the strategic layout of international markets.

**Conducting Innovation driving to support industrial upgrading.** We prioritize technological innovation in all work, adhere to the innovation driven development strategy, focus on developing new quality productive forces, improve the innovation system, enhance innovation capabilities, and transform innovation achievements. We continuously improve enterprise efficiency and effectiveness through digital transformation and industrial digitization, accelerate the improvement of market responsiveness, provide users with safer, more efficient and better services, inject new impetus and provide new support for high-quality development.

**Saving energy and protecting environment to accelerate low-carbon transformation.** We will firmly grasp the strategic opportunities of energy structure adjustment, focus on optimizing business structure, and strengthen low-carbon new industries; we will focus on improving energy efficiency and promoting technological innovation in energy conservation and environmental protection; we will focus on low-carbon product design to assist in green and zero carbon transportation; we will focus on green energy supply and innovate multi-energy complementary models; we will focus on low-carbon solutions and provide green high-end services; we will focus on the construction of low-carbon industrial chains and create a carbon neutrality ecosystem.

We will work together with stakeholders to achieve win-win cooperation, continuously pursue economic, social and environmental co-prosperity, and jointly build a better future for humanity. We will continue to contribute Chinese strength and wisdom to the innovative development of global rail transit, and demonstrate our role in promoting the construction of a community with a shared future for mankind.

# Appendix

## Key Performance Indicators

### Environmental Scope

	Indicator	Unit	2023
<b>• Emissions</b>			
Exhaust pollutant discharge	Sulfur dioxide emissions	t	86.50
	Nitrogen oxide emissions	t	217.63
	VOCs	t	3,101.41
	Mercury	t	0
	Heavy metals	t	0
	Dioxin	t	0
Wastewater pollutant discharges	Sewage discharge	t	9,291,640.41
	Industrial wastewater discharge	t	6,598,871.76
	Domestic wastewater discharge	t	2,692,768.65
	Wastewater reduction	t	795,505.90
	Industrial wastewater reduction	t	183,309.64
	Domestic wastewater reduction	t	612,196.26
	COD	t	371.15
	Ammonia nitrogen	t	34.92
	Total greenhouse gas emissions	tCO <sub>2</sub> eq	2,008,714.44
	Greenhouse gas emissions (category I)	tCO <sub>2</sub> eq	305,114.60

	Indicator	Unit	2023
Greenhouse gas emissions	Greenhouse gas emissions (category II)	tCO <sub>2</sub> eq	1,703,599.84
	Reduction of greenhouse gas emissions	tCO <sub>2</sub> eq	95,048.29
	Greenhouse gas emission intensity (greenhouse gas emissions per RMB 10,000 of output value)	tCO <sub>2</sub> eq/RMB 10,000	0.0788
	Greenhouse gas emission intensity (category I)	tCO <sub>2</sub> eq/RMB 10,000	0.0120
	Greenhouse gas emission intensity (category II)	tCO <sub>2</sub> eq/RMB 10,000	0.0668
Solid waste discharge	Total amount of hazardous waste	t	24,013.80
	Generation of hazardous wastes per RMB 10,000 output value	t/RMB 10,000	0.0009
	Total amount of non-hazardous wastes	t	507,057.41
	Generation of non-hazardous wastes per RMB 10,000 output value	t/RMB 10,000	0.0199
<b>• Use of resource</b>			
	Total energy consumption	tce	587,946.57
	Fossil energy consumption (direct)	tce	180,267.96
	Non-fossil energy consumption (direct)	tce	10,020.94
	Purchased energy (indirect)	tce	397,657.67
	Proportion of non-fossil energy used	%	5.27
	Total water consumption	t	68,009,766
	Fresh water consumption	t	15,596,741
	Circulating water consumption	t	52,413,025
	Proportion of circulating water consumption	%	77.07
	Water consumption per unit output value	t/RMB 10,000	2.6678
	Total usage of packaging materials	t	27,732.11



