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Connecting the World
through Better Mobility



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CRRC Corporation Limited (CRRC)

2020

CRRC Corporation Limited (CRRC)
Social Responsibility Report

2020 Social Responsibility Report



About the Report

As the sixth annual Social Responsibility Report released since the establishment of CRRC Corporation Limited (hereinafter referred to as “China CRRC”, “CRRC”, “the Company” and “We”), this Report accurately reflects China CRRC and its subordinate enterprises’ economic, social and environmental responsibilities aiming to achieve high-quality and sustainable development.

The reporting period of this Report is from January 1, 2020 to December 31, 2020. All data hereunder has been sourced from the Company’s official documents, statistical reports and financial reports, as well as social responsibility performance information collected, summarized and reviewed by the Company. Unless otherwise indicated, the currency in this Report is RMB.

The Report has been prepared under the *Guidelines for State-owned Enterprises Directly under the Central Government on Fulfilling Social Responsibilities and Guidelines for State-owned Enterprises on Better Fulfilling Social Responsibilities* issued by the State-owned Assets Supervision and Administration Commission (SASAC), the *Environmental, Social and Governance Reporting Guide* issued by the Hong Kong Stock Exchange, the *Guidelines on Listed Companies’ Environmental Information Disclosure* and the *Guidelines on Compiling Corporate Social Responsibility Report* issued by the Shanghai Stock Exchange, the *Guidelines on Corporate Social Responsibility Reporting for Chinese Enterprises (CASS-CSR4.0)* issued by the Chinese Academy of Social Sciences, the *GRI Standards* issued by the Global Sustainability Standards Board (GSSB), the *Guidance on Social Responsibility (ISO 26000:2010)* issued by the International Organization for Standardization and the UN Sustainable Development Goals (SDGs).

You can find this Report in PDF and more information pertaining to corporate social responsibilities on the “Social Responsibility” page of the CRRC Portal (Website: <http://www.crrccg.cc>).

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Responsibility Features

Fulfilling our mission by aiming for grand goals



In 2015, CNR and CSR merged into CRRC Corporation Limited following the principle of “future-oriented merging on an equal footing after going through standardized procedures”. CRRC has become the world’s largest supplier of rail transit equipment, reshaping the world’s rail transit equipment industry.

In the past five years, CPC General Secretary Xi Jinping has inspected CRRC three times. His instructions and expectations have inspired us to forge ahead. Bearing in mind his words, we adhere to the goal of seeking development as our first priority, strive to fulfill the responsibility of “serving our country by developing industry”, make every effort to rapidly develop into a large size world-leading rail transit equipment supplier with the most complete product lines and cutting-edge technologies.

Becoming a role model through hard work during the “13th Five-year Plan” period

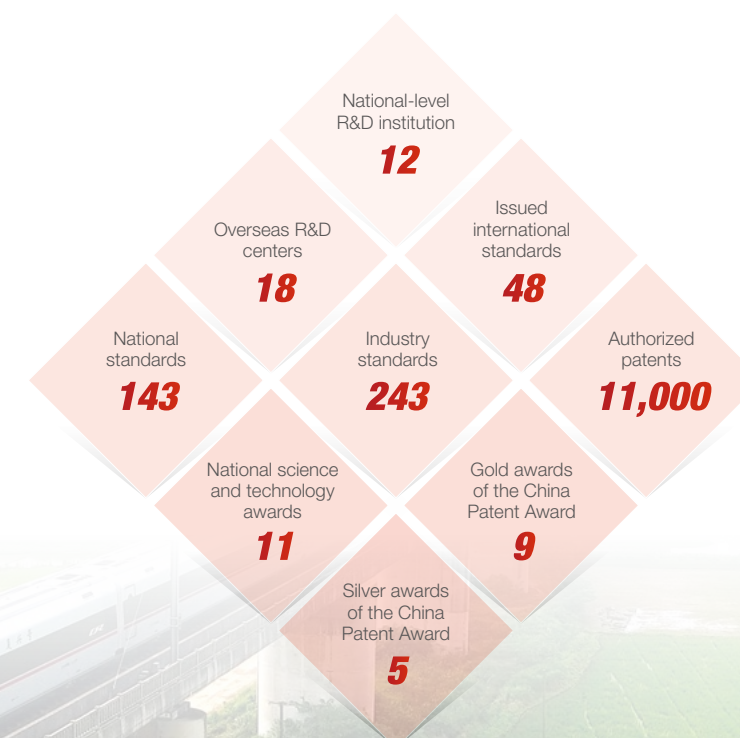
The new CRRC has not only inherited the century-old legacy of China’s rail transit equipment manufacturing, but also carried the dream of enabling China’s high-speed trains to go global. The “13th Five-year Plan period” was the first five years of CRRC after its merge in 2015. In the past five years, we have forged ahead and become a model company that implements new development philosophy, fulfills corporate social responsibilities, and builds a world-renowned brand image.

Our reforms have paid off in an all-round way

We have always adhered to the direction of market-oriented reforms, adapting to changes and opening up new horizons through reforms. CRRC was established through merge, the first case of the merge of an A-share company and an H-share company. We have enhanced the top-level policy design in the reform, formulated and implemented the “1+20” programmatic document, and made breakthroughs in the “double-hundred action”, “mixed-ownership reform” and “scientific and technological SOE reform”, becoming the pioneer of comprehensive reform in multiple fields. The disposal of zombie enterprises and reduction of levels of management have achieved the expected goal, and major reform measures such as business integration have been implemented with success. The special actions for the three systematic reforms have been deepened and substantiated, and remarkable progress has been made in reversing the tendency of the headquarters developing with the traits of government agency.

Technological capabilities have improved across the board

Insisting on self-reliance and independence in technological development, we have grown from a follower to a leader in this regard. CRRC has 12 national-level R&D institutions and 18 overseas R&D centers. In the past five years, we have issued a total of 48 international standards, 143 national standards, and 243 industry standards, and held 11,000 authorized patents; obtained 11 national science and technology awards, including 9 gold awards of the China Patent Award, 5 silver awards, and 63 awards of excellence. We have comprehensively promoted the implementation of major scientific and technological research projects, successfully developed standardized and serialized rail transit equipment products, and accelerated equipment upgrades. A lot of major scientific and technological innovations have emerged, including “Fuxing” bullet trains, 600 kph maglev trains, urban rail transit vehicles, and core systems. General Secretary Xi Jinping praised CRRC that “the Fuxing high-speed train has taken a crucial step in developing from a follower to a leader.”





The industrial landscape has been upgraded in an all-round way

We have strengthened strategic leadership, focused on the main businesses, further developed our five major businesses, and expanded our product lines, making sustained efforts to meet and guide the diversified market demand. In the past five years, the Company has newly built EMUs, electric locomotives, diesel locomotives, passenger trains and freight trains, which has helped drive the modernization of China's rail transit equipment; our share in the growing market of domestic urban rail transit has reached 97%, gradually opening up the whole rail transit equipment market; in terms of emerging industries, the Company has a complete industry chain in wind power equipment, with the newly installed wind power equipment ranking among the top six in the country, the wind turbine motor ranking the first, the wind turbine blades becoming the second, enjoying considerable advantages in core components; we made the world's first trackless Autonomous Rail Rapid Transit (ART) system, which has been put into use in 7 cities in China; the sales of deep ocean robots used for digging trenches and installing cables and remotely operated underwater vehicles (ROVs) have been ranking the first and third in the world respectively; we made the first deep-sea robot with the largest horsepower in the world, which could dive to 5,760 meters deep; the electric drive system for mining dump trucks was developed from scratch and reached the top level in the world, becoming one of the participants in making up the shortcomings in our nation's energy equipment industry; our self-developed electric drive system for 110-ton mining dump trucks has filled the gap in the global industry; modern service business has advanced, successfully building platforms for industrial investment, industry-financing integration, and real estate management; we have made sustained efforts to optimize overseas business, expanding our products and services to more than 100 countries and regions around the world.

Brand value has improved across the board

We have been building our brand with value and deeply promoting the integration of products, services, responsibilities and corporate culture. We adhere to the strategy of improving the Company through developing corporate culture, build a common vision for the Company, shape the core values, enhance our brand communication, and motivate all employees to unite and innovate. CRRC's brand value ranks first in the domestic machinery manufacturing industry, and the Company continuously ranks among the top in the list of "Most Admirable Chinese Companies".

Aiming higher during the "14th Five-year Plan" period

The world today is undergoing major changes unseen in a century. We will size up the situation, identify and adapt to changes, and forge new opportunities amid crises. Going forward, CRRC will shoulder new missions, seize new opportunities, plan for new development, address new challenges, and demonstrate new achievements:

The first step is to build CRRC into a world-class company by the 10th anniversary of its establishment. By 2025, CRRC will become a competitive world-class high-end equipment manufacturer and system solution provider with rail transit equipment as the core. The Company will realize digitalized, high-end, diverse, international, and coordinated development, and present first-class business performance, business structure, management system, corporate image, and party building. Its strength will be close to or reaching the international top level. We will spare no effort to build it into a respected world-class company and deliver a world-renowned brand.

The second step is to build CRRC into a world-renowned company by the 20th anniversary of its founding. By 2035, CRRC will become a respected world-class enterprise with strong comprehensive competitiveness, great market appeal, remarkable brand awareness, strong global influence and good social reputation. CRRC will take a prominent position in the global high-end equipment value chain, obtain the core position in the world-class advanced industrial clusters, and become the backbone in the development of China's strong transportation network in the new era. In the process of building a community with a shared future for mankind, CRRC will strive to make important contributions to global economic development and social progress and fully demonstrate our value, earning wide recognition of the international community.

Standing at the intersection of two centenary goals and taking into account CRRC's grand blueprint, we will bravely shoulder new missions and scale new heights in striving to build CRRC into a respected world-class company during the 14th Five-year Plan period.

Responsibility Features

Joining Hands in the Fight against COVID-19

In 2020, the COVID-19 pandemic became rampant across the world. CRRC earnestly studied and implemented the spirit of General Secretary Xi Jinping's important instructions on COVID-19 prevention and control, and deployed our work in accordance with relevant requirements of SASAC, tackled the challenge head-on and swiftly put in place prevention and control measures. We achieved zero infections for on-the-job after-sale service personnel, zero infections for all employees after the resumption of work and production, and zero deaths among confirmed cases.

CRRC made a donation of money and materials worth RMB 50 million yuan to areas hit hardest by COVID-19, and more than 60,000 CPC members of CRRC donated RMB 8.868 million. Located in Wuhan, CRRC Yangtze Co., Ltd. devoted itself to the protection of Wuhan against the virus, and was awarded the title of "Exemplary Group among CSOs in Fighting COVID-19".

Comprehensively combating COVID-19

Faced with the raging COVID-19 pandemic, CRRC put people's life at the top priority. We mobilized our employees immediately, and made sustained efforts to improve internal epidemic prevention and control measures, providing guidance to employees to ensure their health and safety. We assisted areas severely hit by the virus and supported local governments, demonstrating the Company's responsibility.

Timely coordination and efficient management

We took prompt action, issued the *Notice on the Prevention and Control of COVID-19*, made arrangements and requirements for preventing and controlling COVID-19, formulated a Three-Level Response Mechanism and Three Working Mechanism, and established a complete set of command system and operation mechanism with CRRC characteristics, so as to support the fight against the epidemic.

Three-Level Response Mechanism

The Emergency Command Center

The Emergency Command Center, headed by Sun Yongcai, Chairman of CRRC, is responsible for the leadership in emergency management of the whole Company.

Emergency Command Centers of Subsidiaries

Emergency Command Centers of subsidiaries take the principal person in charge as the group leader responsible for the epidemic prevention and control within the scope of their company.

The Emergency Command Center for Wuhan Area

The Emergency Command Center for Wuhan area takes CRRC Yangtze, CRRC Changchun Railway Vehicles, CRRC Qingdao Sifang and CRRC ZELC as main members to uniformly deploy, coordinate and be responsible for the emergency management of COVID-19 in Wuhan.

Joint Control Mechanism

Three Working Mechanism

The Emergency Response Working Group

The Emergency Response Working Group is responsible for comprehensively coordinating in the prevention of COVID-19 within the CRRC, releasing emergency prevention and control work arrangements, collecting daily statistics on personnel's health conditions, and notifying the daily situation of COVID-19 prevention and control.

The Production and Operations Working Group

The Production and Operations Working Group is responsible for the production arrangements after the Spring Festival, adjusting the business plan according to the situation, and assisting in carrying out the relevant work on epidemic prevention.

After-Sales Liaison Working Group

After-Sales Liaison Working Group is responsible for ensuring the safety of after-sales service personnel of railway transport and urban railways, and coordinating in emergency responses of COVID-19 prevention at stations, sections and institutes.

Full deployment free of obscure corners

We took the COVID-19 epidemic prevention and control as an important task with full devotion, so as to leave no obscure corners and effectively protect our staff's physical and mental health.

The development of COVID-19 prevention and control information management system

We adopted the method of employees' self-reporting via mobile phones to realize the unified submission and automatic data collection of epidemic information and the Company's epidemic prevention work arrangements and emergency supply demand and allocation information, so as to carry out rapid statistics and orderly reporting, as well as timely, accurately and comprehensively grasp the health conditions of all employees and their families, especially the health conditions and the emergency supplies' allocation of after-sales service personnel and the personnel in areas hit hardest by the virus.

The launch of the online video supervision and inspection platform

We made an innovation to launch the Online Video Supervision and Inspection Platform. Beginning on February 14, leaders of the Company would inspect (spot check) the epidemic prevention and control work of their affiliated enterprises via online video meetings, which covered all subsidiaries and after-sales service stations, opening up the connection channels between CRRC's Emergency Command Center and front-line operation units, so as to ensure that no obscure corners were left in preventing and controlling COVID-19.

The construction of CRRC's digital epidemic prevention line of defense

We independently developed the "AI Senseless Temperature Measurement and Attendance System", using artificial intelligence, facial recognition and other advanced technologies to achieve a 24/7 service of 3-5 meters remote intelligent recognition, accurate temperature measurement and data storage. Such system effectively avoided direct contact transmission as employees could accurately be identified without taking off their masks and hats, and facilitated the digital, intelligent and scientific management of employees entering the workplace during the epidemic.

The coordinated procurement of protective supplies for COVID-19 prevention

We convened coordination meetings for the procurement of protective supplies for emergency COVID-19 prevention and control, gave play to the advantages of CRRC as a whole, and tried every means to guarantee the supply, with a view to ensuring employees' physical and mental health; we established a daily coordination meeting system for protective supplies to summarize and report each company's stock and procurement of epidemic prevention and control supplies, and took the initiative to help the subordinate enterprises with large shortage of supplies coordinate the sources of goods, which greatly alleviated the shortage.



The full protection of overseas employees' safety and health

Case

When the domestic COVID-19 situation was moving towards a positive direction, the overseas pandemic situation was turning grim. CRRC continued to extend its solicitude and caring for overseas after-sales service personnel and provide them with guidance on routine COVID-19 prevention, formulate overseas prevention and control plans and contingency plans, and secure supplies for pandemic prevention and control, so as to fully protect the safety and physical health of overseas personnel.

CRRC Ziyang, with after-sales service personnel in many countries, regards protecting overseas personnel's health and safety as an important responsibility. CRRC Ziyang formulated the *Administrative Measures for the Maintenance and After-sales Service Personnel during the Pandemic*, provided sufficient protective supplies, regulated the requirements for disinfection and the spot check system, and exerted all efforts to ensure the health and safety of each overseas employee through a series of prevention measures.

CRRC as the SOE with compassionate care

Bearing the responsibility of a SOE in mind, we exerted all efforts to allocate resources, actively organize staff donation, participated in the fight against COVID-19 with a strong sense of responsibility and mission, so as to do our part in winning the defense of Wuhan, Hubei and the whole nation for COVID-19 prevention and control.

CRRC donated more than RMB 41 million in cash, tens of thousands of medical masks and other large quantities of supplies. In addition, more than 9,600 after-sales service staff held their ground to ensure the unimpeded railway supplies, displaying CRRC's sense of responsibility as a SOE in times of crisis.

