

2018

Environmental, Social and Governance Report

CHINA RAILWAY SIGNAL & COMMUNICATION CO., LTD.

CRSC Technology Safety and Efficiency

Cooperation Promotes Development

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About This Report

This report is the sixth publicly disclosed Environmental, Social and Governance Report of China Railway Signal & Communication Co.,Ltd.. This report aims at responding to stakeholders' expectation and demonstrates CRSC's concept, management, actions and performance of environmental, social and corporate governance and sustainability.

Reporting Reference

This report is prepared with reference to the Guideline on Corporate Social Responsibility of State-owned Key Companies by SASAC, "Appendix 27 Environmental, Social and Governance Reporting Guide" the Rules Governing the Listing of Securities on HKEX (Listing Rules). This report also meets the requirements set out in the Sustainability Reporting Guidelines (G4.0) issued by the Global Reporting Initiative (GRI), the Chinese Corporate Social Responsibility (CSR) Report Preparation Guide (CASS-CSR 3.0) issued by the Chinese Academy of Social Sciences and other national and international CSR reporting guidance.

Scope of the Report

Unless otherwise stated, this report includes China Railway Signal & Communication Co.,Ltd.'s headquarter, all its branches and subsidiaries, which the same scope of 2018 Annual Report.

Report Data Specification

All key financial data disclosed in this report are collected from China Railway Signal & Communication Co.,Ltd.'s 2018 Annual Report, other data are mainly sourced from internal management systems of the Group.

Reporting Period

1 January 2018 - 31 December 2018. Some content is sourced from historical data.

Reporting Specification

For the convenience of expression and reading, "China Railway Signal & Communication Co.,Ltd.'s", may be expressed as "CRSC", the "Company" and "we".

Reporting Cycle

This is an annual report.

Access to the Report

This report can be browsed or downloaded both in Chinese and English version at the official website of CRSC or at the website of Hong Kong Exchanges.



2018

Memorabilia of 2018

1.CRSC was rated Level A in business performance assessment of heads of central government-led enterprises for three consecutive years

CRSC was selected into the A-level list of the 2017 Business Performance Assessment of the Heads of Government-Led Enterprises, the third consecutive year that CRSC has been rated Level A, which fully reflected the State Council's SASAC affirmation of CRSC reform, development and business performance.

2.China's high-speed rail system for autonomous trains passed trial review

In April, the world's first 350-kilometer high-speed rail system for autonomous trains (C3+ATO) developed by CRSC successfully completed the laboratory test.

In December, the complete set of 350km high-speed rail system for autonomous trains (CTCS-3+ATO) independently developed by CRSC passed the trial evaluation by China Railway Corporation, indicating that the technology passed the field test and would officially enter on-site trial phase of Beijing-Shenyang Special Passenger Line. This provided scientific and technological assistance for the construction of China into a transportation powerhouse.

3.CRSC "one-stop service" helped national high-speed rail and urban rail transit construction

In 2018, CRSC fully utilized its "one-stop service" advantage of design, research and development, equipment manufacturing and engineering in the field of rail transit control to contribute to the national high-speed railway and urban rail transit construction.

In 2018, with the involvements of CRSC, Hangzhou-Huangshan High-speed Railway firstly took into operation; the first automatic driving medium to low-speed magnetic levitation train MATC took into operation in China; the modification works of Beijing-Tianjin Intercity Railway Train Control System accomplished successfully.

5.CRSC finalized the design of tailor-made tram for Tianshui, Gansu

In November, the tram model for Tianshui Tram Demonstration Line project invested by CRSC debuted, which marked the official finalization of the Tianshui tram model and the 100% low-floor tram with five-module smart power independently developed by CRSC got one step closer to Tianshui citizens.

CRSC extends to the downstream and upstream of the emerging industry of modern tram vehicles and has become the first enterprise in China to offer one-stop service across the industrial chain from investment and financing, EPC (engineering procurement construction), vehicle manufacturing to operation and maintenance, providing a new energy-saving, environmentally friendly and green choice for the rapid development of China's urban rail transit.

4.China's high-speed rail control core products obtained the "visa" to go global

In August, the high-speed rail RBC (Radio Block Center) independently developed by CRSC was awarded the EU ETCS Baseline 3 Release 2 (B3R2) TSI certification, marking that CRSC RBC became the first signal product in China to receive the highest edition of the EU TSI certification after becoming China's first signal product to receive TSI certification (Baseline 2) in 2017.

In September, TDY-type transponder products independently developed by CRSC obtained TSI certifications of EU ETCS B3M1 and B3R2. To this point, CRSC TDY transponder products have obtained all three baselines of TSI certification (B2, B3M1 and B3R2), indicating that CRSC TDY transponder product has become China's first train control product to obtain all baselines of EU TSI certification. This provides a strong support and guarantee for China's high-speed railway train control systems to which CRSC has proprietary intellectual property rights to enter the EU market, for us to further accelerate the pace of internationalization, and for China's high-speed rail to "go global" and "Belt and Road" initiative to advance smoothly.

6.CRSC participated in the "Belt and Road" Initiative

From May 2nd to 4th, on the eve of Premier Li Keqiang's visit to Indonesia, Lu Dongfu, party secretary and general manager of China Railway Corporation, led a delegation to visit the Jakarta-Bandung high-speed rail project in Indonesia. As one of the main construction units, CRSC sent Zhou Zhiliang, party secretary and Chairman, to participate in the inspection tour, during which Zhou put forward requirements for further advancing construction of the Jakarta-Bandung high-speed rail project and developing overseas market operations in Indonesia.