## Social Scope X

Indicator		Unit	2023
<b>● Employment</b>			
Total number of employees		Person	154,292
Number of full-time employees		Person	154,292
Number of part-time employees		Person	0
Number of employees from the Chinese Mainland		Person	147,502
Number of employees from Hong Kong, Macao, Taiwan, and foreign countries		Person	6,790
Proportion of male employees over total employees		%	83.09
Proportion of male directors of the headquarters		%	100
Proportion of senior male employees in the headquarters		%	83.33
Proportion of female employees over total employees		%	16.91
Proportion of female directors in the headquarters		%	0
Proportion of senior female employees in the headquarters		%	16.67
Proportion of employees by age group	Proportion of employees aged below 30 (inclusive)	%	16.83
	Proportion of employees aged 30-50 (inclusive)	%	63.86
	Proportion of employees over 50 years old	%	19.31
Number of ethnic minority employees		Person	7,920
Number of new employees		Person	6,896
Number of new female employees		Person	1,172
Number of new male employees		Person	5,724
Number of newly hired fresh graduate employees		Person	3,787
Number of newly recruited employees		Person	3,109
Employee turnover		%	1.53
Turnover rate of male employees		%	1.32
Turnover rate of female employees		%	0.21
Turnover rate of employees aged below 30 (inclusive)		%	0.55
Turnover rate of employees aged 30-50 (inclusive)		%	0.92

Indicator		Unit	2023
Turnover rate of employees aged above 50		%	0.05
Turnover rate of domestic employees		%	1.48
Turnover rate of foreign employees		%	0.05
Educational background of employees	Proportion of doctoral candidates	%	0.39
	Proportion of postgraduates	%	10.59
	Proportion of undergraduates and below	%	89.02
Coverage of social insurance		%	100
<b>● Health and safety</b>			
Number of work-related injury/ death		Person	17
Rate of employee deaths due to work		%	0
Lost working days due to work-related injuries		Day	1,087
Number of safety accidents		No.	17
Investment in work safety		RMB 10,000	56,859.92
Number of people receiving training on work safety		Person	488,899
Occupational health expenses		RMB 10,000	2,842.30
Occupational injury insurance coverage		%	100
<b>● Development and training</b>			
Employee training coverage		%	100
Proportion of male employees receiving training		%	100
Proportion of female employees receiving training		%	100
Proportion of senior management employees receiving training		%	100
Proportion of mid-level management employees receiving training		%	100
Proportion of ordinary employees receiving training		%	100
Times of employee training		Time	373,809
Annual training expenses		RMB 10,000	22,160.22
Total hours of annual training		Hour	14,023,984
Average training hours of employees		Hour	103
Average training hours of male employees		Hour	105

Indicator	Unit	2023
Average training hours of female employees	Hour	97
Average training hours of senior management employees	Hour	120
Average training hours of mid-level management employees	Hour	87
Average training hours of ordinary employees	Hour	118
<b>● Labor standards</b>		
Labor disputes	Accident	148
<b>● Supplier management</b>		
Number of suppliers by geographical region	No.	20,071
Number of suppliers in Chinese Mainland	No.	19,830
Number of suppliers from Hong Kong, Macao, Taiwan and foreign countries	No.	241
Number of suppliers reviewed	No.	11,225
Number of suppliers suspended for noncompliance	No.	52
<b>● Product liability</b>		
Number of recalled products and recall rate	Pcs.,%	0, 0
Number of customer complaints	Time	221
Rate of resolution of complaints	%	100
Customer satisfaction	%	99
<b>● Community investment</b>		
Total duration of investment in social welfare activities	Hour	185,000
Number of people involved in social welfare activities	Person	5,700
Amount of funds invested in social welfare activities	RMB	19,708,800
<b>● Scientific and technological innovation</b>		
R&D investment	RMB 10,000	1,481,339.20
Proportion of R&D investment	%	6.32
Proportion of R&D employees	%	12.31
Number of cutting-edge talents	Person	873
Patent	Pcs.	5,615