CRRC donated in cash

RMB **41+** million

Stick to after-sales service staff

9,600+



The Overhaul of Beijing Daxing International Airport Line

CRRC mobile cold storage transporting fresh vegetables to Wuhan citizens' homes

Case

During the epidemic, the railway and highway departments completed 6 cases, 70 tons of fresh and cold goods transportation by utilizing CRRC's cold storage intelligent cold chain equipment. CRRC mobile cold storage's technology of "one container to the end" has saved logistical time, ensured the freshness of vegetables, and effectively alleviated the shortage of transportation capacity, storage capacity and manpower in Hubei under the epidemic.



CRRC Mobile Cold Storage



CRRC Meishan Resuming Work and the Delivery Ceremony of the 1st Type C70E Open-Top Car after Acceptance Check

2,000 "Datong Locomotives" speeding along the railway lines to transport supplies

Case

During the epidemic, nearly 2,000 HXD2 electric locomotives produced by CRRC Datong speeded along thousands of miles' railway lines nationwide around the clock to help protect people's livelihood and provide supplies for the fight against COVID-19. It is the firm belief of all the after-sales service personnel of CRRC Datong and the common belief of all CRRC people to ensure the reliable and efficient operation of locomotives and the smooth passage of supplies and resources transportation along the railway lines.

Employees of CRRC Yangtze fought against the epidemic in Wuhan

Case

CRRC Yangtze is located in Wuhan, the hardest hit area of COVID-19. In addition to epidemic prevention and control, CRRC Yangtze also actively participated in the epidemic prevention and control of Wuhan Defense Campaign. All party members and employees voluntarily supported Wuhan, among whom emerged a large number of pioneers and role models.

Li Zhongdi, a welder from CRRC Yangtze, participated in the construction of Leishenshan Hospital, Huoshenshan Hospital and makeshift hospitals with his solid skills. Li Zhongdi worked three nights in a row to successfully complete the hospitals' pre-embedment and installation of water and electricity supply systems.

Wang Baolei, deputy general manager and chief engineer of CRRC Yangtze, donated blood plasma to save other people's lives after recovery. When he was cured and discharged from the hospital, after learning that more patients could be treated and cured with convalescent plasma, Wang Baolei took the initiative to contact the community and donated blood plasma for treating severe cases.

Full devotion to resumption of work and production

As the leading rail transit equipment enterprise, CRRC's successful resumption has a great impact on the industry chain. We took extraordinary measures to overcome difficulties in production organization, resources supply and order delivery, fully implemented the requirements of the Central Committee of the Communist Party of China and the State Council for "ensuring stability on six fronts" and "maintaining security in six areas", and exceeded expectations in achieving the business objectives for the whole year.



CRRC Qiqihar was engaged in both epidemic prevention and production, and delivered the order for 134 GWA coal hopper wagons exported to Australia on schedule

Helping Foton resume work and production

Case

In order to ensure that Henan Plant of Foton could resume production on schedule, during the Spring Festival, CRRC Shandong and Henan Foton Zhilan New Energy Automobile Co., Ltd. maintained frequent communication, coordinated R&D, process and engineering related matters, and determined the construction plan by arranging beforehand the progress of various work according to the agreed time of the contract. In mid-February when the epidemic situation was relatively stable, a special vehicle was sent to escort six equipment installation and maintenance personnel and related on-site epidemic prevention supplies to the equipment installation site in Shangqiu, Henan. The installation and commissioning work was completed on March 11 to ensure that Henan Foton Zhilan New Energy Automobile Co., Ltd. could launch production on schedule.



One world as one family in the battle against COVID-19

CRRC fulfilled the mission of "Connecting the World through Better Mobility", actively participated in international assistance to fight COVID-19, and rushed to assist Japan, Italy, Germany, Ukraine, Austria, Serbia, Malaysia and other severely affected countries, reflecting the Chinese enterprises' sense of responsibility in the global fight against the pandemic. CRRC ZELC and CRRC Sifang, having more than 100 long-term dispatched employees overseas, achieved remarkable results in COVID-19 prevention and control with zero infection among overseas employees throughout the year.

CRRC ZELC donating protective supplies to Austria

Case

CRRC ZELC actively responded to the call of the Austrian government and the Chinese Embassy in Austria to donate protective supplies to Austria on March 20, 2020. CRRC ZELC donated 3,000 sets of protective gowns, 50,000 FFP2 masks, and 100,000 disposable medical masks. CRRC ZELC printed the message "Locomotives Connecting the World, Hand in Hand Through Thick and Thin" on the package of the supplies, indicating the determination and confidence of China and Austria in overcoming difficulties together.



CRRC ZELC donated 100,000 medical masks to the Ministry of Transport of Malaysia and expressed the deep friendship of good neighbors and partners between China and Malaysia through the Malaysian proverb on the package, "Bukit sama didaki, Lurah sama dituruni (together we climb mountains, and together we cross valleys)."

Message from the Chairman



Building CRRC
into a respected
world-class
company

Chairman of the Board, CRRC Corporation Limited **Sun Yongcai**

Dear stakeholders,

It is an honor to present to you this year's Social Responsibility Report. 2020 was an unusual year for the entire world. Adhering to our principle of "Dedicated to Our Founding Mission and Committed to Our Social Responsibility", we thought out of the box at the special moment to calmly address the impact of COVID-19 and many challenges. We sought steady progress and opportunities out of the challenging situation, coordinated COVID-19 prevention and control while achieving major progress in business development, and embarked on a new journey of modernized development.

We put product quality high on the agenda. Shouldering the mission of "Connecting the World through Better Mobility", we actively implemented the strategy of improving our country's transport network, constantly contributing to China's modern comprehensive transport system. In 2020, railways in China's delivered 2.2 billion passenger trips, carried 4.46 billion tons of goods, a year-on-year increase of 3.2%; the urban rail transit system served 20.671 billion (including 17.527 billion in the mainland) passengers. The Beijing-Xiong'an intelligent EMUs were put into operation, and new members were added to the "Fuxing" family. 1,200 railroad flat cars provided by the Company played their role in advancing the Belt and Road Initiative, and multi-system electric locomotives were exported to Europe. With excellent product quality and high-quality full service, we help promote the sustained and healthy development of rail transit equipment and facilitate connectivity of the world.

We focus on providing industrial powerhouse led by innovation and intelligence. Considering technological innovation as the key to leading development, we adhere to independent innovation, collaborative innovation, and open innovation. We have accelerated strategic deployment in the new infrastructure construction, focusing on multi-dimensional exploration of smart products, smart manufacturing, smart logistics, smart services, and smart operations and maintenance. We have made sustained efforts to provide solutions for intelligent urban rail transit systems, and enhanced the technological capabilities of new industries such as wind power equipment and new materials, providing innovative impetus and new directions for the sustained and rapid development of the Company. In 2020, CRRC won 2 gold awards of the China Patent Award, 1 silver award, and 7 awards of excellence. The quality of its patents was among the A-level of CSOEs.

We contribute to emission reduction and environmental protection. Adhering to green and low-carbon development, we have actively used new environmental protection technologies, developed new environmental protection products, built energy management and control platforms, comprehensively improved resource utilization efficiency, strived to win the tough battle of ecological protection and pollution prevention, secured the blue sky, clear water and clean land, and improved waste management. In tackling climate change, we have promoted green factories and advocated green office, striving to become a "leader in green manufacturing" and a "maker of green life". In 2020, 9 subsidiaries were included in the list of "Green Factory Model Enterprises" of the Ministry of Industry and Information Technology.

We provide an ideal home for the growth and development of talents. We uphold CRRC's idea that "talents hold the key to a company's performance", placing a high priority on talents development. We have revised and improved the Special Action Plan on First-class Talent Development of CRRC and have forged a complete talent management model, institutional system, and operating mechanism. We strive to build a globally integrated talent management system, give full play to CRRC's brand advantage, realize the international development of high-end talents, and introduce talents from across the world, with a view to providing sustained impetus for CRRC's high-quality development.

We are committed to helping improve people's well-being. Taking our social responsibilities and missions, we have carried out poverty alleviation programs in earnest to help poverty-stricken areas, exploring and adopting a wide variety of models of poverty alleviation through infrastructure construction, promoting consumption, developing industries, supporting e-commerce, and younger generation education. By doing so, we have delivered our solution to poverty alleviation. We have actively organized and participated in diversified public welfare activities and voluntary service activities, and implemented a strategy of "localized manufacturing, localized procurement, localized workforce, localized maintenance and localized management", playing our role as a cultural "interpreter" and a "good neighbor" in communities. We give back to the society and demonstrate our responsibility. In 2020, we gave RMB 16.85 million in assistance funds to help the four counties (districts and cities), namely, Jingxi City and Napo County of Guangxi Zhuang Autonomous Region, and Maji District and Gangu County of Gansu Province, shake off poverty.

We adhere to compliance operations and coordinated development. Upholding the core values of "being honest and upright; excelling at doing good deeds", we have been adhering to the law and compliance operations, earnestly practicing the idea of transparent operations, striving to be world-class in innovation, and working towards a more stable, efficient and scientific modern enterprise operation mechanism. We have been promoting the coordinated development of rail transit by facilitating win-win cooperation while adhering to the rule of law and keeping an open mind. We were selected as one of the world's 9 benchmark companies in risk management by the research group of SASAC in its research project entitled "Risk Management Approaches and Experience of World-class Enterprises".

Our new journey in the new era requires greater achievements and more responsibilities. Standing at the starting point of the "14th Five-year Plan" period, CRRC will continue to seize opportunities and forge ahead to work with all stakeholders to build a new pattern of harmonious, win-win and sustainable development, speeding up the pace of building CRRC into a respected world-class company.

About Us

About CRRC

CRRC is the world's largest supplier of rail transit equipment with the most complete product lines and leading technologies. Headquartered in Beijing, CRRC has ranked first in the world in rail transit equipment sales for many years in a row. On June 8, 2015, CRRC became listed on the Shanghai Stock Exchange and the Hong Kong Stock Exchange. In 2020, CRRC continued to rank among Fortune 500 and Top 100 Chinese Enterprises, secure its prominent place for consecutive years on the list of "Most Admirable Chinese Companies" released by Fortune magazine, seeing its brand value ranking top in China's machinery manufacturing industry.

Fulfilling the mission of "Connecting the World through Better Mobility" and upholding the social responsibility philosophy of "Dedicated to Our Founding Mission and Committed to Our Social Responsibility", CRRC has continuously strengthened its sustainable operation capabilities, contributing to social development. CRRC actively implements the strategy of building national strength in transportation. In light of the new development stage, it practices the new development concept, actively adapting to changed environment by contributing to the building of a "dual circulation" development pattern in which domestic economic cycle plays a leading role while international economic cycle remains its extension and supplement. We accelerate structural reforms and upgrade, making targeted efforts in market expansion, international operation, technological innovation, coordinated development, and digital development, so as to meet the development needs of advanced, practical, smart, green and safe development of global rail transit.

CRRC has established **78** overseas institutions in 27 countries and regions around the world

Provide products and services to **109** countries and regions on six continents around the world

Statistics in

Total assets

RMB **392.380** billion

Operating revenue

RMB **227.656** billion

Net profit attributable to shareholders of the parent company

RMB **11.331** billion

National-level R&D institution

12

Overseas R&D center

18

Economic aspect

Social aspect

Total number of employees

164,177

Number of safety and emergency drill

2,184

Money invested in safety training

RMB **900** million

Directly invested poverty alleviation funds

RMB **16.85** million

Comprehensive energy consumption per gross industrial output value

0.0226

tons of standard coal/RMB 10,000

Sulfur dioxide emission

241 tons

Nitrogen oxide emission

637.2 tons

COD emission

538 tons

Ammonia nitrogen emission

64.2 tons

Environmental aspect

Main Businesses

CRRC's main businesses include: research and development, design, manufacturing, maintenance and repair, sales, leasing and technical services of railway locomotives, rolling stocks, EMUs/DMUs, urban rail transit vehicles, engineering machinery, various electromechanical equipment, electronic equipment and components, as well as electronic devices and environmental protection equipment; information consultation; industry investment and management; asset management; import and export businesses.

Five business areas

Railway equipment business

- Locomotives business
- EMUs (including inter-city EMUs) and passenger vehicles and freight vehicles
- Rail engineering machinery business



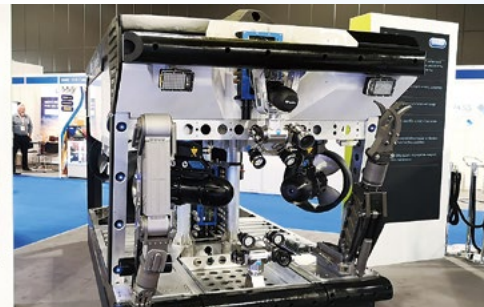
Urban rail transit and urban infrastructure business

- Urban rail transit vehicles business
- General contracting of urban rail transit business
- General contracting of other engineering projects business



New industry business

- Electromechanical business
- New industries business



Modern service

- Finance business
- Logistics and trade business
- Other businesses



International business

- CRRC implements an all-round operating model of "product + technology + service + capital + management"
- CRRC is committed to implementing a strategy of "localized manufacturing, localized procurement, localized workforce, localized maintenance and localized management"



Main products

MUs

It mainly includes various EMUs and DMUs that have speed of up to 200 kilometers per hour, 200-250 kilometers per hour, and 300-350 kilometers per hour and above, which are mainly used for main line passenger train services and intercity passenger train services. EMU products represented by "Fuxing" trains have independent intellectual property rights.

Locomotives

It mainly includes various DC-drive and AC-drive electric locomotives and diesel locomotives with a maximum traction power of 28,800 kilowatts and a maximum speed of 200 kilometers per hour. These locomotives are used as traction power for main line rail passenger and freight services. The Company's locomotive products have independent intellectual property rights.

Passenger carriages

It mainly includes seat cars, sleeping cars, dining cars, luggage cars, generator cars, special cars, plateau cars and double-deck railway passenger cars with a speed of 120-160 kilometers per hour, which are mainly used for main line rail passenger services. The Company's passenger vehicle products have independent intellectual property rights.

Freight wagons

It mainly includes various types of railway open-top cars, box cars, flat cars, tank cars, hopper cars and other special freight trains, which are mainly used for the freight transportation of main line railways or industrial and mining enterprises. The Company's freight vehicle products have independent intellectual property rights.

Urban rail transit vehicles

It mainly includes subway vehicles, light rail vehicles, urban (commuter) vehicles, monorail vehicles, maglev vehicles and trams, rubber-tired vehicles, etc., which are mainly used for urban and suburban commuter transport services. The Company's urban rail transit vehicle products have independent intellectual property rights.

Electrical and mechanical equipment

It mainly includes traction electric drive and network control system, diesel engine, braking system, cooling and heat exchange system, train operation control system, passenger information system, power supply system, and gear transmission equipment, which are mainly used for the Company's main line and intercity EMUs, locomotives, urban rail transit vehicles, and rail engineering machinery. Some products are independently provided to third-party customers as components. The above-mentioned products of the Company have independent intellectual property rights.

New industries

It mainly includes wind power equipment and components (wind turbine motors, blades, gearboxes, towers, converters, wind power flexible support, wind power super capacitors, etc.), trackless Autonomous Rail Rapid Transit (ART) system, new materials (vibration and noise reduction materials, lightweight materials, aramid, etc.), and machines, components and parts products in multiple industries such as environmental protection, industrial digitalization, heavy machinery, shipbuilding and marine engineering. The above-mentioned products of the Company have independent intellectual property rights.

Social responsibility management

Social responsibility philosophy

CRRC takes the fulfilment of its social responsibilities as an inevitable requirement for deepening its corporate reform and enhancing its core competency, and continuously integrates its social responsibility principle into corporate management.



Backbone of the nation for value creation

As a large state-owned backbone enterprise and a leader in rail transit equipment industry, CRRC has thoroughly implemented national strategies aimed at building national strength in transportation and manufacturing and enhancing safety, speeded up the development of advanced equipment manufacturing, and facilitated the development of China's industry towards the mid-to-high end of the global value chain. We provide CRRC technologies, products, solutions and philosophy globally and have become a world leader in the rail transit equipment industry, greatly enhancing the self-confidence and pride of the Chinese nation.