In September, five products independently developed by CRSC - fully electronic computer interlocking system, centralized traffic control system, switch machine, axle counting and intelligent power screen - successfully obtained the DeBo certification issued by the Serbian Railway Standard Technical Management Committee. So far, the seven major equipments required for China's high-speed rail control system have obtained the "visa" to Serbia, providing comprehensive equipment guarantee for the construction of Hungary-Serbia High-speed Railway.

On May 8, the World Congress on High Speed Rail opened in Turkish capital, Ankara. CRSC attended the congress with products to which CRSC has proprietary intellectual property rights including high-speed rail train control system CTCS-2/3, intelligent maintenance system and intelligent transportation management system, overall solutions across the industry chain, abundant domestic and overseas cases, and mainstream signal products that had obtained EU TSI certifications.

7.China Railway Society Communication Signal Branch was established in Beijing

On June 29th, the inaugural meeting of China Railway Society Communication Signal Branch cum academic seminar was held in CRSC Building, marking the official establishment of the most extensive and competitive professional branch in China's railway communication signal field, adding impetus to the construction of China into a powerhouse of transportation and science and technology.

8.CRSC employees attended national event

In August, the Central Government-Led Enterprise System (in Beijing) Women's Twelfth Congress elected 48 representatives to attend Chinese Women's Twelfth Congress. Fu Chunyan from CRSC subsidiary Beijing Railway Signal Co., Ltd. was elected.

In June, the list of representatives of the 18th National Congress of the Chinese Communist Youth League was announced. Comrade Niu Feifei, a technical worker of Shenyang Railway Signal Co., Ltd. of Xi'an Rail Transit Industry Co., Ltd., a subsidiary of CRSC, was elected.

10.CRSC was in action to comprehensively strengthen the Party's building

On the morning of February 4th, the Sixth Session of the Third Party Committee of CRSC Group cum the Sixth Plenary Session of the Party Committee of the Company was held in CRSC Building. The meeting listened to, deliberated and approved the work report by Zhou Zhiliang, party secretary and Chairman of CRSC on behalf of the Standing Committee of the Party Committee of the Company. The report, entitled "Unswervingly and Comprehensively Strengthening Party Discipline and Party Building to Provide Strong Political Guarantee to the Building of a Globally Competitive World-Class Enterprise", was a comprehensive review of the work of CRSC Party Committee in 2017.

On January 19th, CRSC Party Committee held a review meeting on the performance in party building by party secretaries in second-level enterprises in Beijing to thoroughly implement the spirit of the National Conference on Party Building in State-Owned Enterprises and the 19th National Congress of the CPC in terms of comprehensively strengthening party discipline.

On April 3, CRSC 2018 Annual Conference on Party Building Publicity was held in Beijing. Participants of the meeting summarized the achievements of CRSC in party building publicity in 2017, exchanged work experience, and deployed after deliberation the key tasks in 2018.

On April 13, CRSC Party Committee training class on studying and implementing Xi Jinping's thought on socialism with Chinese characteristics for the new era and the spirit of the 19th National Congress of the CPC opened in Beijing.

On November 4th, CRSC grass-roots party branch secretary demonstration class opened in Beijing. The five-day intensive training took a variety of forms such as special lectures, scenario simulation teaching and exercises, video teaching, group discussions and experience exchange to further introduce the learning content to the depth.

9.CRSC fulfilled the social responsibility of central government-led enterprises by helping to fight the battle against poverty

From October 12th to 14th, Zhou Zhiliang, party secretary and Chairman of CRSC, went to Sheqi County, Henan Province to inspect the poverty alleviation work, where he visited households with difficulties for in-depth investigation on the implementation of CRSC assistance project. A symposium on poverty alleviation research was held to discuss the work ideas and specific measures for poverty alleviation with Sheqi County Government. Views were exchanged with Wu Guoding, deputy governor of the Henan Provincial Government, on poverty alleviation and cooperation between central and local governments, and a consensus was reached.

2018

Memorabilia of 2018

11.Real-name verification gate independently developed by CRSC was put into use

On the occasion of the Mid-Autumn Festival and the National Day, the real-name verification gate independently developed by CRSC Communication & Information Group Co., Ltd. officially debuted in Beijing South Railway Station and Shanghai Hongqiao Station to help passenger transportation during the two festivals, which was well received by passengers. After on-site experiment, the real-name verification gate can complete ticket check in only 2 seconds, which greatly improves the traffic speed and saves the valuable time for passengers to queue for ticket check.

CRSC real-name system verification gate will be deployed in more than 100 stations under 11 branches of China Railway Corporation across the country. Deployment on such a large scale will provide technical assistance for saving passengers' travel time and improving the efficiency of high-speed rail operations.



14.CRSC marshalling station automation system helped the construction of China into a freight powerhouse

On January 15th, the CIPS (Computer Information Process System for Railway Yards), the world's first marshalling station automation system independently developed by CRSC, was put into use at Zhengzhou North Station. Marking the milestone in innovation of marshalling station automation in China and consolidating China's status as a freight powerhouse.

On August 9th, the CIPS of Shanhaiguan Marshalling Station was successfully put into formal operation. It handles more than 13,000 trucks, 215 pairs of passenger trains, 2 million passengers per year, and 2 million tons of goods per day. The CIPS after installation will form a closed-loop adaptive system of "management and control integration" throughout station transportation and production from planning, autonomous operation, real-time feedback and optimization and adjustment, so that traffic control operators can grasp the progress of operation in real time, dynamically adjust the planning, and implement centralized autonomous control to ensure the safety of operation process, improve efficiency and reduce transportation costs.