## Governance Scope >

Indicator	Unit	2023
<b>● Corporate governance</b>		
Number of meetings of the Supervisory Committee	Time	5
Average tenure of Supervisory Committee members	Year	3
<b>● Board of Directors</b>		
Number of board directors	Person (s)	7
Number of board meetings held	Time	10
Average tenure of Board of Directors members	Year	3
<b>● Compliant operation</b>		
Number of legal compliance training	Time	333
Hours of legal compliance training	Hour	929
Number of people receiving training on legal compliance	Person	29,836
Number of training sessions on anti-corruption	Time	89
Hours of training on anti-corruption	Hour	178
Number of people receiving training on anti-corruption	Person-time (10,000)	2.67
Number of times pushing articles and cases related to anti-corruption topics	Time	533
Number of concluded legal cases regarding corrupt practices brought against the issuer or its employees during the reporting period	No.	0
<b>● Investor relations and shareholder equity management</b>		
Number of shareholders' meetings held	Time	2
Attendance rate of directors at shareholders' meetings	%	85
<b>● Economic performance</b>		
Total assets	RMB 10,000	471,791,74
Total operating revenue	RMB 10,000	234,261,51
Revenue growth rate	%	5.08
Total profit	RMB 10,000	16,373,00
Growth rate of total profit	%	1.57
Weighted average return on equity attributable to common shareholders	%	7.41
Various taxes	RMB 10,000	11,726,28



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## Appellation

Full name of the Company	Abbreviations in the report
the State-owned Assets Supervision and Administration Commission of the State Council	SASAC
China Securities Regulatory Commission	CSRC
Shanghai Stock Exchange	SSE
The Stock Exchange of Hong Kong Limited	SEHK
CRRC Dalian Locomotive & Rolling Stock Co., Ltd.	CRRC Dalian
CRRC Tangshan Co., Ltd.	CRRC Tangshan
CRRC Shenyang Co., Ltd.	CRRC Shenyang
CRRC Qiqihar Rolling Stock Co., Ltd.	CRRC Qiqihar
CRRC Yangtze Group Co., Ltd.	CRRC Yangtze
CRRC Shandong Wind Power Co., Ltd.	CRRC Shandong Wind Power
CRRC Qishuyan Co., Ltd.	CRRC Qishuyan
China State Railway Group Co., Ltd.	China Railway
CRRC Shandong Co., Ltd.	CRRC Shandong
Zhuzhou Times New Material Technology Co., Ltd.	Times New Material
Zhuzhou CRRC Times Electric Co., Ltd.	Times Electric

## Suggestions and Feedback

Dear readers,  
Greetings. Thank you for reading CRRC Environmental, Social and Governance (ESG) report. In order to improve the quality and level of the report, we sincerely hope that you can provide valuable opinions and suggestions on this report. We look forward to your reply!

Close-ended question (please tick on your answer.)

Please evaluate the extent to which this report reflects the impact of CRRC on the economy, society and environment:

Very good    good    Fair    Poor    Very poor

Please evaluate the response and disclosure of this report to the concerns of stakeholders:

Very good    good    Fair    Poor    Very poor

Please evaluate the clarity, accuracy and completeness of the information, indicators and data disclosed in this report:

Very good    good    Fair    Poor    Very poor

Please evaluate the readability of the content of this report:

Very good    good    Fair    Poor    Very poor

Please provide an overall rating of this report:

Very good    good    Fair    Poor    Very poor

Open-ended questions

- What do you think are the most satisfying aspects in this report?
- What other information do you think needs to be disclosed in this report?
- What are your comments and suggestions on the ESG work of CRRC?

Please leave your personal information if available:

Name: \_\_\_\_\_

Job: \_\_\_\_\_

Institution: \_\_\_\_\_

Tel.: \_\_\_\_\_

E-mail: \_\_\_\_\_

Address: \_\_\_\_\_