Iconic brand, quality assurance

Thanks to the rapid development of China's economy and booming rail transit, CRRC has grown bigger and stronger from a follower to an industry leader, shifting its focus from bringing in foreign advantages to seeking global development. It has become the world's largest supplier of rail transit equipment with the most complete product lines and cutting-edge technologies. Insisting on independent innovation, CRRC has tackled a series of major technical difficulties and global challenges during the design, research, and development of the Fuxing EMUs. CRRC has completely independent intellectual property rights, suggesting that China's railway equipment technology has reached the world-leading level.

Adhering to compliance as a modern enterprise

Complying with laws and regulations, CRRC has established a modern enterprise operating mechanism and system. Based on value creation and customer needs when following the direction of market-oriented reforms, we have deepened supply-side structural reforms, improved the quality and efficiency of the Company, and accelerated transformation and upgrading in an effort to build a more stable, efficient, and scientific modern enterprise operating mechanism.

An Industrial powerhouse led by innovation and intelligence

As an industrial powerhouse, CRRC has always been promoting independent innovation, creation, and entrepreneurship, especially in technology, products, development models, and logistics distribution, to create the momentum for sustainable and healthy development of the Company in an effort to guide the development of the rail transit equipment industry.

Contributing to poverty alleviation through capacity building

Attaching great importance to communication with different sectors of the society, CRRC has contributed to poverty alleviation through capacity building and empowerment, helping relevant stakeholders to develop together with us in jointly building the ecological chain of sustainable and healthy development. On the basis of continuously improving its own operations, CRRC has made sustained efforts to cooperate with our shareholders in a mutually beneficial way to seek common development, assuming greater national, social and corporate responsibilities. We are striving to solve more development problems and give back to the society, shoulder greater responsibilities, and deliver more benefits.

Social responsibility management system

CRRC has established a leading group for corporate social responsibility to review, discuss and decide the direction, content, and implementation of corporate social responsibility. At the same time, it has formed working groups to undertake daily management of CSR. The Company's board of directors is in charge of performing CSR, responsible for reviewing social responsibility management plans, annual social responsibility reports, and other key tasks in this regard; functional departments at the headquarters and subsidiaries are specific institutions practicing corporate social responsibilities, to make sure that social responsibility work is fully implemented throughout all levels of the Company.

Principle of performance improvement

Adhering to the combination of social responsibility and corporate operations, we manage the impact of corporate operations on stakeholders while striving to create more and better economic value, so as to maximize the comprehensive economic, environmental and social value.

Principle of serving strategies

Driven by the mission of "Connecting the World through Better Mobility", we integrate the philosophy of social responsibility into the Company's development strategies to fully serve its "double building and one cultivation" goal (i.e., building a respected international company, building a "reputable business card" for CRRC's party development, and cultivating a world-class enterprise with global competitiveness).

Principle of aligning benefits

Implementing the new concept of "innovative, coordinated, green, open, and sharing development", we incorporate the fulfillment of social responsibilities into corporate operations, and strive to achieve the alignment of our economic, social, and environmental benefits.

Principle of feasibility

Based on the five major tasks of "international-oriented, diversified, high-end, digitized, and coordinated development", we identify the goals, priorities, and action plans of CSR, and effectively promote better performance of social responsibilities in a comprehensive manner.

Principle of continuous improvement

We make sustained efforts to improve the system, establish an effective communication mechanism with external stakeholders, actively participate in the management of global sustainable development issues, and better promote CSR tasks of the Company.

Social responsibility practice system

With the rapid economic and social development and the upgrading of rail transit equipment in China, CRRC has gained increasingly clear and profound insights into its social responsibilities. In particular, through in-depth integration with the capital market, benchmarking its performance align world-class enterprises, and extensive communication with stakeholders, CRRC has built a well-structured social responsibility practice system featuring five driving forces.

Navigation Mission

The corporate mission of "Connecting the World through Better Mobility" is not only a condensed expression of CRRC's corporate responsibility philosophy, but also a navigation mark that guides its social responsibility practice.

Traction Vision

To build a respected international company is CRRC's pursuit. It is the essential demand of CRRC to become a world-class company with global competitiveness. It is key for CRRC to perform corporate social responsibility of high quality and surpass the expectations of all stakeholders in order to achieve greatness.

Driver Value

Throughout the operating and management process, CRRC has always placed a high priority on creating maximum economic, social and environmental value. This is also an inevitable choice for CRRC to adapt to sustainable economic and social development and enhance its core competency, innovation, guidance, and influence.

Guarantee Compliance

CRRC incorporates social responsibility management into all aspects and processes of the Company, including corporate strategies and major decision-making, daily operation management, supply chain management, and international development, so as to ensure compliance operations.

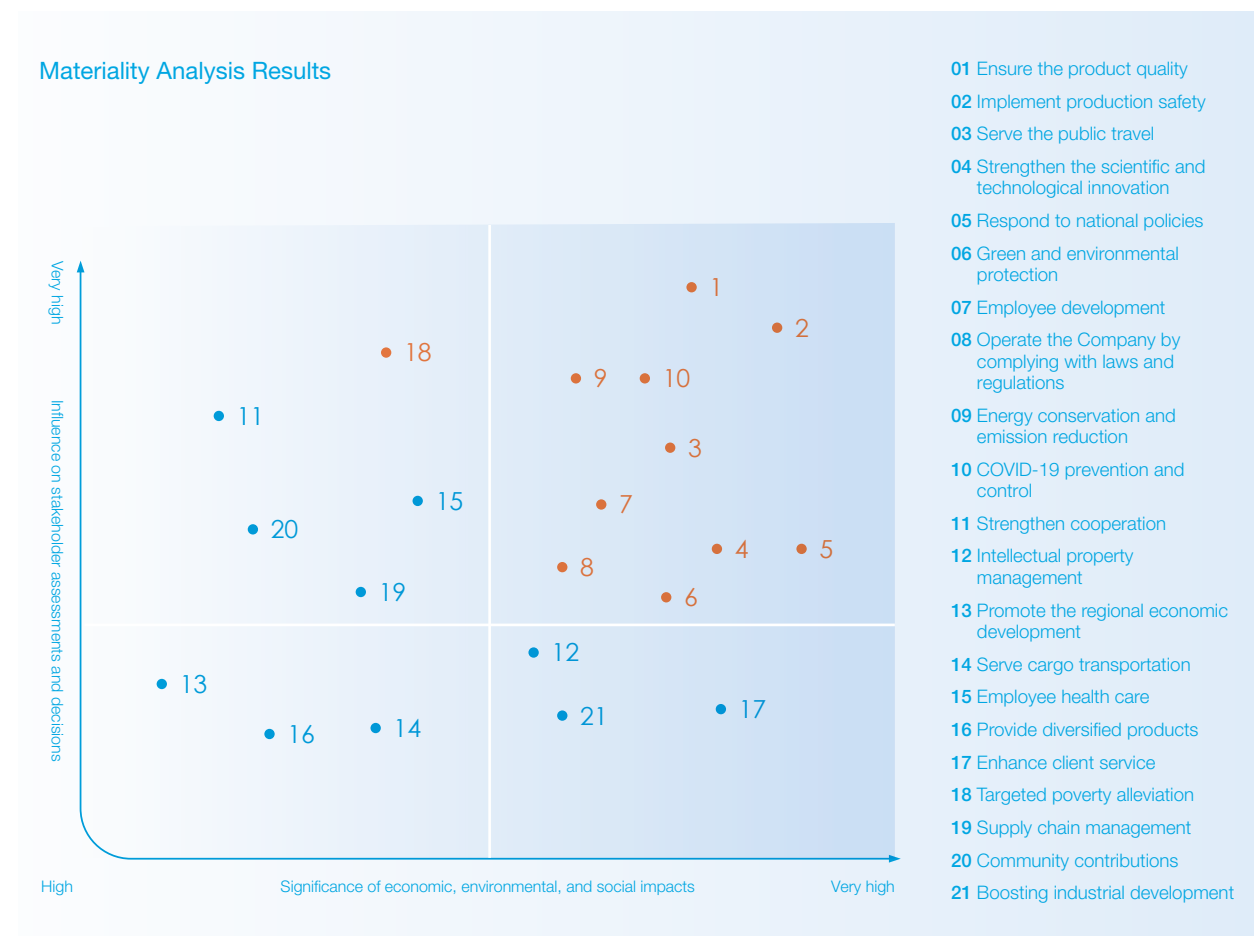
Support Management

CRRC regulates and improves internal operations and management, thereby creating favorable conditions for better handling the relations among all parties and fulfilling its social responsibilities.

Identifying material issues

We seek the ideas of the Company’s internal and external stakeholders, benchmark top international companies in disclosing CSR issues, and further improve and define the content and process of the report. After identifying the issues shareholders pay attention to and judge on their importance, we finally decide on the boundary of the issues and the extent of disclosure so as to more accurately and comprehensively disclose the management, practice and performance of CSR.

| Screening process for social responsibility issues | | |
|--|--|--|
| Source of Issues | <ul style="list-style-type: none">Advice of corporate managementAnalysis advice of internal and external expertsMultimedia information analysisResearch on benchmarking of peer companiesStandard guidance on social responsibilitiesProposals of the Staff Democratic Life League and the Workers’ CongressConcerns of clientsAssociated requirements of laws and regulationsPartners feedbackCommunity comments | |
| Screening Standard | <ul style="list-style-type: none">Contribution to sustainable developmentGeneral concerns of stakeholdersAssociated requirements of social responsibilityNeeds of the Company’s strategic development | |



Stakeholder Engagement

We interact with the internal and external stakeholders like clients, governments, partners, employees, regulators, etc. through promotion, open day, road show, online and offline activities, incorporate their concerns and demands into corporate issues of social responsibilities development, and respond through a series of social responsibility practice.

| Stakeholders | Expectations and Requirements | Means of Communication |
|----------------------------------|---|---|
| Government and regulators | <ul style="list-style-type: none">To comply with laws and regulationsTo ensure the product qualityTo carry out energy saving and emission reductionTo maintain and appreciate the state-owned assetsTo promote the technological progressTo benefit the country and its people | <ul style="list-style-type: none">Conscientiously implement national policiesParticipate in the formulation of regulationsBe subject to regulatory assessmentCommunicate with local government |
| Investors | <ul style="list-style-type: none">Steady growth in return on investmentStable operationInformation disclosure and transparency | <ul style="list-style-type: none">Improve profitabilityTimely disclose information |
| Clients | <ul style="list-style-type: none">To provide high-quality products and servicesTo satisfy the diversified requirements of clientsTo create value for clients | <ul style="list-style-type: none">WebsiteVisit and interviewCustomer satisfaction surveyCorporate brochure |
| The general public | <ul style="list-style-type: none">To offer safe and reliable servicesTo promote operational transparency | <ul style="list-style-type: none">Enhance service capacityCommunicate and interact |
| Employees | <ul style="list-style-type: none">Protecting employees' rights and interestsEnsuring occupational healthPromoting occupational capacityImproving career pathsWork life balance | <ul style="list-style-type: none">Make factory affairs publicDialogue between the ManagementConference of employee representativesEmployee satisfaction surveyCaring for sympathy |
| Suppliers and partners | <ul style="list-style-type: none">Open, fair and equitable procurementAbiding by relevant agreementsMutual benefit and long-term development | <ul style="list-style-type: none">Joint R&DSupplier meetingDaily communication |
| Peers and industry organizations | <ul style="list-style-type: none">Fair operationWin-win cooperationBoosting industrial development | <ul style="list-style-type: none">Industry conferenceAssociation activitiesWorkshops |
| Community | <ul style="list-style-type: none">Conducting targeted poverty alleviationParticipating in community developmentSupporting philanthropy | <ul style="list-style-type: none">Joint organizePublic benefit activitiesVolunteer activity |
| Environment | <ul style="list-style-type: none">Energy saving and emission reductionDeveloping environmental protection industryAdvocating green of office | <ul style="list-style-type: none">Carrying out green operationsR&D of environment-friendly productsPracticing green public welfare |



As a "backbone of the nation and a powerhouse of the industry", CRRC has earnestly implemented the new development concept by contributing to the acceleration of rail transit transformation from high-speed development to high-quality development, becoming an iconic brand of China to the outside world.

Value Creation and Quality Assurance

- Practicing the strategy of building national strength in transportation
- Serving global connectivity
- Pursuing excellent product quality
- Providing high-quality service throughout the whole process

Practicing the strategy of building national strength in transportation

Actively implementing the strategy of building national strength in transportation, CRRC has been making sustained efforts to improve China's modern integrated transportation system so as to meet the goal of higher speed and greater load capacity transportation of rail transit, as well as to promote the sustainable and healthy development of rail transit equipment. In 2020, China carried 2.2 billion passengers by rail and transported freight of 4.46 billion tons, a year-on-year increase of 3.2%.

Backbone of the nation

With the advancement of the strategy of developing science and technology and building national strength in transportation, developing safe, reliable, green, intelligent, efficient and convenient transportation equipment has become an inevitable trend. As the vanguard of China's high-end equipment manufacturing, transit equipment represented by high-speed rail trains has shown increasing global influence. We have given full play to the advantages of high-end equipment manufacturing to serve the national strategic needs and our overall economic and social development.

During the "13th Five-Year Plan" period, China's high-speed railway mileage in service nearly doubled, reaching 37,900 kilometers and ranking first in the world. The high-speed rail trains have been carrying hundreds of millions of Chinese along the road of building a moderately prosperous society in all respects.

▶ Providing convenient transport within metropolitan areas

Case

The CRH6A-A Intercity EMU "Tianfu" developed by CRRC Sifang on the basis of the high-speed EMU platform to suit the passenger flow and operation characteristics of intercity (urban area) rail transit can reach a speed of 200 kilometers per hour, featuring small marshaling, large capacity, fast start and stop, and fast board-on and exit. The new "Tianfu" intercity EMU connects six cities including Chengdu, Mianyang, and Ya'an, further shortening the time it takes to travel within the city cluster on Chengdu Plain, and accelerating the formation of a more facilitation "traffic circle of half-an-hour in urban areas and one-hour in Chengdu Plain economic area". It has injected new vitality into the development of urban agglomeration transportation integration and city integration.

▶ Beijing-Xiong'an Intelligent EMU CR400AF-C was put into operation as a new addition to the "Fuxing" family

Case

In 2020, Beijing-Xiong'an Intelligent EMU CR400AF-C was put into operation, adopting the 8-vehicle marshalling with 4 trailer cars in 4 traction power units. Adopting the basic painting style of the same platform train with silver base color and red lines, it put on the design of streamer composed of continuous curves on the basis of straight line of traditional Chinese high-speed trains. The Beijing-Xiong'an Intercity Intelligent EUM is safe, reliable, economical, efficient, warm, comfortable, facilitation, energy-saving and environmental-protection, playing a positive role in helping build a facilitation, safe, green and intelligent rail transit system, promoting the coordinated development of Beijing-Tianjin-Hebei Region.



Great travel experiences

We have accelerated the layout of urban rail and urban infrastructure businesses, built a full range, diversified, and multimodal urban rail vehicle platform, and developed product pedigree that adapt to various operating environments and meet diversified needs. Committed to providing passengers with better travel experiences, we have effectively improved the safety, efficiency and service of urban rail transit system. In the past five years, we delivered nearly 50,000 urban rail vehicles of various types. Our products are used in 42 cities across China and exported to more than 20 countries and regions in the world.



Promoting urban rail development of Lin'gang New Area

Case

In May 2020, CRRC Zhuzhou Locomotive Co., Ltd. delivered the "upgraded and extended version" of Shanghai Metro Line 16 addition trains, marking the total number of Shanghai metro trains had officially reached 6,000 units (sections). The delivery helped promote the rapid development of Lin'gang New Area, Shanghai Free Trade Zone and thus contributed to better rail transit in building a world-class metropolitan area in the Yangtze River Delta.