15.CRSC's reform and development attracted broad attention from central government-led media

On December 12th, Zhou Zhiliang, party secretary and Chairman of CRSC, participated in CCTV Finance's "Dialogue" recordings with the theme of "Reform to Start a New Journey of Real Economy". Zhou talked about the development of real economy. He also introduced the reform and development and independent innovation of CRSC and discussed the role of central government-led enterprises in reform and innovation in the new era.



17.CRSC and Taixing High-tech Zone Management Committee jointly built a smart city project

In July, the signing ceremony for the construction of smart city and surrounding supporting facilities in Taixing City was held in Taixing City, Jiangsu Province. CRSC has fully utilized its one-stop service advantage of investment and financing, EPC, and system solutions in the field of smart city to promote the construction of Taixing Smart City. The project after completion will greatly enhance the management capacity and service level of Taixing Municipal Government, improve the related supporting facilities of Taixing High-tech Park, and make positive contributions to the realization of Taixing's sustainable development goals.



18.The 16th CRSC Vocational Skills Competition concluded successfully

On the afternoon of November 1, China Skills Competition - the 16th vocational skill competition of CRSC – concluded successfully in Tianjin. The competition decided the winners of four special types of work: rail transit communication workers, rail transit signal workers, signal equipment manufacturing fitters, and signal equipment group adjustment workers. After being approved by the Ministry of Human Resources and Social Security, 9 people will receive the title of "National Technology Master", 12 people will receive the title of "Technical Expert in Central Government-Led Enterprises", and 39 people will receive the title of "CRSC Technical Expert", which further strengthens the CRSC team of high-skilled talents, laying a solid foundation of skilled talents for national high-speed railway and urban rail transit construction.



19.Two subsidiaries of CRSC were included in the "Double Hundred Enterprises" list of the SASAC

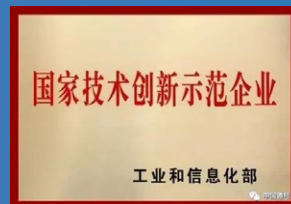
In August, according to the *Notice of the State-owned Assets Supervision and Administration Commission (SASAC) of the State Council on Printing and Distributing the "Double Hundred Action" in State-Owned Enterprise Reform* (SASAC [2018] No. 70), two wholly-owned subsidiaries of CRSC – CRSCD and Smart City Research & Design Institute - were included in the list of "Double Hundred Enterprises" in 2018.

12.CRSC was among the 2018 China Business Top 100

On November 23, the 18th China Business Top 100 Summit Forum was held in Beijing. CRSC was selected into the 2018 China Business Top 100 List with a total profit of 4.286 billion yuan and outstanding performance, and won "China's Innovative Enterprise Award".

13.Two subsidiaries of CRSC were on the list of "National Model Enterprises in Technology Innovation"

In December, the Ministry of Industry and Information Technology (MIIT) and the Ministry of Finance announced the list of "National Model Enterprises in Technology Innovation" in 2018. A total of 68 technology companies were listed, including Beijing National Railway Research & Design Institute of CRSC (hereinafter referred to as "CRSCD"). In 2016, Casco Signal Co., Ltd. won the title of "National Model Enterprise in Technology Innovation". So far, CRSC has had two subsidiaries to win the title of "National Model Enterprise in Technology Innovation".



In September, the MIIT announced the list of China's top 100 software companies in 2017. CRSCD and Casco were selected into the list for eight consecutive year and four consecutive year respectively, ranking 31st and 59th. This fully reflected the comprehensive competitive advantage and strong development momentum of CRSC software companies.

16.CRSC participated in the 2nd World Intelligence Congress

On May 16, the 2nd World Intelligence Congress was grandly opened at the Tianjin Meijiang Convention and Exhibition Center. In the Congress, CRSC comprehensively demonstrated its main achievements of independent innovation in the fields such as rail transit in recent years. Its one-stop service across the industry chain of design and development, equipment manufacturing and engineering in the field of rail transit control was unveiled. Its service across the industry chain of trams was also displayed in the exhibition. Its tailored smart city integration solutions received a lot of attention.



20.CRSC project construction standardization level was continuously improved to adorn the national name card of high-speed rail with CRSC technologies

CRSC project construction standardization management has been continued for several decades. In 2018, CRSC promoted process standardization management, implementing CRSC technologies at the construction sites of high-speed railways such as Beijing-Shenyang, Shenzhen-Maoming, Hangzhou-Huangshan, and Qingdao-Lianyungang railways. It constantly renews the benchmark for processes and refines technologies for high-speed rail communication signal, thereby enhancing the brand awareness of CRSC.



Chairman's Statement



Chairman

周志良

The year of 2018 was a crucial link for the realization of the national “Thirteenth Five-Year Plan”. Also in this year, CRSC accelerated to implement its development strategy of “diversification based on one sector”, striving to achieve high-quality development. Under the strong leadership of the State-owned Assets Supervision and Administration Commission of the State Council (SASAC), all the cadres and workers of CRSC adhered to new development concept, worked in unison and down to earth with an enterprising spirit to make new achievements, open a new chapter, and embark on a new journey in the reform and development of the enterprise and the party building. The Company's operating results continued to grow steadily. The newly contracted volume for the year was RMB 68.29 billion, up 12.4% year-on-year; operating income was approximately RMB 39.84 billion, up 15.7% year-on-year; net profit was approximately RMB 3.8 billion, up 8.0% year-on-year.