Promoting integrated development of city clusters in the basin area in Central China

Case

In May 2020, the Type A "driverless" train of Taiyuan Metro Line 2 developed by CRRC Dalian Company was delivered to Xiaodian South section in Taiyuan. It is the first time that CRRC Dalian has developed a fully driverless vehicle that meets the requirements of GoA4 in the EN62267 standard, representing the highest requirements and design & manufacturing level in China's subway train. The stainless-steel train body not only has a higher corrosion resistance, and low cost of operation and maintenance, but also has low-carbon, environmentally friendly, safe, comfortable and other features. The completion of Taiyuan Metro Line 2 will further improve the quality and efficiency of Taiyuan's public transportation, and will also promote the integration process of urban agglomeration in the central basin.



Promoting the development of Guangdong-Hong Kong-Macao Greater Bay Area

Case

In September 2020, the first trains of Guangzhou Metro Line 18 and Line 22 developed by CRRC Zhuzhou Locomotive Co., Ltd. were officially delivered. It is China's first underground city express transit line with a speed of 160 kilometers per hour. The train creatively solved the problems of air tightness and noise control, adopted lightweight design, and applied a number of new technologies, such as carbon fiber hood, composite floor, etc. It not only brings passengers a safe and comfortable travel experience, but also makes travel more energy-saving and environment-protection. In addition, it is the first to introduce an intelligent vehicle operation and maintenance system based on big data and cloud computing. After being launched, it can realize an operation mode that combines stop at every station and direct access to major stations so as to meet the travel needs of the metropolitan area.

CRRC core product helped the launching of Shenzhen Metro Line 10

Case

In August 2020, Shenzhen Metro Line 10 was officially launched, using a number of core-technology products of CRRC Sifang. It is the first time for domestic urban rail transit vehicles to be equipped with OLED "smart windows" in bulk. OLED "smart windows" realize one-stop information sharing through high-definition color images, increasing the train's technological and humanistic care, and greatly improving the travel experiences of citizens.





Better freight transportation

We have continued to deepen technological innovation to meet the new requirements of China's rail freight equipment interconnection and heavy load adaptability, and provide large-capacity, safe and convenient rail freight transportation channels, so as to promote the economic and social development of the regions along the railway.

Two "Fuxing" trains passed -40°C low temperature test

Case

In January 2020, two new models of the "Fuxing" locomotive family produced by CRRC Dalian, namely FXN3B-0001 hybrid power shunting locomotive and FXN3C-0001 main line freight diesel locomotive, passed the low temperature test simultaneously, meeting the requirements for operation in extremely cold conditions. During the test, the functions of all the systems of the two models were normal with stable performance, and the test results met the requirements of the National Railway Locomotive Type Test Program.

The electric locomotives of the world's largest power rolls off the assembly line

Case

In July 2020, CRRC Zhuzhou Electric Locomotive Co., Ltd. rolled off its electric locomotives with a unit power of 28,800 KW and a tractive effort of 2,280 KN. The locomotive adopted 6-section marshalling, with a length of 106 meters and a maximum speed of 120 kilometers per hour. It can tow 10,000 tons of cargo on a 12‰ ramp, and can pull a train of about 1.5 kilometers long and over 100 full-load carriages. It can be called the "King of electric locomotives" of heavy haul railways. It marks a major breakthrough in China's technological innovation in heavy haul railways and a major achievement of independent innovation in China's equipment manufacturing.

The "Fuxing" family has a new heavy haul freight train

Case

At the 2020 China International Railway and Urban Rail Transit Conference in September 2020, a number of CRRC's subsidiaries for the first time released the new vehicles developed by them. Among them, the FXD2B electric locomotive developed by CRRC Datong Co., Ltd. is the heavy haul freight electric locomotive with the largest starting traction in China currently. It is 20% better in traction capacity than other trains of the similar category. One such vehicle can transport 800 more civilian cars.

Serving global connectivity

Proactively undertaking the mission of "Connecting the World through Better Mobility", CRRC have been engaging in advancing the Belt and Road Initiative, pushing forward better connectivity across the world and contributing to the sustainable development of the world. In 2020, CRRC successfully had won new orders in such overseas markets as New Zealand, Turkey, India, Russia, South Korea, Chile and United Arab Emirates, and successfully signed an EMU contract for the China-Laos Railway and won a tender to modernize Mexico City's Metro Line 1.

1,200 rail flat cars contribute to the Belt and Road Initiative

Case

In July 2020, CRRC Zhuzhou Locomotive Co., Ltd. delivered all the 1,200 flat cars in the first bid in 2020. These rail freight flatcars, mainly used for container transportation, have all joined the fleet of the China-Europe Railway Express. While helping the pandemic prevention and control in European countries, the flat cars also contribute to the Belt and Road Initiative.

CRRC won a bid for the US\$ 350 million order of Emirates Railway Company

Case

In July 2020, CRRC Yangtze Transportation Equipment Group Co., Ltd. won the second phase of the UAE Railway project, including over 1,600 railway wagons and long-term maintenance service orders. This marks the largest single overseas order so far in China's railway freight car equipment manufacturing industry. Affected by the epidemic, a cloud signing ceremony for this international project was held simultaneously at the CRRC headquarters in Beijing, CRRC Yangtze Group headquarters in Wuhan and Emirates Railway Company in Abu Dhabi.

China-Laos Railway EMU procurement project was signed

Case

In September 2020, the CRRC Sifang and the CRRC Dalian formed a consortium to sign the contract for the China-Laos railway EMU project. The two CR200J centralized-power EMUs with a speed of 160 kilometers per hour for the China-Laos Railway feature high transport capacity, convenient operation, easy maintenance and comfortable passenger experience. They perfectly adapt to the landscape and climate along the China-Laos Railway. The EMUs are designed and manufactured with the concept of "being extremely rich in Lao cultural features, carrying forward the friendship between China and Laos and showing advanced technologies and modern style". Also integrating the technologies of China's "Fuxing" EMU trains, they will become a shining business brand when Chinese railway "going out" to the globe.



CRRC Dalian exported EMUs to Abuja, Nigeria

▶ Zhuzhou Locomotive helps Pakistan embrace the era of subways

Case

In October 2020, the operation ceremony of the Pakistan Lahore Rail Transit Orange Line Project was held via video link in both Beijing and Lahore, marking that Pakistan has entered the era of subways. The Project is the first CPEC metro transportation project under the framework of the Belt and Road Initiative and the first metro transportation project in Pakistan. The vehicles were designed and manufactured by the CRRC Zhuzhou Locomotive Co., Ltd. The Lahore Orange Rail Transit Line not only adds a beautiful view to the city, but also has far-reaching economic and social significance for relieving the city's traffic pressure, slashing travel costs, reducing environmental pollution and boosting economic development.



Trains for the Pakistan Lahore Orange Rail Transit Line Metro Project

Pursuing excellent product quality

CRRC has continued to deepen the construction of quality management system, improve product quality by improving design, technology and production and adopting new technologies and new means, and cling to the lifeline of product quality. We adopted a science-based approach to build a quality management platform and a management system to integrate the whole product chain, supply chain and value chain so as to ensure the refined management of product quality.

Building Standardized Management Process

CRRC has revised a series of standards of our quality management system, drafted specifications for product design and development and product application fault information management, and thus further improved supplier quality control.

Overall Quality Inspection and Research Operation

CRRC has carried out special inspections on the quality and safety of locomotives and conducted research on the quality of non-functional structure of locomotive running gears and technical requirements of welding.

Activities Aiming to Improve Quality Management

CRRC has ensured that after-sales service is in place at critical time period such as the "Spring Festival travel rush", organized such activities as "Quality Safety Month" and "CSOE Comprehensive Quality Management Knowledge Competition", and carried out "micro-innovation" quality research and improvement program.



National model worker Zhang Jian

▶ Winning the ICQCC Platinum Award

Case

Guided by the quality strategy of CRRC, the CRRC Zhuzhou Locomotive Co., Ltd. has formed a quality management system covering the whole life cycle of products. In December 2020, the "Research and Development Program of New Technology for Injecting Glue and Defoaming Magnetic Poles of Offshore Direct-drive Permanent Magnet Wind Turbines" submitted by the WindbellQC Group won the ICQCC Platinum Award, the highest award of the International Conference on Quality Management.

Providing high-quality service throughout the whole process

Improving service quality is the most direct reflection of a brand at the frontier. Always putting customer satisfaction at first, CRRC have been making full use of remote monitoring, cloud quality analysis and control technology to continuously improve speed of service response and provide users with system solutions of life cycle management.

With its first-class project management and control capabilities, CRRC has been striving to respond to customer needs right at the first time, attaching importance to customer privacy, and sparing no effort to protect customers' rights and interests.

▶ Working with railway administrations to provide best after-sales service of EMUs

Case

As CRRC Sifang continued to increase the number of EMUs traded online, after-sales service guarantees have increasingly become the key element of the Company's production and operations. In response to this, CRRC Sifang has set up 44 after-sales service stations and 6 maintenance bases in 13 railway administrations across the country. The after-sales service stations are close to users and the front line.



CRRC has been adhering to the innovation strategy of integrating knowledge with practice and consolidating the foundation, taking scientific and technological innovation as a key variable for leading development, insisting on independent innovation, collaborative innovation, open innovation, maintaining development vitality, and forming a scientific and technological innovation ecology featuring flow of factors, vitality bursting, sharing and win-win results, providing innovative impetus for the sustained and rapid development of enterprises.

An Industrial Powerhouse Led by Innovation and Intelligence

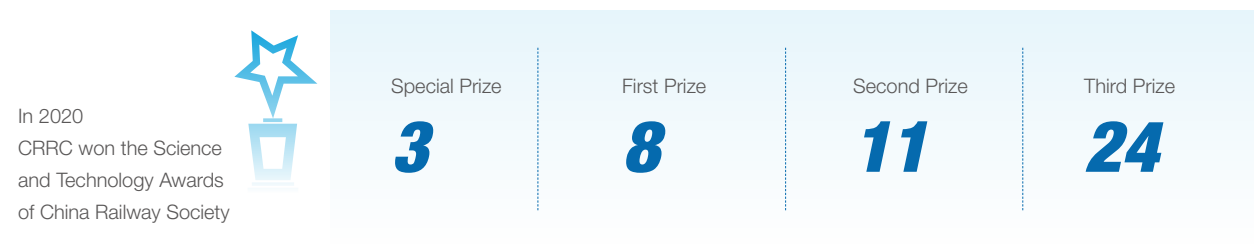
- Promoting scientific and technological innovation
- Building smart CRRC
- Developing smart products
- Developing emerging industries

Promoting scientific and technological innovation

CRRC plans and promotes innovation with a global perspective, takes scientific and technological self-reliance as the strategic support for corporate development, and takes scientific and technological innovation as the foundation for building an inexhaustible driving force for CRRC's major national brand, continues to increase scientific research investment, and strives to build advanced rail transit R&D innovation platform and a core technology system with international competitiveness, so as to further enhance China's rail transit technology innovation capabilities and core competitiveness. In 2020, CRRC's investment in technological innovation accounted for as much as 6.1% of its sales revenue of the year.

Innovation system

CRRC boasts the world's leading rail transit equipment R&D and manufacturing platform and manufacturing base, and has improved its technology development capabilities for the entire technology chain, product development capabilities for the entire product chain, and scientific and technological support capabilities for the full life cycle innovation guarantee, providing innovative impetus for the rapid development of enterprises.



Improving the scientific and technological innovation system

We actualized President Xi Jinping's important instructions during his inspection of CRRC, centered on the goal of "double building and one cultivation", and completed the submitted draft of the 14th Five-Year Plan for Science and Technology Development. In accordance with the basic principles of "driving innovation, systematic advancement, gradual breakthroughs, grasping both ends to promote the middle", the *Guidelines on the Reform of the Science and Technology System* was formulated. CRRC Organized field research, expert consultation, rules and indicator structure setting, completed the construction of four sets of rule systems, including *Guidelines on the Development of Scientific and Technological Innovation Resources*, *Guidelines on the Construction of Overseas R&D Institutions*, *Science and Technology Innovation Evaluation Index System*, and *Technology Trading Platform for Scientific and Technological Achievements*, produced the Draft for Public Comment, established a management leading group for major scientific research projects, and promoted the company to form an "open, coordinated and integrated" scientific and technological innovation system.

Building an innovation platform

Aiming at forming platforms for "two first generations" technologies and products, CRRC has been striving to attract and cooperate with more well-known universities, scientific research institutions, and multinational companies at home and abroad to participate in our basic technology research, so as to promote efficient and collaborative innovation of scientific and technological resources within CRRC and to build technology collaborative innovation platform, test verification resource sharing platform, and technical public service support platform. CRRC has continued to accelerate the construction of the National High-speed Train Technology Innovation Center and CRRC Big Data Center, build two supporting platforms for test verification and standard systems, and establish a signal company, so as to make up for the weak links in braking and signal services.

Cultivating scientific research teams

CRRC has given full play to the role of special projects, improved the "team + project + talent" training model, relied on major scientific research projects, key talent project implementation and industry-university-research cooperation projects, etc., focused on cultivating high-level talents and high-level innovative teams; we have implemented fault-tolerant and corrective measures, addressed scientific researchers' worries behind, encouraged them to produce more fruitful results, and fully incentivize their enthusiasm at work.

Scientific and technological achievements

CRRC focused on tackling core technology difficulties and converting scientific and technological achievements, constantly accelerated the independent innovation and industrialized application of key technologies, achieved a major leap from following and running side by side to leading, and created a series of major scientific and technological innovations such as the serialized "Fuxing" bullet trains, high-speed maglev with a speed of 600 km/h, urban rail vehicles and core systems, leading the rapid and sound development of the railway equipment industry.

Strengthening product research and development

CRRC has been rooted in the development of technology, committed to technological innovation, kept up with the trend of the times, and continued to strengthen product development.

Successful test of the maglev prototype with a speed of 600 km/h

Case

On June 21, 2020, the maglev prototype with a speed of 600 km/h developed over the past 4 years by CRRC Sifang was successfully tested on the Maglev Test Line of Shanghai Tongji University, marking an important breakthrough in the research and development of high-speed maglev in China. High-speed maglev has the advantages of high speed, safety and reliability, strong transportation strength, comfort and punctuality, environmental friendliness, low maintenance cost and so on, and can be used for long-distance transportation, namely, "corridor" transportation, forming high-speed corridors between large hub cities or among urban agglomerations to promote coordinated development among regions; high-speed maglev trains are also suitable for medium and short distance passenger transport, and are used for commuting in large cities or intercity connection between neighboring cities within urban agglomerations, so as to create a half-hour to one-hour economic circle, and promote the "integrated" and "coordinated" development of metropolitan areas and urban agglomerations.



China's first lithium battery refrigerated container put into trial operation

Case

China's first lithium battery refrigerated container developed by CRRC Yangtze was put into trial operation. CRRC Yangtze has innovated and developed high-performance heat insulated box, high-capacity lithium battery system, overall electronic control and information communication and remote-control system, high-power pure electric frequency conversion refrigeration unit, which has many advantages such as high refrigeration speed, even distribution of cooling capacity, zero emission of green energy, low noise, and low energy consumption.

The administration of standards and intellectual property rights



CRRC continues to intensify the participation in international standardization work, and speed up the construction of a standard system for CRRC urban rail transport vehicles and electric lines. We set up a special subject of intellectual property risk assessment and patent layout for major scientific research projects represented by the *Serialized China Standard Subway Development and Test Projects*, strengthened the protection of core technologies, and effectively enhanced the core competitiveness of enterprises.

In 2020, CRRC participated in the formulation of **9** international standards, **24** national standards and **25** industrial standards, applied for **6,437** patents, winning **2** gold awards of the China Patent Award, **1** silver award, **7** awards of excellence, and ranking **A** class in terms of patent quality.

Intelligent technology developed by CRRC SRI

Case

CRRC SRI accelerates the research and development of core technology of intercity EMU trainsets traction drive system in the field of intercity EMU trainsets involved in the "new infrastructure", forming a technical platform of rail train traction converter system with complete independent intellectual property rights.

In terms of intelligent technology

CRRC SRI makes comprehensive use of key core technologies and independently develops the "Train Autonomous Circumambulate System" (TACS) that can realize "vehicle-vehicle communication". TACS endows the train with a "brain" to operate independently and automatically, making it highly intelligent with the capacity to transmit route maps, timetables and other information in real time, and empowering it to obtain the operating environment, think independently and make decisions. At present, CRRC SRI has completed the TACS system installation of three trains, finished the line type test of vehicle system, and is carrying out the line function test.

In terms of intelligent overhaul

The intelligent overhaul robot is the "super assistant" for "subway doctor" developed by CRRC SRI. The robot uses a 4K HD 3D camera for train bottom overhaul, has automatic navigation and deep learning capabilities for "learning by doing" at work and constantly reducing the false positive rate. The robot with vehicle running gear trackside detection system can simultaneously complete the inspection on the side and most of the train bottom. The intelligent overhaul means, represented by the intelligent overhaul robot and vehicle running gear trackside detection system, provide a powerful guarantee for improving the quality and efficiency of maintenance, and emancipate the productive forces.

In terms of intelligent operation and maintenance

CRRC SRI regards the real-time perception of vehicle online operation status as the core of business, integrated professional systems such as vehicle network monitoring, trackside intelligent comprehensive inspection, and daily maintenance of sections, uploads collected real-time data of all systems and links to an integrated big data platform, and analyzes the data collected at all links of vehicle application by using machine vision, big data analysis and other artificial intelligence technologies, so as to comprehensively assess vehicle status and provide support for condition-based maintenance.

Building smart CRRC

Building a new manufacturing system and developing intelligent manufacturing have become the inevitable course to "manufacturing power" under the new situation, with focus on industrial big data and cloud computing, as well as industrial intelligent terminal equipment such as industrial Internet, industrial robots and intelligent machine tools covering the whole industrial chain. CRRC accelerated its strategic deployment in the field of "new infrastructure", focused on multi-dimensional exploration of intelligent products, intelligent manufacturing, intelligent logistics, intelligent services, intelligent operation and maintenance, and created an intelligent overall solution for the whole life cycle, so as to contribute to the transformation and upgrading of rail transport manufacturing.



Developing smart products

CRRC, guided by the *Outline for the Development of Smart Urban Rail in China's Metro Systems*, is committed to intelligent products and intelligent systems, constantly improving the safety, efficiency and services of urban rail transit systems, creating solutions for smart urban rail system, and contributing to CRRC's efforts and wisdom for "Smart Urban Rail" and "Intelligent Operation and Maintenance".

FAO system (i.e., Fully Automatic Operation System), as a fully automatic and highly centralized train operation control system, is a new generation of urban rail transit system capable of train operation process automation based on technologies such as modern computer, communication, control, comprehensive monitoring and system integration. CRRC's global launch of the first independent FAO signaling system marks the company's entry into the era of "fully automatic" urban rail, and equips the company with the ability to provide the world with a more comprehensive global urban rail signaling system solution.



The new generation medium and low speed maglev train

Developing emerging industries

We not only look up to the stars, but also keep ourselves more down to earth. CRRC makes new plans for strategic emerging industries, grasps more cutting-edge technological trends, constantly develops and improves product platforms, and strengthens differentiated competitive strategies. We accelerate the integration of innovative resources to create core capabilities, continuously enhance the technical capabilities of wind power equipment, new materials and other new industries, so as to gradually realize industrial upgrading and transformation.

Wind power equipment

CRRC Wind Power has formed a complete industrial chain from whole machine to generator, blade, gearbox, converter and so on, with distinct advantages in core components and accelerated research and development of featured fan products.

▶ Providing lifecycle intelligent operation and maintenance solutions

Case

Based on high performance computing cluster of data center and the mining and analysis of massive fan data, CRRC Zhuzhou Institute developed a series of core products centering on intelligent operation and maintenance services. CRRC Logistics can provide users with remote monitoring services of fan operation status, diagnosis and early warning services of fan failure, and regular condition examination services, which will effectively reduce the frequency of fan failure and costs for operation and maintenance, extend life span, and provide intelligent operation and maintenance solutions for wind turbines in the whole life cycle.

▶ The launch of wind turbine intelligent control and load test system

Case

The Wind Turbine Intelligent Control and Load Test System based on advanced sensors developed by CRRC Wind Power (Shandong) integrates the advanced functions of wind turbine such as lidar control, online load test, real-time load estimation and real-time wind speed estimation. It is the first time at home and abroad for the system to be applied in Weaving Maid Spring Fourth Phase Wind Farm project of Datong Coal Mine Group.

Vessels and ocean engineering equipment

CRRC is devoted to building a core technology platform for China's high-end vessels, providing an application platform for achieving the autonomy of high-end vessel electric propulsion systems, and promoting the development of China's shipping industry.

▶ The successful development of the first home-grown megawatt-class vessel DC network electric propulsion system

Case

In April 2020, CRRC Zhuzhou Institute successfully developed the first home-grown MW-class vessel DC network electric propulsion system device, and it was applied to the Shenzhen sightseeing catamaran for the first time, adding an "authentically Chinese" member to China's high-end vessel core equipment. The system transplanted new high-speed train technology to the vessel sector, innovatively adopted solid-state circuit breakers, permanent magnet generators, power batteries, permanent magnet motors, etc. The system's autonomous controllability rate reaches 100%, the optimization of the spatial layout would increase by more than 40%, and the effect of energy saving compared with the AC electric propulsion system has increased by more than 20%. The overall technology has reached the international advanced level.

CRRC logistics

CRRC uses transportation management systems, information identification terminals, unmanned automatic sorting warehouses, and BeiDou Navigation Satellite System (BDS) positioning systems to provide host companies and suppliers with transportation trajectories, electronic fence settings, real-time warehousing, production and distribution, etc. Intelligent logistics services have opened 62 green circular logistics operation lines, with a total of nearly 300 operating lines. Among them, CRRC Zhuzhou Logistics and Zhuzhou City jointly launched the China-Europe Railway Express project, operating a total of 29 trains to facilitate the construction of the Belt and Road Initiative. More than 40,000 sets of integrated storage and transportation packaging have been put into use, and 43 patents have been obtained, covering more than 200 types of products on various platforms.

CRRC is promoting the pilot of "three in one" intelligent logistics in Qingdao, and forming a high-end industrial smart logistics brand through building a business model that can be exported, replicated, and promoted for customers, featuring the coordination among "transportation network", "VMI warehousing service" and "storage and transportation integrated packaging".





As a responsible corporate citizen, CRRC has been committed to creating greater value at the cost of smaller environmental impact, respecting nature, following the law of nature, and protecting nature. Adhering to the concept of green and low-carbon development, we continued to engage in the R&D of environment-friendly products, actively respond to climate change, and fully improve the efficiency of resource utilization, with a view to winning the battle against air, water and soil pollution, protecting the natural environment, promoting the harmonious coexistence between mankind and nature, and becoming the leader of green manufacturing and creator of green lifestyles.

Green and Low Carbon for Environmental Protection

- Strengthening environmental management
- Responding to climate change
- Carrying out green operations

Strengthening environmental management

CRRC has passed the ISO 14001 environmental management system certification, and implemented environmental management in all aspects, covering policy development, organizational structure, staffing, production operations and environmental awareness. In 2020, all entities under CRRC have passed the ISO 14001 certification, and no major or more serious environmental emergencies occurred.

Improve Environmental Management System

CRRC instituted various environmental management policies, formulated the *Guidelines for the Assessment of Green Factories in the Rail Transit Equipment Manufacturing Industry* and passed the review of corporate standards and group standards. Besides, it run pilot programs and verified the standards at four subsidiaries including CRRC Sifang, CRRC Qiqihar, CRRC Dalian, and Zhuzhou CRRC Electric Co., Ltd.

Strengthen the construction of environmental energy management system

CRRC has sped up the change of version of ISO 14001:2015 Environmental Management System, actively engaged in the establishment, review and certification of the ISO 50001 Energy Management System, and implemented full-process control to reduce the energy cost and continuously improve the management performance.

Environmental Risk Management and Control

As the team leader, CRRC continued to conduct a special environmental supervision and inspection of four CSOEs on behalf of the State-owned Assets Supervision and Administration Commission (SASAC); completed energy and environmental assessment of 12 enterprises, environmental supervision of 35 enterprises, environmental energy monitoring of 30 enterprises, inspection of 14 enterprises for energy conservation and water conservation, and independent inspection for acceptance of 27 construction projects on energy conservation and environmental protection.



Responding to climate change

Climate change has become a major environmental concern of the whole world. CRRC has taken concrete actions to deal with climate change, including the R&D of new environment-friendly products using new environmental protection technologies and reduction of energy consumption through technological transformation and other measures. In 2020, CRRC fully achieved the energy conservation and emission reduction targets set out by the SASAC and in the "13th Five-Year Plan".

R&D of environment-friendly products

Relying on its core competitiveness, CRRC has been committed to developing and providing more energy-saving and environment-friendly products and solutions for the whole world, such as maglev trains, super-capacitor trams, whole basin water environment governance systems, photovoltaic and wind power generation equipment, and shared packaging products.

In 2020, the 600 km/h high-speed maglev pilot prototype was successfully tested, filling the gap of speed between high-speed rail and air transportation. The Beijing-Xiong'an intelligent high-speed EMU was put into operation; the 350 km/h freight EMU successfully rolled off the assembly line; and the development of Fuxing Plateau Dual-source Power Concentrated EMU sped up.



The unveiling ceremony of the National Advanced Rail Transit Equipment Innovation Center

Noise reduction, energy conservation, and environmental protection

Case

In October 2020, the 400 km/h cross-border interconnected high-speed EMU, a key "Advanced Rail Transit" project as part of the national key R&D program, rolled off the production line at CRRC Changchun Adopting the "multi-objective balanced comprehensive energy-saving technology", the train may reduce per capita energy consumption by 10% per km and noise by 2 decibels at the same running speed. In other words, the energy consumption and noise of this 400 km/h EMU is equivalent to that of a 350 km/h high-speed EMU. With increased speed without additional energy consumption, this train is energy-saving and environment-friendly.

Opening a new page in green welding of continuous welded rail in China

Case

The power supply device of China's first mobile new-energy flash-butt welding machine developed by CRRC Yongji Electric Co., Ltd. and its partners features a power supply system consisting of battery packs and power electronic devices. Such a power supply device has realized almost zero emission of harmful waste gas, especially when welding underground tracks such as subways, thus avoiding fume pollution, reducing noise pollution, and optimizing the energy consumption structure.

Development of environmental protection industry

To contribute industrial strength to cope with climate change and protect our green home, CRRC has stepped up efforts to promote the development of the environmental protection industry by converging the market synergy mode and turning energy conservation and environmental protection into its pillar business.

- While making continuous efforts to strengthen the “synergy” of “CRRC+”, we closely followed the “installation tide” of wind power business and signed RMB 30 billion worth of new orders throughout the year, further promoting our ranking among wind turbine manufacturers;
- Seizing new opportunities for infrastructure construction, we continuously optimized the industrial layout of our new materials business and successfully launched environmental protection programs in Qingdao and Zhuzhou.
- CRRC's e-commerce trading platform for green circular economy has eight business sections, i.e., waste materials, second-hand equipment, backlog materials, discounted products, waste office supplies, property business, shared equipment and re-manufactured products. The annual trade volume of the platform reached RMB 913 million, up by 159% YoY. While generating economic benefits, it provides an expeditious and efficient channel for enterprises to dispose of idle and waste resources.
- The smart logistics has been promising. Since the application of smart logistics in 2017, CRRC has put into use more than 40,000 green recycling packages by the end of 2020, reducing wood packaging by about 780,000 cubic meters, which are equivalent to reserving 10,000 hectares of forest resources.

In 2020, nine enterprises under CRRC were rated as national green factories. CRRC issued its own green factory standard which is more stringent than the current national standard and reflects more specific industrial characteristics. To date, four enterprises have been certified according to the CRRC green factory standard. By doing so, CRRC has played a leading role in the establishment of green factories and laid a solid foundation for the development of the CRRC green manufacturing system.

Carrying out green operations

CRRC has integrated the concept of giving priority to environmental protection into its daily management and production, with a view to developing green circular economy, helping build a resource-saving and environment-friendly society, and continuously improving the efficiency of resource utilization. Besides, CRRC improved waste management, promoted the establishment of green factories, realized green operations, and earnestly fulfilled its environmental protection responsibilities.

Promoting energy conservation and consumption reduction

CRRC promoted energy conservation and maximized resource utilization by developing energy management and control platforms, building energy consumption models, promoting energy cost reduction, and conducting energy consumption inspection. Compared with the previous year, CRRC's annual energy cost decreased by RMB 400 million, down by 15.2% YoY. A total of 15 centralized investment projects for energy conservation and emission reduction were established, with an investment of nearly RMB 198 million and an aggregate profit deduction of RMB 53.5 million.

- In 2020, the comprehensive energy consumption of added value (comparable price) was **0.0994** tons of standard coal/RMB 10,000, down by **49.3%** over the end of the “12th Five-Year Plan” period;
- The total energy consumption of the gross industrial output value (comparable price) was **0.0226** tons of standard coal/ RMB 10,000, down by **42.9%** over the end of the “12th Five-Year Plan” period;
- CRRC over-accomplished its annual targets of energy conservation and efficiency increase by a margin of RMB **200** million, achieving a total of RMB **400** million throughout the year;
- The total coal consumption was **65,000** tons, down by **82%** over the end of the “12th Five-Year Plan” period.

Developing an energy management and control platform

CRRC pushed ahead with the development of the corporation-wide energy management and control platform, gradually incorporated the energy data of its subsidiaries into the company system, realized online data collection and real-time monitoring, and gradually promoted digital measurement and intelligent management and control throughout the energy consumption process, thus providing basic support for benchmarking and potential tapping.

Establishing energy consumption models

CRRC established algorithm models for electric power and non-electric power energy costs, as well as the energy consumption models for trucks, buses, and locomotives, laying the standard for the application of energy management and control systems.

Reducing energy costs

CRRC carried out energy price surveys, put forward energy conservation suggestions, and popularized effective cost reduction methods.

Carrying out energy consumption inspection

Through energy auditing, energy-conservation diagnosis, energy-conservation monitoring of key energy-consuming equipment, energy consumption inspection, CRRC tapped the energy conservation potential, increased incentives and imposed more severe punishments, and reduced energy waste.

Engaging in pollution prevention and control

Through implementing multiple pollution control projects, compiling waste management guidelines and specifications, safely disposing of hazardous wastes, general solid wastes and domestic garbage, and promoting the comprehensive utilization of solid wastes, CRRC realized reasonable disposal and recycling of wastes and accomplished its three-year targets of pollution prevention and control. In 2020, CRRC completed 675 pollution control projects. By the end of 2020, 133 subsidiaries at all levels, including CRRC Qiqihar, CRRC Shandong, and CRRC Tongling, had obtained the emission permit.

- Sulfur dioxide emission amounted to **241** tons, down by **87.7%** over the end of the “12th Five-Year Plan” period;
- Oxynitride emission amounted to **637.2** tons, down by **82.7%** over the end of the “12th Five-Year Plan” period;
- COD emission amounted to **538** tons, with **43.8** tons discharged to the external environment, down by **34.9%** over the end of the “12th Five-Year Plan” period;
- Ammonia nitrogen emission amounted to **64.2** tons, with **2.4** tons discharged to the external environment, down by **84%** over the end of the “12th Five-Year Plan” period.

Regulating solid waste management

In accordance with the State's new *Law of the People's Republic of China on Prevention and Control of Environmental Pollution by Solid Waste*, CRRC compiled the *Guide to Hazardous Waste Management* and the *Guide to the Management of General Industrial Solid Waste and Domestic Waste* and run pilot programs at eight subsidiaries in Tangshan, Ningbo, and Chengdu. Four exemplary enterprises in solid waste management, including CRRC Tangshan Co., Ltd., Ningbo CRRC Rail Transit Equipment Co., Ltd. under CRRC ZELC, CRRC Chengdu Co., Ltd. under CRRC Qingdao Sifang Co., Ltd., and CRRC Chengdu Sifang Rail Co., Ltd., were selected to run the pilot programs for solid wastes management. In 2020, CRRC disposed of 19,814 tons of hazardous wastes through qualified units.