Under the guidance of Xi Jinping thought on socialism with Chinese characteristics for a new era and the spirit of the 19th National Congress of the CPC, CRSC continued to improve independent innovation based on innovative R&D systems and high-quality R&D talents, accelerated industrialization of key products, and promoted breakthrough and development of China's rail transit industry and extension industries in order to create the national business card of “China High Speed Rail”. CRSC's self-developed 350km/h high-speed rail system for automatic trains (C3+ATO) is about to be put in the on-site trial of Beijing-Shenyang Special Passenger Line and to provide strong support for the intelligent Beijing-Zhangjiakou High-speed Railway construction. Our brand awareness was on the rise with scientific and technological innovations represented by high-speed rail C3, intercity rail C2+ATO, metro CBTC, medium to low-speed magnetic levitation train MATC, Computer Information Process System for Railway Yards (CIPS) among other rail transit control technologies, which have become important arsenal to help the construction of China into a powerhouse of transportation and technology. CRSC also established three integrated laboratories and 48 special laboratories with world-class level. It has 3 national innovation platforms and 7 provincial and ministerial level innovation platforms, including 2 national enterprise technology centers and one national industrial design center.

CRSC always adheres to safety-first principle with continuously increasing awareness of red lines and bottom lines. It firmly established the concept of “quality is life, safety is paramount”, strengthened responsibility fulfillment and assessment, and implemented safety and quality responsibilities at all levels. It signed responsibility warrants for quality and safety, letters of responsibility for safety and quality, safety production agreements and quality assurance agreements, so that all employees implemented their respective safety and quality responsibility, thus the annual quality and safety objectives were achieved. The number of cases in CRSC system-wide test case library reached more than 40,000. All cases included in the library have been applied in practice, indicating that our ability to solve rail transit problems and train control technology has reached the global leading level.

While focusing on technological innovation and security, CRSC continued to strengthen its operations management. In terms of environmental protection, our environmental protection management system passed the ISO14001:2015 certification. We launched key energy-saving and emission reduction target projects, covering all aspects of process design, product development and engineering manufacturing to reduce environmental impact. In terms of talent management, adhering to the strategy of “open access and elite concentration”, we formulated medium to long-term human resource planning, established a reasonable talent echelon, and systematized the talent pool. Through the establishment of personnel cultivation mechanisms such as recruitment, training, assessment, and salary incentives in line with the Company's development strategy, we comprehensively improved the value of human capital. In terms of overseas development, CRSC actively responded to the national “Belt and Road” initiative by participating in such projects as Indonesian Jakarta-Bandung high-speed rail, Pakistan's Orange Line Metro Train, India's freight line reconstruction and Hungry-Serbia Railway and actively tracking international cooperation projects such as Russia Moscow-Kazan high-speed rail, California High Speed Rail, Sino-Thai Railway, China-Laos Railway, etc., working hard to push China's high-speed rail to go global as a whole. In terms of social welfare, CRSC actively responded to the country's strategy of poverty alleviation by fulfilling corporate social responsibility. It continued to strengthen support in all aspects such as intelligence and capital, committed to helping the development of poverty-stricken areas in terms of education, health care, economy, and people's livelihood, and promoting the development of public welfare activities on a regular basis.

Looking into the future, the Company will stick to the overall plan of “emphasizing safety, adjusting structure, advancing reform, strengthening management and control, and promoting transformation”, focusing on the general concept of being bigger, better, stronger, and more resilient. We will continue to consolidate the long-acting mechanisms of quality and safety, accelerate the pace of scientific and technological innovation and the progress of transformation and upgrading. We will unswervingly deepen reform, innovate on institutions and mechanisms, improve modern enterprise systems, and give full play to our advantages in industrial chain integration. While making unremitting efforts to build CRSC into a world-class enterprise with global competitiveness, we will serve the society, give back to shareholders, and benefit employees with sustainable and sound business performance!

Chairman

Zhou Zhiliang



About Us

Introduction

China Railway Signal & Communication Corporation Limited (hereinafter referred to as CRSC) is the provider of railway signal and communication technology, products and services, the precursor and leader in the China rail transit control industry, one of the biggest rail transit system solution provider. We provide specialized one-stop solution of design and integration, equipment manufacturing and system implementation services for rail transportation control systems to our customers and are the only authorized reviewer of rail transportation control system equipment modes, technology standards and product standards in the PRC. In 7th August, 2015, CRSC was successful listed in Stock Exchange of Hong Kong (stock code: 03989.HK).



Performance and Achievements

Revenue

39.84 billion RMB



with a year-on-year growth of

15.7%



Net income attributable to shareholders

3.80 billion RMB



with a year-on-year growth of

8.0%



Total assets

79.68 billion RMB



with a year-on-year growth of

30.1%



Overall new contract amount in the year

68.29 billion RMB



with a year-on-year growth of

12.4%



In the market of high-speed railway in 200 km-250 km per hour, CRSC occupies a market share of more than 60%

Ranking **1st**



In the market of highspeed railway in 300 km-350 km per hour, CRSC occupies a market share of more than 70%

Ranking **1st**



Our core control system products and services cover 20 provinces or municipalities in China and close to **40%** of domestic urban rail transit market