Reducing exhaust emissions

As regards boiler flue gas

CRRC Changchun Railway Vehicles Co., Ltd. completed the “coal to gas” conversion of four boilers in the new factory area; CRRC Nanjing Puzhen Co., Ltd. adopted electric boilers instead of oil-fired boiler; CRRC Qingdao Sifang Co., Ltd. completed the demolition of four gas-fired boilers and their auxiliary facilities and adopted external central heating to reduce the emission of pollutants such as sulfur dioxide and nitrogen oxides from the source, thus eliminating the pollution of boiler flue gas to the atmospheric environment.

In terms of smoke control

CRRC Dalian completed the technical transformation of its exhaust pipes; CRRC Nanjing Puzhen conducted the air derusting or /rust removal in the processes of vehicle repair; CRRC Qiqihar adopted the point source electrostatic dust removal technology for the hook and tail frame welding to reduce particulate matter emission from the source; CRRC Tongling officially put the one-off casting cleaning shot blasting process into operation.

As regards process waste gas

CRRC Sifang invested RMB 11.05 million to treat industrial waste gas within the factory building by adopting the technology of “high cartridge efficient filtration + Zeolite wheel adsorption-desorption+ catalytic combustion”; CRRC Qiqihar adopted the UV photo-oxygen catalysis and activated carbon adsorption technology to treat the organic waste gas of motor immersion paint.

Reducing pungent odors

Case

In the casting process, even if water-based coatings are used, odors will still be emitted. To optimize the working environment for front-line operators and achieve greener production, CRRC QSYRI pooled experts to develop and apply inorganic adhesives, with a view to providing an ultimate solution to irritating odors generated during the casting process. Significant improvements were seen from the result of the trial of the first batch of products.

Water resources management

Committed to water resources conservation and sewage treatment, CRRC realized “zero emission” of industrial sewage by carrying out key projects such as the construction of new sewage treatment stations. In line with the design concept of recycling and making the best use of everything, the Lvshun factory area of CRRC Dalian built a sewage treatment station that may reuse 100% of reclaimed water, making itself a practitioner of water resources recycling, emissions reduction and efficiency improvement. In 2020, CRRC Dalian emitted 538 tons of CODs and consumed 15.32 million tons of new water.

CRRC continued to track the progress of sewage treatment projects, issued project implementation requirements to all its subsidiaries, specified project milestones, and established assessment and evaluation mechanisms. CRRC Sifang built a new sewage treatment station to realize the networking of online monitoring; CRRC Ziyang upgraded its on-line monitoring system for COD water quality at the general wastewater discharge outlet of its Locomotive Division; CRRC Datong completed the installation and commissioning of the on-site equipment for the treatment system project for cutting fluid purification and reuse; CRRC Zhuzhou adopted the method of “filtering, recycling and reusing water-based paint waste water” to “turn waste into treasure”; CRRC Qiqihar combed through its rainwater and sewage pipe network in the factory area, worked out plans, and realized the separation of rain and sewage; CRRC Changchun started the rainwater and sewage terminal regulation and storage treatment in its old factory. By the end of 2020, enterprises under CRRC had basically achieved rainwater and sewage diversion and attained the emission standards, and the number of enterprises directly discharging waste water had been reduced from 17 to 10, with the reuse rate of reclaimed water reaching 18.8%.

Contributing to ecological protection

Relying on its advanced technology and equipment, CRRC has contributed to ecological civilization by participating in a series of projects such as “Protecting the Yangtze River Basin Economic Belt and Building Chongming into a World-Class Ecological Island”, integrated water supply and sewage treatment in urban and rural areas, river regulation, and comprehensive environmental treatment for villages and townships.

Protecting the ecological environment of the Yellow River Basin

Case

Relying on its capability of integrated design and manufacturing of advanced environmental protection equipment, CRRC Datong won the bid for the novel rural sewage treatment project in Yangcheng County, Shanxi Province. In this project, the new ecological treatment method used for the buried integrated sewage treatment equipment was superior to the State’s highest standards for sewage treatment and discharge in terms of each of the 12 detection indicators, such as chemical oxygen demand and suspended solids, meeting the first-grade A discharge standard. The treated sewage can be used for farmland irrigation, sanitation, and cleaning. As such, water resources are reused, the utilization rate of water resources has been increased, and the living environment for the local residents and ecological environment have been improved.



Advocating green office

CRRC provided environmental protection training, with a view to embedding environmental awareness into every detail of corporate management, and advocated green office practices and green lifestyles among its employees.

“Cloud office” + paperless operations = high efficiency and environment-friendliness

Case

CRRC Xi'an Yongejietong Electric Co., Ltd. developed and applied the Enterprise Resource Planning (ERP) system and the Manufacturing Execution System (MES) + WeChat platform to realize mobile office, by which electronic signature and verification of various documents can be performed on the cellphone at any time. As such the data structure of its production management system was improved. On-site operators can search operation drawings and technical documents by operating the terminal display equipment, thus improving work efficiency and reducing paper use.



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CRRC has been committed to attracting highly-trained professionals from all over the world, providing good working and production conditions for its employees, arousing their enthusiasm, initiative and creativity, enhancing their senses of gains, well-being and security, carrying on entrepreneurship, scientific spirit, workmanship, and innovative spirit in the new era, and promoting harmonious relations and common prosperity between enterprises and employees. In 2020, the total number of CRRC employees was 164,177.

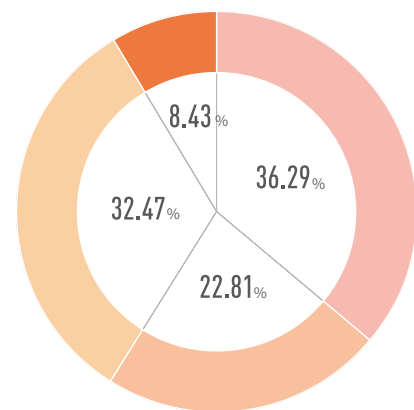
Bringing Together Talents and Promoting Career Development

- Safeguarding the legitimate rights and interests of employees
- Cultivating vigorous teams
- Focusing on health and safety
- Care for physical and mental health of employees

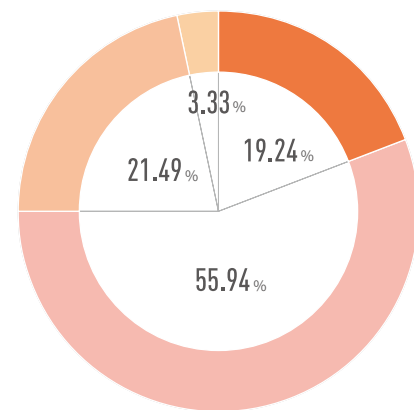
Safeguarding the legitimate rights and interests of employees

CRRC strictly abided by relevant laws and regulations, advocated fair employment, opposed employment discrimination due to gender, age and educational background, resolutely opposed employment of child labor and forced labor, and sought to build harmonious and stable labor relations. We resolutely safeguard the legitimate rights and interests of our employees and provides them with basic security such as pension, medical insurance, work injury insurance, unemployment insurance and maternity insurance. We valued democratic management, respected our employees' rights of participation and expression, broadened the channels of communication with them, and organized our subsidiaries to convene employees' congress, so as to learn about and address their needs. We have established a sound welfare system, providing paid annual leave, holiday subsidies, labor union services, physical examination, medical insurance, and annuities for our employees.

Educational background



Professional competence



"CRRC Day" celebrations

Cultivating vigorous teams

Practicing CRRC's talent philosophy of "talents hold the key to a company's performance", we have improved our talent management system, compiled the "14th Five-Year" Human Resources Management and Training Plans, formulated the *Implementation Plan for the Human Resources System to Engage in the Three-Year Action for State-Owned Enterprise Reform* and the *Implementation Plan for the Action to Improve Human Resources Management and the Working List of Improvements through Benchmarking*, and revised the *Special Action Plan on First-class Talent Development of CRRC*. All these policies have provided the "design and "construction drawings" for CRRC to deepen the reform of three systems and further improve its talent teams.

CRRC has fully implemented its talent strategy, issued and implemented the *Measures for the Administration of Core Talents at CRRC* and the *Administrative Measures of CRRC for the Rating of Vocational Skills*, and organized annual appraisal and selection of core talents by the standards and means of professional competence, competitiveness, openness, fairness, and practical utilization. We strengthened the coupling between salary incentives and performance assessment, and increased medium- and long-term incentives, with the number of subsidiaries implementing medium- and long-term incentives increasing to 11. Through salary-benefit linkage, efficiency-benefit benchmarking and salary regulation, CRRC systematically implemented differentiated remuneration management.

Key training programs at the headquarters

71

Cumulative training

6,000



Training specialists report on training enhancement results

Our subsidiaries trained

275,000

Including management personnel

38,000

Technicians

51,000



Outbound training for team leaders

Internal training

- We provided online skills training, opened the "Course for High-speed Rail Workers", and organized **17** experts in management, technologies and skills to develop training courses on rail transit equipment manufacturing featuring CRRC management, technologies and skills.
- Relying on the course resources of the Online Academy of CRRC University, we organized special training programs aiming to improve the comprehensive competence of our personnel stationed overseas, and more than **760** people participated in the online learning.
- Giving full play to CRRC's role as the national training demonstration base, we held **9** training sessions for highly-skilled professionals, and trained **297** people.

External training

- Relying on the platform of China E-Learning Academy for Leadership, CRRC organized more than **480** management personnel to participate in three courses, including the session of learning the spirit of the 4th Plenary Session of the 19th CPC Central Committee.
- Relying on training resources of universities such as Huazhong University of Science and Technology, CRRC held a special seminar to train digitalization talents, marking a new start of training in this specific area.
- Stepping up its efforts in the training of international talents, CRRC trained **256** such talents throughout the year.
- Besides, we held a training session for R&D talents and one for core process technicians, training **143** people in total.



National model worker Luo Zhaoqiang from CRRC Changchun



National model worker Zang Lanlan from CRRC Dalian



NPC deputy Zhang Jinghua from CRRC Qiqihar

Focusing on health and safety

Adhering to the concept that "ensuring safety is a paramount responsibility", CRRC has increased input in safe production, fulfilled its responsibilities, and implemented stringent management to provide its employees with a safe and reliable working environment.

Safe production

We implemented the *Three-Year Action Plan for Production Safety Rectification* and 12 special programs and promoted the modernization of the production safety governance system and governance capacity, with a view to fulfilling the vision of building a safe, harmonious and healthy CRRC.

Improving the safety management system

CRRC promoted the unification and standardization of safety management standards, processes and forms, and realized standardized management and regulations. Besides, we developed the "CRRC Safe Building" management system and created a duplicable and translatable safety management mode. Guided by CRRC's 14th Five-Year Plan for Safety and Environmental Protection and the scheme for safe building construction, we have been engaged in enhancing the intrinsic safety of personnel, equipment, environment and management.

Carrying out safe production assessment

CRRC revised the *Corporate Measures for Reward and Punishment in Respect of Safe Production*, issued the *Notice on Consolidating Safe Production Responsibilities and Promoting the Application of "Two Lists for Each Post" for Safe Production* and the *Notice on Strengthening Source Control and Promoting Safe Processes*, carried out centralized rectification of performance of duties, and consolidated the system of "one post with double responsibilities" for safe production.

Improving the professional competence of the safety team

We established a talent pool by engaging the first batch of CRRC safety management technical experts and selecting personnel for the first batch of CRRC technical talent reserve for safety management.



National model worker Sun Jingnan from CRRC Nanjing Puzhen

Safety culture

Placing a high priority on safety culture, CRRC carried out "Safe Production Month" activities, featuring online and offline training sessions on safe production laws and regulations and post-specific operation procedures, so as to help employees get familiar with safe production rules and regulations, understand technical operation specifications, and effectively improve their safety protection capabilities.

Besides, we organized a speech contest for safety among our operating teams, and uploaded the videos of speeches made by outstanding teams to the "CRRC Digital Platform for Safety" for employees to watch and learn. Seven subsidiaries of CRRC have been rated as national model enterprises for safety culture.



Invested in safety training

RMB **900** million



10 courses of safety training such as special operations were provided for a total

121,845



Safety emergency drills were conducted

2,184



A total of person-time

87,260

Health management

Putting employees' safety and health first, CRRC has been standardizing occupational health management for its employees, and carrying out physical examination and mental health training for them on a regular basis.

Each year, we make meticulous plans for safe operations, occupational health, hazard source identification, fire safety, and emergency response, replenish and enhance our trainer team, and arrange internal and external safety experts and leading members of the party branch committee to give lectures on a monthly basis, thus enhancing all employees' comprehensive competence for safe production, safety awareness, and safety skills, ensuring their personal safety, and promoting safe production for our branch factories and subsidiaries. In 2020, the coverage of physical examination reached 99%.



In 2020, the coverage of physical examination reached

99 %

Releasing mental stress

CRRC has held conference calls, during which centralized psychological consultation was offered to after-sales service personnel to relieve their mental stress. Besides, we strengthened publicity to promptly interpret the requirements of our superior authorities, the common knowledge on pandemic prevention, as well as corporate policies.

Increasing aid

We facilitated the channels for employees to safeguard their legitimate rights and interests, increasing the funding for key support programs, and enhance our aid to the employees and their family members living together with them. Besides, we made overall arrangements to comfort front-line personnel engaged in pandemic prevention and control.

Care for physical and mental health of employees

We have been caring about our employees, offered help to them in their work and daily life, and assisted them in overcoming difficulties, thus improving cohesion and creating a warm and harmonious atmosphere.

Besides, we have organized various skill competitions and a variety of cultural activities to enrich employees' lives. To improve the physical and mental health of its employees, we built on-site rest corners, comprehensive cultural activity rooms, and "flower huts" for female workers. Besides, to create a good environment for employees to learn and take rest, we improved the living facilities for our operating teams, constructed cultural and sports venues, and built a cultural wall on the theme of "Harmonious Home".

Creating a warm atmosphere by building the "Aquilaria House"

Case

In March 2020, CRRC Zhuzhou established "Aquilaria House" as per the needs of technicians. "Aquilaria House" offers a fitness center, a "harbor for the soul", a "garden for learners" and a "Party-masses ground", providing fixed venues for employees to engage in spare-time activities.



The "Runner Group" of CRRC Xi'an line up at Xi'an Marathon



CRRC Sifang gives out "happiness" during the Spring Festival



CRRC Datong holds chorus competition on the theme of "Going Together with You"



"CRRC Day"



CRRC values the sharing of development achievements with the society and gives back to the society by fulfilling its social responsibilities and love. In this regard, we built a CSR ecosystem for sustainable development together with the local authorities, sparing no efforts to become an enterprise with temperature and responsibility.

Care Welfare of Society and Improving People's Livelihood

- Winning the battle against poverty
- Supporting community development
- Implementing “five localizations” model

Winning the battle against poverty

In response to the call of the CPC Central Committee and the State Council, CRRC has actively shouldered its corporate social responsibilities and missions. We have earnestly engaged in targeted poverty alleviation for Jingxi City and Napo County of Guangxi Zhuang Autonomous Region and Maiji District and Gangu County of Gansu Province, by combining “blood transfusion” and “blood making”. In 2020, CRRC dispatched four cadres and one first party secretary stationed to village to work in the targeted areas of poverty alleviation. Besides, CRRC has made a direct investment of RMB 16.85 million, brought in RMB 750,000 of poverty alleviation fund, trained 96 grassroots cadres (including 9 people in Pingxiang County) and 539 technical personnel, purchased RMB 23.2816 million worth of agricultural produce from the poverty-stricken areas, and assisted them in selling RMB 4.7696 million worth of products. As a result, all of the four counties were lifted out of poverty as scheduled.

CRRC and the targeted areas of poverty alleviation have worked together and explored a variety of poverty alleviation model, including infrastructure construction, consumption, industrial development, e-commerce, and intellectual development, forging the “high-speed rail quality” for targeted poverty alleviation.