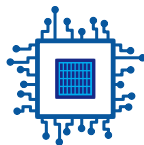


World's first-class

3 complex laboratories and **48** special laboratories

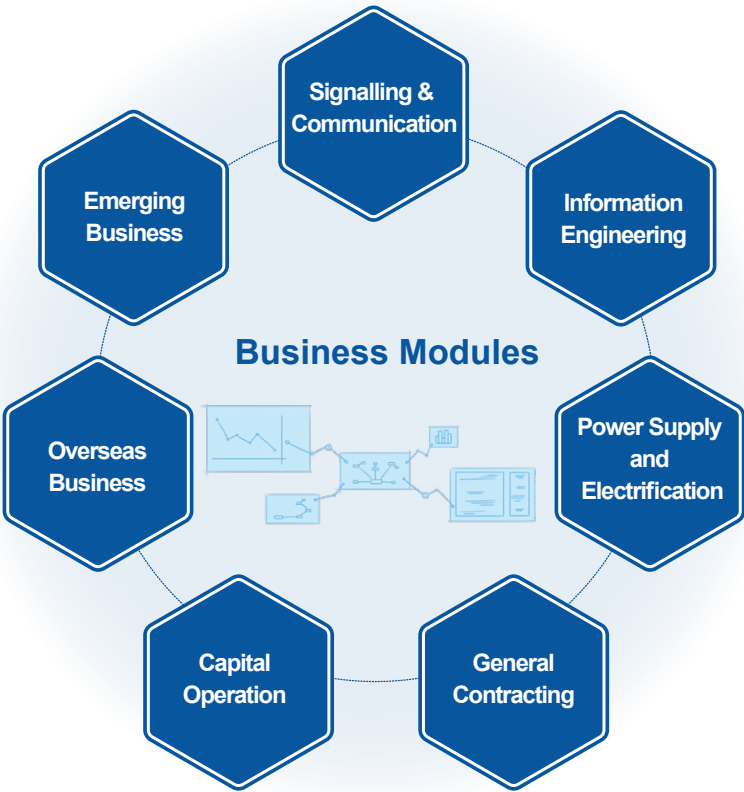


100% technologies of the train control systems for national high-speed railway and subways are developed by the Company itself, and all products are purchased from domestic markets



Business Modules

CRSC sticks to the idea of “Giving priority to one major industry while developing other relevant ones”, constantly improves industrial products structure, creates a business module system of “Extension between upstream and downstream, Development within related areas, Collaboration among industries”, accelerates the transformation and upgrade of industries and pushes forward a sustainable development of CRSC.

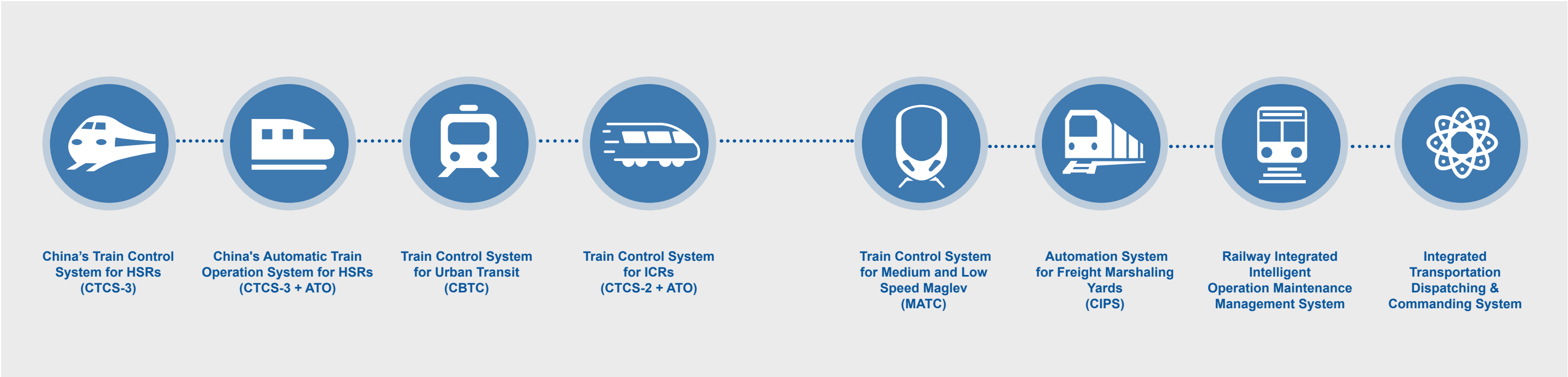


Development Strategies

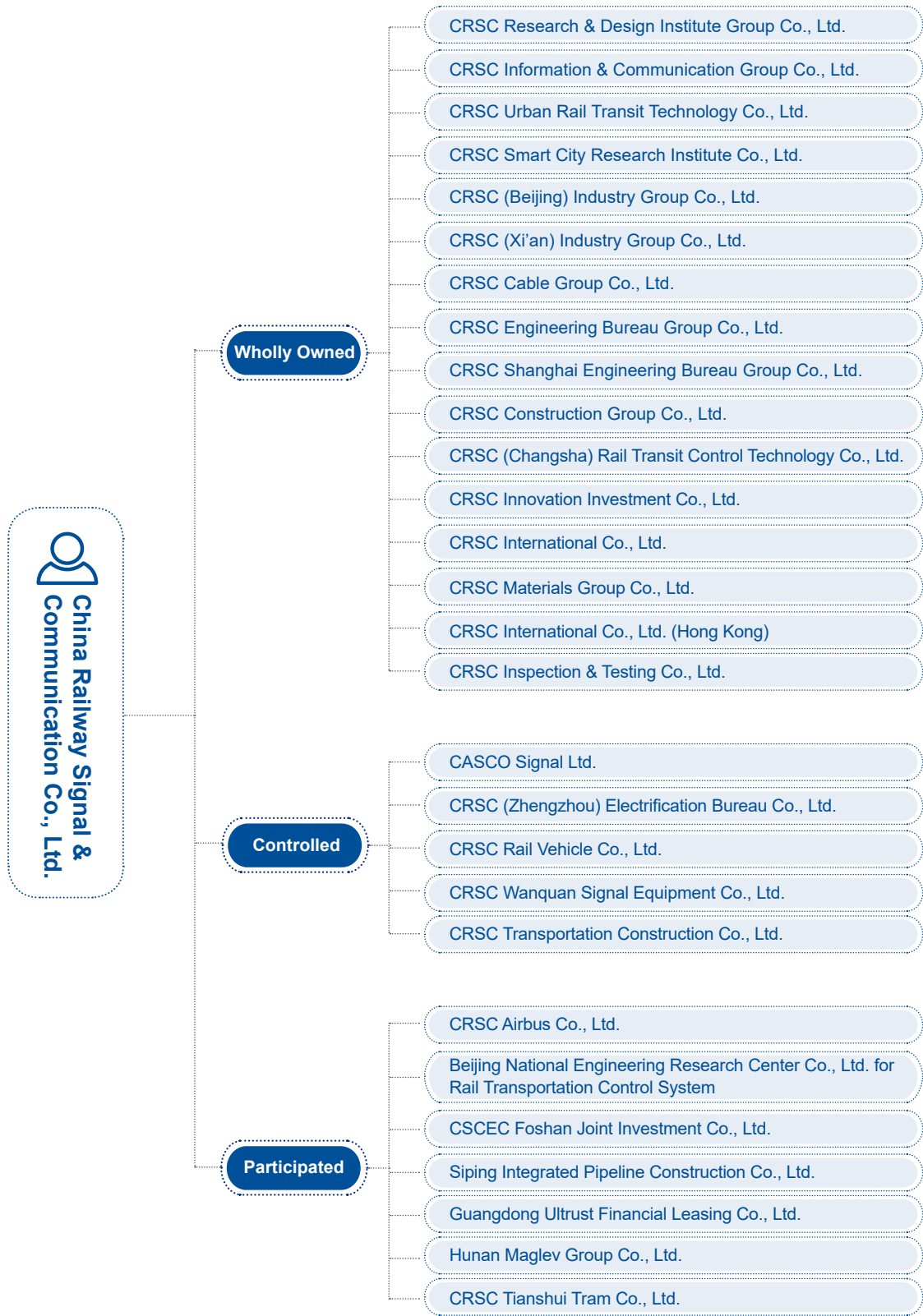
CRSC insists on holding quality and safety as our lifeline and shouldering the responsibility of introducing China's railway communication signal industry to the world. CRSC will speed up the pace of scientific and technological innovation and accelerate the process transformation and upgrading, give full play to the advantages of integrated industrial chain. CRSC are looking for strategic breakthrough of key industrial product structure adjustment, historical breakthrough in core technologies, and international breakthrough in China's high-speed rail standards and industrial output. CRSC will constantly enhance the level of modern enterprise management, and actively integrate into the global competitive landscape, developed into a rail transit control technology for the characteristics of the world-class multinational industrial groups.



8 Core Technologies



Structure



Management

Board of Directors



Zhou Zhiliang
Secretary Of The Party Committee,
Chairman



Yin Gang
President,
Executive Director,
Deputy Secretary of CPC



Yang Yongsheng
Executive Director,
Deputy Secretary of CPC



Wang Jiajie
Independent Non-
Executive Director



Chen Jinen
Independent Non-
Executive Director



Chen Jiaqiang
Independent Non-
Executive Director



Yao Guiqing
Independent Non-
Executive Director

Board of Supervisors



Tian Liyan
President of
The Board of Supervisors



Wu Zuowei
External Supervisor



Zhao Xiumei
Employee Supervisor

Top Management Team



Yin Gang
President,
Executive Director,
Deputy Secretary of CPC



Kong Ning
Vice President



Hu Shaofeng
Chief Accountant,
Secretary Of
The Board Of Directors



Zhao Xiaodong
Vice President



Huang Weizhong
Vice President



Zhang Zhihui
Vice President,
Chief Engineer



Culture Concept

Mission

- Develop National Industry of Rail Transportation
- Provide Domestic and Foreign Users with Safe and Suitable Control System Technologies for Rail Transportation
- Achieve Continuous Value Creation

Vision

- Global Leader in Rail Transportation Control Technology
- World-Class Multinational Industrial Group Featuring Rail Transportation Control Technology
- World-Famous Enterprises

Core Values

People-Oriented, Innovation & Progress, Safety-First, and Joint Value Creation

Advocate people-first approach Talent is the biggest capital for a company's development. Our company regards people's talents as its major resources, upholding a "people-oriented" principle and seeking common development. The company treats employees well by protecting their fundamental interests. We are also customer-centered by making every effort to fulfill their needs and to grant them satisfaction. Moreover, we respect our cooperative partners, adhering to win-win cooperation and mutual benefits.

Innovation and progress Innovation is the momentum for a company's development. We stick to technological innovation and endeavor to promote technological progress of national industries. We also continually encourage our management innovation to strive to be stronger and better. The innovation in technologies and management are the two wheels for the growth of the company. Continuous innovation serves as the inexhaustible impetus for the company's sustainable development.

Safety-first approach Quality is the cornerstone for our company's development. The most important political, economic, and social responsibility for us is to provide safe, stable and reliable technologies and products for our customers, which in turn can ensure the safety of rail transportation and the security of people's lives and properties.

Joint value creation Creating values shall be the eternal pursuit of a company. Our company shoulders great political, economic and social responsibility in the country's social and economic development. Creating values is not only represented by increasing economic benefits, reducing operation risks, and enhancing development potential, but also by fulfilling responsibilities. Creating values also means to make joint efforts with shareholders, customers and society, and share those values with them.