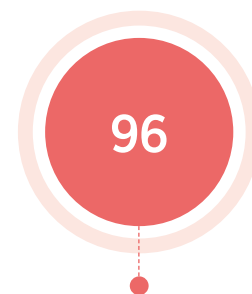
In June 2020, Sun Yongcai, then president of CRRC, went to Maiji district and Gangu County of Tianshui City to carry out research on targeted poverty alleviation work. He successively went to Fuwan farmers' Professional Cooperative in Maiji town and Bee Breeding Industrial Park in caotan village to learn more about bee breeding and poverty alleviation industrial development, and donated poverty alleviation project funds



CRRC invested aid funds



Brought in aid funds



Trained grassroots cadres

Enhancing the “blood-making” function through poverty alleviation by industrial development

To enhance the “blood-making” function and achieve long-effect poverty alleviation, CRRC developed distinctive industries relying on its industrial advantages and according to the local conditions of the targeted counties.

Developing planting and breeding industry based on local distinctive industries

In the past three years, CRRC has invested more than RMB 28 million of industrial capital to build a pepper industrial park across 12 villages of Baliwan Township, Gangu County and a Hongfeng apple planting base in Xiping Township; a 200-mu flower plantation and a Chinese honeybee breeding park in four townships of Maiji District; an edible fungus base in Dashi Village, Ludong Township, Jingxi City, a 2,500-sqm pig breeding greenhouse in Kanghe Village, and a 200-sqm small-silkworm breeding room in Dezhou Village; a passion fruit industry park in Bainan Township, Napo County, a large-silkworm breeding room in six villages of Longhe Township, and a collective cattle farm in Qianhe Village.

Developing the spare parts industry based on CRRC's industrial advantages

CRRC launched a series of cooperation projects with nine manufacturing enterprises in Tianshui, achieving a total turnover of more than RMB 15 million. In Wei County, Handan and Pingxiang County, Xingtai of Hebei Province, the lock nut project led by CRRC Mechanical and Electrical Division and planned by CRRC Beijing Heavy Industry Mechanics Co., Ltd. has helped local enterprises rapidly realize mass production capacity from zero basis in terms of talent co construction, equipment transfer, technical training, etc., and has formed a production capacity of 30,000 per day. Besides, the product cooperation between CRRC Dalian and Fengwei Company in Pingxiang Township has been extended to 23 kinds under three categories across two major product series.



CRRC ZELC aided Shibadong Village in constructing the “Miao Embroidery (National Intangible Cultural Heritage) Workshop for Poverty Alleviation by Employment” and developed Miao Embroidery products on the theme of high-speed rail

Stepping up poverty relief inputs through consumption-based poverty alleviation

We tapped further into local product resource in the designated poverty alleviation areas, and carried out consumption-based poverty alleviation in well-targeted fashion, helping the villages assigned to the CRRC grow business revenues by “transfusing, generating and invigorating blood”.

Orders were placed with “poverty relief workshops”

A total of 72 “poverty relief workshops” have been created in Gangu County, Gansu province. CRRC has ordered over 50,000 sets of uniforms from the poverty relief workshops over the past three years, with a total price of more than RMB 8 million. In addition, “Gangu County Tengda Apparel Co., Ltd”. has been officially accepted as the CRRC's labor protection appliance supplier and also a noted industrial brand in Gansu province.

Resource sharing amid collaborative consumption-based poverty alleviation

We entered into an agreement on collaborative consumption-based poverty alleviation with the Agricultural Bank of China and China Construction Bank, and listed agricultural produce from four counties directly on the “Consumption-based Poverty Alleviation” platforms of the two major national banks and the CSOEs to share related resources, leveraging the “CRRC Charity Shopping” platform - some RMB 36 million worth of agricultural goods have been purchased by CRRC, or helped to be sold to other entities.

Inspiring endogenous power through education

People is key to targeted poverty alleviation. Following the principle of “poverty alleviation necessarily involves inspiring the fighting spirit and wisdom”, we continuously reinforced the spiritual and intellectual dimensions of poverty alleviation, improved the competence and overall qualifications of grassroots-level government officials, and broadened the horizons of children living in these areas, inspiring endogenous power of poor households to fight poverty.

Training sessions for grassroots-level government officials

CRRC Academy has run the training for grassroots-level government officials in the poverty-stricken areas assigned to the CRRC for three years in a row, and 189 officials have received the training.

Comprehensive quality training of rural backbone

CRRC took various training forms, such as “bringing external specialists to poverty-stricken areas, while sending local residents out” to carry out training for general qualification training of rural “backbone” officials. A total of 907 local officials have received well-targeted training so far.

Students from poor mountainous regions rode bullet trains

We organized two “bullet train riding” events for children in mountainous regions to broaden their horizons, benefiting 75 students and teachers in total.



CRRC Yongji Electric Co., Ltd. held “Set Sail in Pursuit of Your Dreams” open day events in poverty-stricken areas

Poverty alleviation by further developing infrastructure facilities affecting the public’s well-being

Focusing on “two worries and Three Guarantees”, we developed poverty aid projects tailor-made to the actual needs of poor areas, and rectified weaknesses in infrastructure networks, sparing the efforts to release the people in poverty-stricken areas “free from worries over food and clothing and have access to compulsory education, basic medical services and safe housing”. Since the launch of poverty alleviation initiatives in 2016, we have invested more than RMB 32 million of funds in the renovation of 120 dilapidated houses in Gangu County, hardened 15 kilometers of roads, and built drinking water projects for humans and animals; sanded and hardened 38.5 kilometers of roads in Maiji District, Ganquan Town; built 150 houses in national border-adjointing villages within 0-3 kilometers from the border of Pingmeng Town, Napo County, and multi-purpose complexes in Dehe Village and Zhehe Village, Longhe Town; hardened 12 kilometers of country roads in Nanpo Township, Jingxi, transforming the Buling New Village into a model village of the New Countryside campaign in Baise.

Temporary government official sells poverty-relief local specialties via livestream commerce

Case

Dong Qing, a CRRC employee who temporarily acted as a deputy mayor of Jingxi, sold Jingxi local specialties through livestream commerce, in partnership with the local broadcaster in Guangxi province, contributing to the poverty alleviation initiatives. The livestreams attracted more than 50,000 viewers with some 240,000 likes. More than RMB 200,000 of sales were generated by the mayor livestreams. As a totally new sales channel, it facilitated the resumption of business and production activities, as well as boosting agricultural goods sales.



A “The Mayor is Here” livestream

Supporting community development

CRRC actively communicated with local communities, and organized and participated in a diverse range of charity and voluntary service events, spreading the CRRC's philanthropic ideals, and leveraging the CRRC's strengths to give back to the society.

Communications with communities

We pay due attention to communications with all sectors of the society, so that various stakeholders can get a better understanding CRRC quality and corporate culture. In 2020, we held the largest and the most high-profile global open day event since the inception of the CRRC – “Introducing You to the CRRC, a Leading SOE” to celebrate the 5th anniversary of the CRRC.

Increasing brand global visibility via “Introducing Fans to the CRRC”

Case

During the 9th “Introducing Fans to the CRRC” event was held at the Cultural Mission Section of CRRC Chengdu in July 2020, more than 60 international students from seven countries visited our fully automated intelligent driving test platform, and production lines of the urban rail transit plant, allowing them to see for themselves what goes on in high-end rail equipment manufacturing behind the scenes.



“This is my first close contact with rail transit machinery and equipment. Those trains become warm after I learned about the CRRC's culture, and they look very humane to me.”

—Salih Sulieman Elzain Salma, an international student from Sudan



Volunteer services

We are a champion of the philanthropic spirit, and encourage employees to join volunteer organizations. We have provided various forms of volunteer services regarding topics such as “Learn from Lei Feng”, bringing tiny streams of kindness together, and turning them into an ocean of selfless dedication.

Carry out the book donation activity of "good books with growth"

Case

CRRC Beijing Nankou Co., Ltd. organized a book donation event dubbed “Good Books Accompany Me Growing up” in 2020. The employees responded enthusiastically, and donated Chinese books to primary and middle school students in Hotan, Xinjiang. CRRC Beijing Nankou and all joint-venture affiliates took part in the event, and a total of 963 books were collected and donated, covering nearly 20 categories such as world classics, humanities and social sciences, historical biography, and children's literature. After the books were sterilized, they were sent directly to Xinjiang by JD Logistics, disseminating knowledge and spreading love among primary and middle school students in the Hotan area.

A diverse range of volunteer events have been organized

Case

CRRC Qiqihar has continuously organized various employee volunteer activities such as “March 5th Learn from Lei Feng”, “Golden Autumn Financial Aid for Students”, “Thanksgiving to Young High-speed Rail Service Workers” and other forms of employee volunteer activities to guide young employees to shoulder their social responsibilities. In addition, we innovated existing models, and held the fourth “Youth Culture Festival” combining online and offline facilities, to unite and gather the strength of young employees and showcase the glory of youth. In 2020, CRRC Qiqihar provided more than 600 hours of volunteer services, with 767 donors donated RMB 41,278 in total.

Blood donation activities

Case

In July 2020, CRRC Qishuyan organized its employees to donate blood for free. Staff members participated in the event with enthusiasm, contributing significantly to public health. A total of 96 employees donated 28,400ml of blood. CRRC Qishuyan also initiated the “Charity Star, the Charity Center in the Capital of Trains”, and organized charity events revolving around blood donation, disseminating knowledge related to free donation of blood and bone marrow. The events have led to a profound impact on society.



Implementing “five localizations” model

CRRC implemented the strategy of “localized manufacturing, localized procurement, localized workforce, localized maintenance and localized management” in a deep-going way, striving to serve as a cultural “translator”, a talent “incubator”, a driver of market growth, and a “good neighbor” to local communities, seeking to materialize mutual consultation, co-development, sharing, and win-win cooperation with various stakeholders in more areas.

Localized manufacturing

We developed local production bases by establishing joint ventures and wholly-owned subsidiaries and acquiring production sites on leasehold, introducing our “technology + management” expertise to external entities. Manufacturing companies were set up in Australia, Turkey, Malaysia and South Africa. In particular, the Turkish company has an annual manufacturing capacity of 200 urban rail vehicles, and has started production for the Ankara stainless steel subway project.

Localized procurement

We have established a localized procurement strategy. Small parts and components: we actively sought out the best local suppliers to replace imported parts and components, and broaden procurement channels; medium-sized parts and components: efforts were made to help local manufacturers achieve localized production of parts, and further develop the industrial chain; large parts and components, we supported suppliers in setting up branches overseas, and co-invested with suppliers to build factories abroad.

Localized workforce

We scaled up localized employment supported by local projects, and conducted staff training on skills, language and culture to enhance the professional qualifications of staff members. In recent years, the number of locally recruited employees in the company's overseas bases has continued to rise steadily, with a localization rate of 92.2% in overseas production bases.

Localized maintenance

We have been committed to providing full-life-cycle localized services, and improving service response speed. In India, multiple measures, including advising by Chinese technical specialists, mixing Chinese and Indian employees, and offering skill training, have been adopted to effectively tackle the issue of inadequate skill level among Indian service staff.

Localized management

Localized management has made it easier for us to acquire a thorough understanding of local laws and regulations, customs, culture and market rules, foster our identity, draw the Company closer to the market and customers, and gain direct access to information.

Fostering local industrial chain companies in Malaysia

Case

CRRC ZELC Malaysian branch fostered local industrial chain enterprises, and stimulated the development of the local economy. Malaysia Light Rail Line 3 is the first driverless light rail project ever undertaken by a Chinese company overseas. As the consortium leader for the project, CRRC ZELC oversaw the project management operations, overall vehicle design, supply of non-localized components and train production. TegapDinamik was responsible for implementing localization, including localization of procurement and supply of parts and services, while Siemens China was tasked with the design of vehicle traction systems.

Diesel locomotives produced in Myanmar gent into operation

Case

Diesel locomotives DF-2099 and DF-2100, locally manufactured by CRRC Dalian in Naypyidaw, Myanmar, came into operation in August 2020, and made travel much easier for local communities. In the locomotive manufacturing process, the Chinese and Burmese sides collaborated with each other based on a clear division of labor - CRRC exported its technology, while the Burmese side organized localized production activities, significantly improving the local railway equipment production capacity in the country.




DF-2099, a diesel locomotive produced by CRRC Dalian in Myanmar

Maintenance service and localization training for the Mombasa-Nairobi Railway project

Case

CRRC Qishuyan, CRRC Qiqihar, and CRRC Nanjing Puzhen respectively produced rail transportation equipment internal combustion engines, freight cars and passenger cars for the Mombasa-Nairobi Railway in Kenya, as well as undertaking railway operations and maintenance and localized training services. With a view to ensuring the safe operation of the Mombasa-Nairobi Railway, the three companies respectively dispatched maintenance teams to be permanently stationed in Kenya, providing 24/7 operation security services. In addition, through apprentice-master mentoring, the maintenance teams created substantial supplies of railway technical human resources in Kenya. As of February 2020, the Mombasa-Nairobi Railway in Kenya has operated safely for 1,000 days, and the performance of the maintenance service team has been highly praised by the railway operator Africa Star Railway Operation Company.



The Kenya Maintenance Project Team of CRRC Qiqihar went all-out to ensure the smooth freight transportation along the Mombasa-Nairobi Railway



Adhering to the core values focusing on "being honest and upright; excelling at doing good deeds", CRRC has been a champion of transparent operations, and has innovated and benchmarked itself against world-class standards, striving to build a more reliable, more efficient and more systematic modern enterprise operating mechanism. We have promoted win-win cooperation among various entities, as well as synergistic rail transit development following the principles of the rule of law and openness.

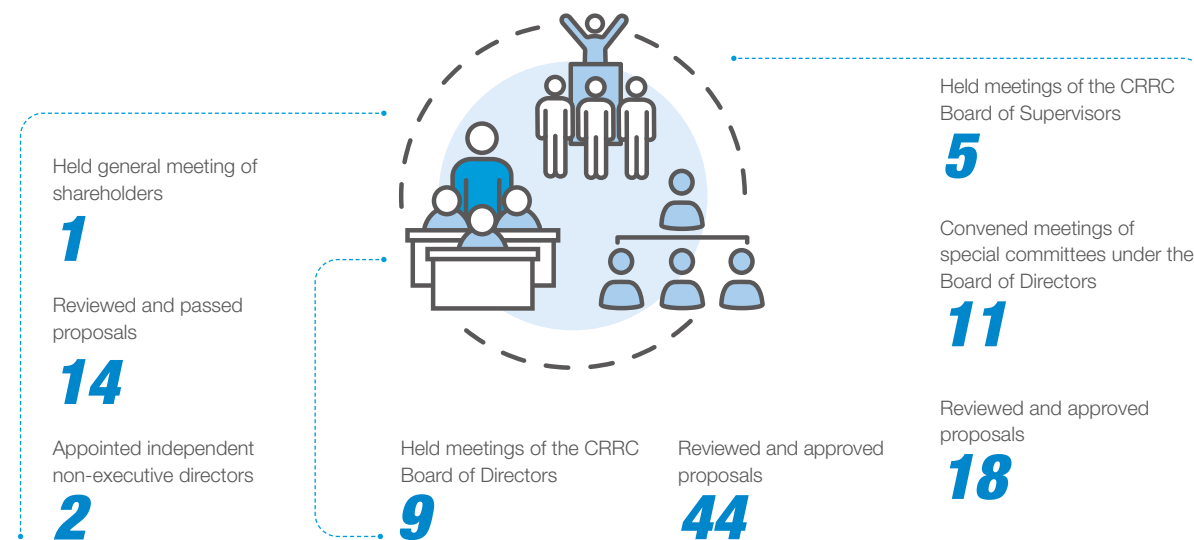
Regulatory Compliance and Synergistic Development

- Enhancing corporate governance
- Transparent operations conducted in compliance with regulations
- Promoting management innovation
- Promoting win-win cooperation

Enhancing corporate governance

Scientific and standardized corporate responsibility governance structure and system are crucial to ensuring regulatory compliance. CRRC optimized and improved its governance system, revised its “Articles of Association”, “Rules of Procedures of the General Meeting of Shareholders” and the “Rules of Procedures of the Board of Directors”, and amended and improved the implementation measures for the “Three Important Matters and One Major Matter” decision-making policy, setting out the requirements for the party committee, the Board of Directors, and the Office of the General Manager (President) in terms of division of powers and responsibilities regarding the “Three Important Matters and One Major Matter”.