Corporate Spirit

Realism, Innovation, Endeavor and Dedication

Rigorous attitude and scientific spirit
Compliance with regulation
Pursuit of results
Openness and cooperation
Courage and efforts
Strive for perfection
Aspire for excellence
Poised but not arrogant
Fail but not discouraged
Selfless and fearless
Devoted and responsible
Ambitious and serve the country



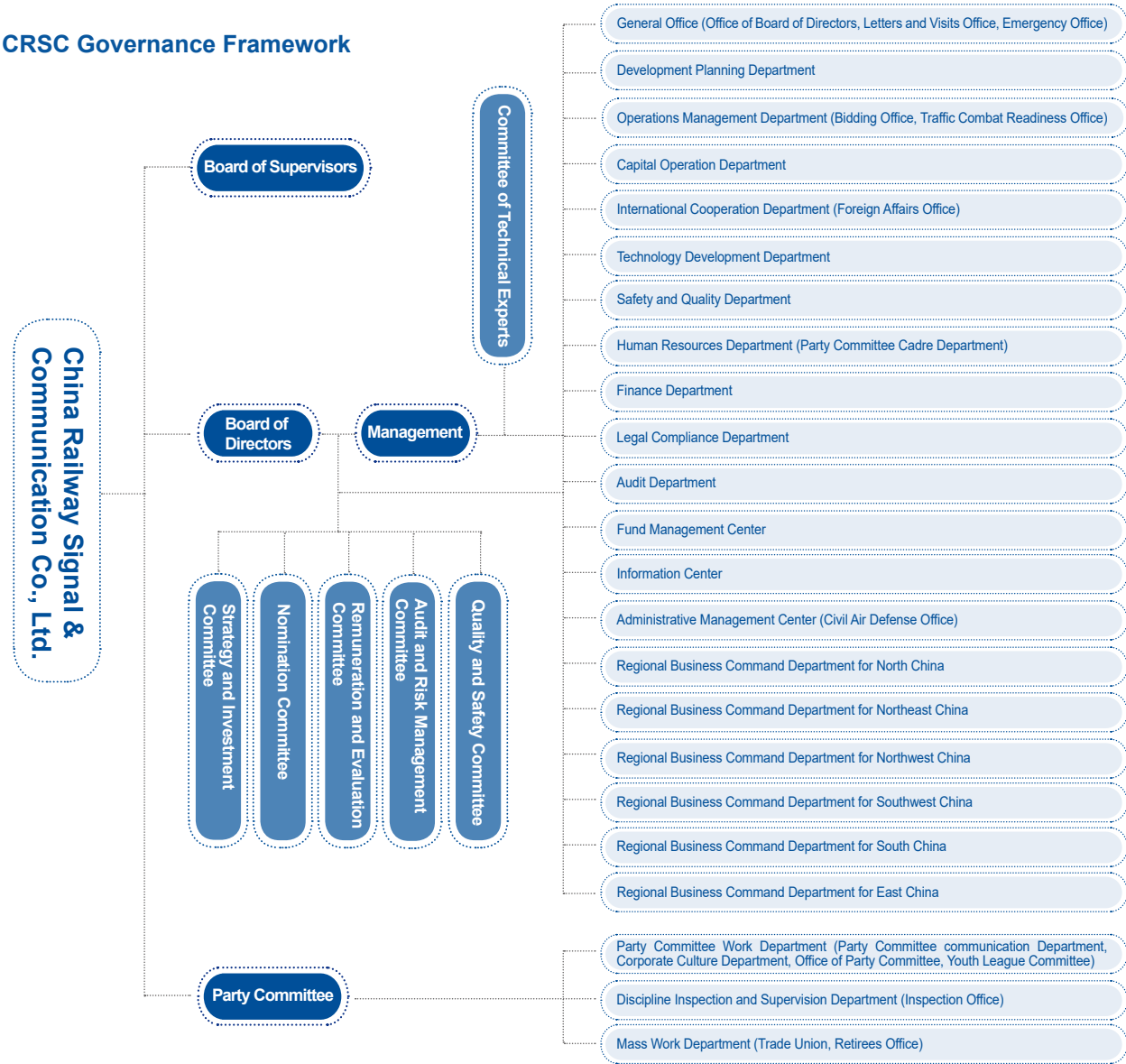
Corporate Governance

CRSC endeavors to maintain a high-level of corporate governance to ensure the interests of its shareholders as well as to enhance the company's value. The company established a three-level management system; namely the first level is the headquarters, the second level is specialized groups or companies and the third level is business and operation units.

Governance Framework

According to requirements of the *Rules and Guidance on Listing Matters*, the *Company Law* and other laws, regulations and other usual documents, CRSC formulated an effective regulatory framework and constantly reviews it to improve the internal supervision and management mechanism. We also do work for the company information disclosures, investor relation management, and investor services according to the law.

CRSC Governance Framework



For detailed information of Board of Directors, Board of Supervisors and Party Committee, please refer to the section of *Company Management Report of the CRSC Annual Report 2018* (HK 3969).

Risk Control

CRSC accelerated the construction of the inner control system by formulating the *Methods of Comprehensive Risk Management and Internal Control Management*, *Management of Risk Assessment and Management* and other management systems. They formulated methods that specify the responsibilities of the company's Board of Directors, managers, as well as functional departments like the legal compliance department and the audit department, in internal control and risk management. This practice aims at effectively preventing and controlling operation and management risks and then promoting the company's sustainable development.