With a view to adapting itself to the latest changes made by regulatory authorities, and to the development of the capital market, CRRC conducted a diverse range of multi-level training courses, stepped up the development of the Board of Directors nurturing governance talents that meet the needs of the capital market, aiming to create well-coordinated, systematic and highly efficient corporate governance mechanisms characterized by clear division of duties and effective checks and balances. In 2020, we organized employees to attend various on-site training sessions offered by regulatory authorities for more than 80 trainees, to obtain a clear understanding of the latest regulatory policies and requirements, and build on our professional governance capabilities.



Transparent operations conducted in compliance with regulations

Upholding the principle of regulatory compliance, the CRRC has been committed to establishing a long-term mechanism for ensuring regulatory compliance and transparent business operations by tightening up internal risk control and promoting transparent communications.

Tightening up internal risk control

In view of the constantly growing risk exposure, risk management and control capabilities have been becoming one of the factors contributing to the core competitiveness of companies today. The CRRC has carried out a systematic risk response plan in place focusing on the monitoring of material risks, and aligned its internal control and risk control capabilities with business development, while mounting a campaign of risk prevention and mitigation. In 2020, CRRC was selected as one of the world's 9 benchmark companies in risk management by the research group of SASAC in its research project entitled “Risk Management Approaches and Experience of World-class Enterprises”.

Improving and optimizing the risk management mechanism

We established the Audit Risk and Legal Affairs Center, and formulated and distributed the “14” Five-Year Plan of the CRRC on Audit Supervision and Risk Management (Preliminary Draft), “(Interim) Risk Review and Management Measures for Major Projects” and accompanying supporting risk management guidelines, “(Interim) Administrative Measures for Major Business Risk Events” and accompanying risk management guidelines, and “CRRC Risk Management Improvement Action Plan and Benchmark-based Improvement Checklist”. Furthermore, we released the first “CRRC Code of Business Conduct” and a series of related policies, established the criteria for calculating risk exposure, implemented quantitative management of key risk control operations, and set up an archive of material risk events, laying the institutional groundwork for more effective risk management.

Organize risk assessment and screening

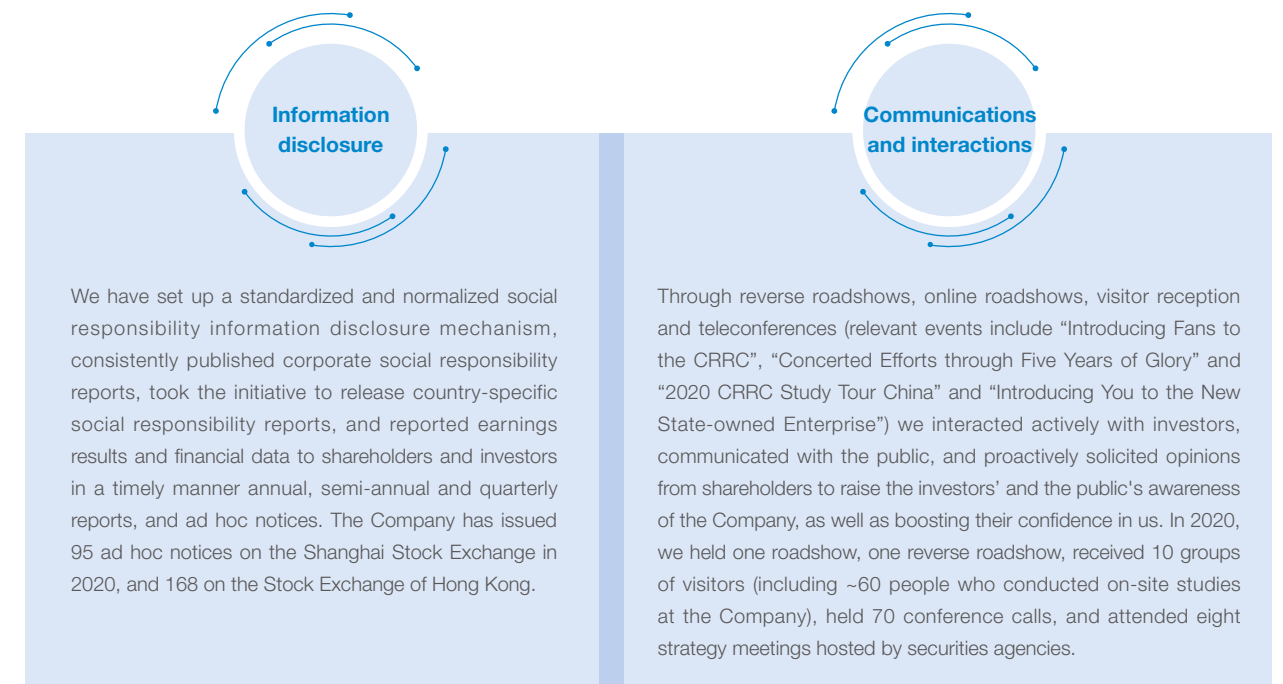
Focusing on material risks and key projects, we organized and carried out an annual comprehensive risk assessment campaign, special PPP project risk assessment and audit in Taizhou, and special risk management and control initiatives for overseas projects, with the aim of investigating internal and external risks on a comprehensive scale.

Effectively preventing and mitigating material risks

Through internal transfers and external referrals, we have set up a special risk mitigation team to develop risk mitigation strategies for various material risks and perform group consultation. Different strategies have been drawn up for different types of risks, and high-risk affiliates have been subject to close scrutiny, with positive results achieved.

Promoting transparent communications

CRRC has attached great importance to the protection of investigators' legitimate rights and interests, and paid due attention to communications with the public, seeking to safeguard investors' interests with well-regulated information disclosure and diversified communication channels, and created a favorable external environment for the company by building close connections with the public in a transparent and open fashion.



Promoting management innovation

The management improvement campaign, which is benchmarked against international best practices, reflects not only the top-down arrangement for deepening the reform of state-owned enterprises (SOEs) and building a world-class enterprise, but also CRRC's inherent need to fulfill strategic development objectives in response to the latest changes in market conditions and its obligations. Taking the management improvement campaign benchmarked against world-class management practices as the most important means to revamp the management system and build on management capacities, CRRC has sought to create a world-class model enterprise, and was committed to building a systematic, well-regulated, complete and highly efficient management paradigm, adhering to approach focusing on "strong foundation, business enablement, and transcendence".

➤ Build an "integrated" promotion structure

Prioritizing performance metrics-based improvement and promotion efforts, we established a system for quantitative metrics, e.g. development at scale, operating performance, operating efficiency, and innovative development; focusing on major breakthroughs in 10 high-priority areas, we have been committed to innovating, leading and improving management systems and capabilities on a comprehensive scale; we strived to build a secure management foundation to drive the CRRC's transformation into a world-class company, with the three-year "Strong Foundation Campaign", which encompasses "foundational policies, operations, capabilities and management", serving as the platform.

➤ Develop a multi-layer implementation plan

We finalized the "1 + 10 + N" three-year management improvement action plan benchmarked against world-class management practices, where: "1" refers to the CRRC's "benchmark-based world-class management improvement action plan"; "10" refers to the 10 special improvement implementation plans; and "N" refers to the implementation plans of all the first-tier subsidiaries with regards to the management improvement action plan.

➤ Focusing on "penetrative" benchmarking

Benchmarked against international peer companies, we compiled the "Comprehensive Report on Benchmarking Research between the CRRC and World-Class Companies" and the "CRRC Guidelines for Benchmark-based Management Improvement Campaign", giving greater prominence to self-improvement in terms of benchmarking against global market leaders, best management practices and the most effective industry standards.

➤ Clarifying a progressive approach to management improvement

The "1-2-3-10" progressive pathway has been proposed, where: "1" refers to the core goal of creating management soft power that befits world-class companies; "2" refers to the coordination of systematic improvement at the headquarters and subsidiary level; "3" refers to the formation of a driving engine to deliver fast improve in management revolving around the three priorities - foundational capacity building, synergistic business enablement and value transcendence; and "10" refers to innovation-driven and comprehensive development of the management systems and management capabilities in ten high-priority areas.

➤ Establishing multi-phase working plans

We divided long-term work arrangements into "three stages and nine steps", and drew up high-quality working plans and checklists for management improvemen with benchmarking world-class as the starting point.

Promoting win-win cooperation

Firmly believing that "open cooperation is the right way and win-win cooperation is the only way towards steady growth", CRRC continued to improve procurement management, conduct extensive industrial exchanges and strategic cooperation, and joins hands with upstream and downstream partners and industrial communities to help promote the high-quality development of the rail transit industry.

Optimizing procurement management

CRRC has strengthened the top-level design by preparing the "14th Five-Year Plan" for procurement and supply chain, improved the institutional building, deepened the benchmarking assessment of procurement management, enhanced dynamic management, prevented supply risks, assisted suppliers in fulfilling their responsibilities, and carried out procurement training. We carry out procurement training and other diversified ways to comprehensively optimize the company's procurement management and build a responsible supply chain.

Enhancing the institutional building and improving the management system

CRRC has amended and issued the *CRRC Headquarters Operational Service Procurement Management Measures*, drafted the *CRRC Operational Service Procurement Measures*, standardized the procurement business process, and actively participated in the drafting and review of the *Procurement Operation Standards for State-owned Enterprises and the Procurement Management Standards for State-owned Enterprises* organized by China Federation of Logistics & Purchasing, laying the foundation for the improvement and innovation of CRRC's procurement management system.

Strengthening the top-level design and formulating five-year plan

CRRC has formulated the "14th Five-year Plan" for the procurement and supply chain, and vigorously developed key businesses such as centralized procurement, internal support, smart logistics, e-procurement, supply chain finance, e-commerce platform for CRRC green resource reuse, etc., in an effort to give full play to the value-added role of supply chain coordination.

Deepening benchmarking management and promoting typical experience

CRRC has carried out in-depth benchmarking assessment of first-level subsidiaries' procurement management, organized further experience review by subsidiaries, identified gaps and made improvement, and formulated *CRRC Procurement and Supply Chain Management Experience Exchange Materials* in an effort to continuously improve the overall procurement and supply chain management.

Preventing supply risks and ensuring supply stability both at the company level and the subsidiary level

CRRC has actively cooperated with relevant departments in ensuring emergency materials, and promoted the coordinated resumption of work and production of CRRC's supply chain and industrial chain. CRRC has also organized thematic meetings to study overseas supply chain risk mitigation and handled CRRC procurement and supply chain risk prevention and control.

Strengthening dynamic management and improving synergy

CRRC has issued the *2021 Catalog of CRRC Authorized Centralized Procurement Materials* to further expand the scope of first-level centralized procurement materials; CRRC has released the 2020 blacklist of CRRC market trade business to prevent trade risks in new market.

Organizing professional training and improving business skills

Combining online and offline training, CRRC has carried out professional training on procurement and supply chain. A total of 1,274 people have taken online courses such as modern supply chain development and China's supply chain strategy, and new trends in global supply chain development in the post-COVID-19 era. A total of 113 people have participated in the training on procurement cost control and optimization at CRRC University.

Carrying out extensive cooperation

Paying attention to the growth of its partners and the development of the industry, CRRC joined hands with the government, universities, peers, equipment manufacturers, etc. to carry out technical exchanges and strategic cooperation, jointly contributing to the development of global rail transit.

CRRC won the bid for the Wuxi-Jiangyin intercity rail transit PPP project

Case

With its professional advantage in the rail transit field, CRRC won the bid for the PPP project of the Wuxi-Jiangyin intercity rail transit project. With a total investment of about RMB 14 billion, the project adopts the BOT model of "investment + construction + operation". It is an important strategic project for the acceleration of the integration of Wuxi and Jiangyin by CPC Wuxi Committee and Wuxi Municipal Government, actively echoing the integrated development strategy of the Yangtze River Delta region. It is also a successful example of the "government-enterprise cooperation" between the CRRC and the governments of Wuxi and Jiangyin. CRRC will gather the strengths of different industrial modules and strive to turn the project into an exemplary one.

Signed a strategic cooperation MOU

Case

CRRC Sifang and Khalifa University of Science and Technology signed a strategic cooperation MOU in a joint plan to establish in UAE CRRC's first overseas joint R&D center in the Middle East specializing in rail transit. The center will make the most of the strengths of CRRC Sifang Co., Ltd. in rail transit equipment, the scientific research capabilities of Khalifa University of Science and Technology, and the application experience of Etihad Rail to jointly carry out project cooperation and promote technological innovation in rail transit.



31 technical equipment procurement agreements were signed at the 3rd CIIE

Case

In November 2020, 13 subsidiaries of CRRC and 26 overseas suppliers and their agencies from 9 countries including the United States, Germany, Sweden, Czech Republic and Japan signed 31 agreements on technical equipment procurement at the 3rd CIIE. On the CIIE platform, CRRC shared the results of trade growth with its partners from all over the world and worked with global partners to jointly promote the prosperity of the industry.



Outlook on 2021

2021 is the first year of the "14th Five-Year Plan" period and also the year when China's "two centenary goals" converge. We will further implement the important instructions of General Secretary Xi Jinping during his three inspections at CRRC, remain true to our original aspirations, keep in mind our mission, fully integrate into the strategy of building national strength in transportation, science and technology, manufacturing, and high-quality products, and strive to build a world-class model company while achieving high-quality development.

Adhering to reform-driven development

We will continue to accelerate the optimization of the allocation of production factors, comprehensively build the four major business segments, namely, railway equipment, urban infrastructure, strategic emerging industries, and modern services, speed up the strategic layout of new industries, accelerate the cultivation of several backbone businesses of high technology, strong influence, and good economic benefits, and continuously improve the diversified business management structure and control system.

Adhering to innovation-driven development

We will continue to develop high-end technology in the high-end industry, provide high-end products (services) and move towards high-end value chain, and deliver high-end brand. We will strengthen the building of the technological innovation system, make breakthroughs in core technologies, speed up technology and product upgrades, accelerate transformation and upgrading, and build a high-end brand image.

Adhering to openness

We will continue to integrate into global development, promote the global development of our products, technologies, services, capital, management and system solutions, provide our customers with more professional technologies and better services, and strive to provide countries in the world with CRRC technologies, products, wisdom, and solutions, in an effort to realize joint contribution and win-win results.

Adhering to ecological conservation

We continue to practice the concept that "lucid waters and lush mountains are invaluable assets", strengthen ecological conservation and pollution prevention, and contribute to green travel, green manufacturing, green products and green development through the application and promotion of new products, new processes, and new technologies, helping win the battle of defending our blue sky, clear water and clean soil.

Adhering to social interaction

we will continue to adhere to the people-oriented principle, provide our employees with promising career development, create a warm and harmonious working atmosphere, deliver greater comprehensive value for the society, give back to the society, and share the results of our development with employees and society, helping promote the local economic and social development.

A good beginning is half the success. Embarking on the new journey of the "14th Five-Year Plan", we will seek progress while maintaining stability, remain firm in our direction, move forward with resolve, and strive to rapidly develop CRRC into a world-class company while realizing our dreams.



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Feedback from Readers

Dear readers,

Thank you very much for reading the 2019 CRRC Social Responsibility Report. We pay great attention to and expect to hear your feedback on CRRC's management, practice and reporting of social responsibility. Your comments and suggestions will help us to continue promoting the management and practice of corporate social responsibility. We look forward to your reply!

Multiple-choice Questions (please tick ✓ in the appropriate box)

1. Does the Report reflect the significant influence of CRRC on economy, society and environment?

☐ Yes ☐ Somewhat ☐ No

2. Do you think the relation analysis of stakeholders hereof and CRRC is accurate and comprehensive?

☐ Yes ☐ Somewhat ☐ No

3. Was the information provided in this report comprehensive?

☐ Yes ☐ Somewhat ☐ No

4. Was the information provided in this report readable?

☐ Yes ☐ Somewhat ☐ No

Open Question

Please address any opinions and suggestions on the 2018 CRRC Social Responsibility Report.

Your Contact Information :

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