In 2018, in accordance with the systems and regulations of the Company's legal compliance department and audit department and the requirements of the Company's board of directors and management, various functional departments and subordinate enterprises at all levels were organized to implement various tasks at the beginning of the year including comprehensive risk assessment, internal control evaluation, combing and continuous improvement of internal control systems, special risk investigation, follow-up of major risk management and control measures, risk warning, as well as special risk assessment and response for each major project, in order to improve the Company's comprehensive risk management and internal control management systems and to ensure that the Company's risks are controllable, internal control systems and procedures continuously effective, and internal control measures in place. For detailed information of the internal control department and department responsibilities, please refer to the section of *Company Management Report of the CRSC Annual Report 2018* (HK 3969).

Anti-corruption

CRSC always incorporates anti-corruption work into the Company's operations and management, and has formed an atmosphere of "no dare, no ability and no desire to commit acts of corruption". In 2018, there were no corruption-resulted lawsuits within the Company.

At the level of anti-corruption system construction, the Company strengthens the building of systems and mechanisms focusing on key links, important areas and important positions, and strengthens supervision and inspection, regulates the operation of power to effectively prevent corruption. In February 2018, the Company issued the *Administrative Measures for the CRSC Party Committee to Further Implement the Spirit of the Eight-point Regulation of the Central Government to Further Strengthen the Work Style Construction* to run the requirements of strictly administering the party and the enterprise throughout all work of the Company. In September, the Company revised the *Measures for the Supervision and Administration of CRSC Bidding* which established a mechanism for bidders and bid evaluation experts to commit integrity, using information technology to monitor the whole process of bidding and to standardize procurement. At the same time, the Company issued the *Implementation Opinions on Promoting the Construction of Systems and Mechanisms to Ensure that "Officials Cannot Corrupt"* which established a work system led by the leaders of CRSC Party Committee and Committee for Disciplinary Inspection featuring division of work among various functional departments, and promoted the construction of systems and mechanisms to ensure that "officials cannot corrupt". In December, the Company revised the *Administrative Measures for CRSC Reporting on Integrity and Clean Governance* to strengthen the management and supervision of leading cadres and create a clean and sound corporate political ecosystem.

At the level of anti-corruption awareness enhancement, in 2018, the Company selected 9 disciplinary inspection cadres to participate in various training courses organized by the Central Commission for Discipline Inspection and the State-owned Assets Supervision and Administration Commission, and the per capita training period was 40 hours. From June to July, a series of educational activities on party conduct and clean governance was organized. The whole system organized 621 meetings for group learning with a total of 8,266 participants, 9 seminars with a total of 492 participants, screening of 286 educational films with a total of 5,755 participants, and 47 visits to anti-corruption education bases with a total of 1,161 participants.

CRSC strictly abides by the various regulatory requirements of the Mainland and the Hong Kong stock exchanges. It actively adopts scientific decision-making and standard operation and communicates with the capital market and relevant institutions. It conducts regular information disclosure in accordance with the requirements of the stock exchanges to timely and accurately disclose information. It effectively responds to capital market concerns, ensuring corporate compliance and honest and rigorous information communication.

From June to July, a series of educational activities on party conduct and clean governance was organized

The whole system organized **621** meetings for group

Learning with a total of **8,266** participants

9 seminars

a total of **492** participants

Screening of **286** educational films

a total of **5,755** participants

47 visits to anti-corruption education bases

a total of **1,161** participants



Sustainable Development Management

Based on their main business, CRSC identified the factors that have influence on the environment, society and the economy. We have built an effective control system and procedure, to realize the sustainable development of the company and its stakeholders.

Sustainability Concept

1. Running business with integrity and abides by law

CRSC is committed to the legal operation and highest standards of integrity, business ethics and industry regulation when working with all stakeholders, including investors and creditors. CRSC embraces the value of paying taxes in full amount, committing to the execution of contract, and keeping commercial credit. We are against unfair competition and business corruption.

2. Improving profitability

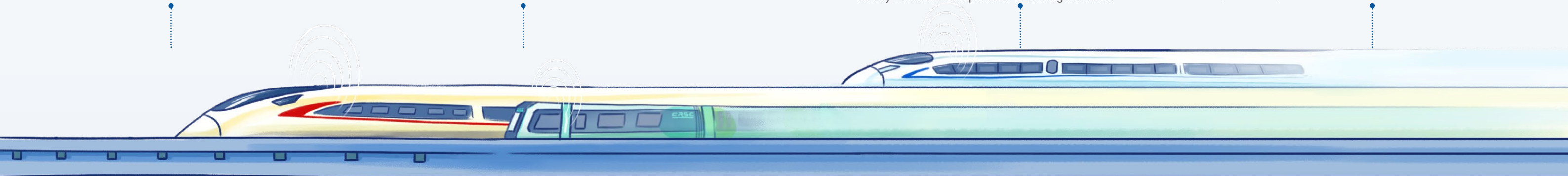
CRSC is dedicated to perfect the corporate governance and enhance management level. We consistently carry forward the implementation of CRSC Group's development strategy by highlighting the strength of main business and technological innovation. CRSC has always been devoted to the rational allocation of resources to reduce operating cost with the precaution of risk prevention. Consequently, CRSC's production has gradually been more cost-effective, and thus the sharpening of market competitive edge.

3. CRSC's commitment to product quality and service level

CRSC is committed to the implementation of the management system which integrates quality, environment and vocational safety. CRSC values the quality awareness in every aspect of its business from product design, manufacturing, construction, installation to customer service. We seek to deliver these core values to every employee, and at the same time CRSC strives to enhance the performance, reliability and security of products to meet the requirement of railway and mass transportation to the largest extent.

4. Reducing our environmental impact

CRSC Seriously implements the responsibility of energy conservation and emission reduction, takes the lead in completing the related task and develops a circular economy and improve the efficiency of comprehensive utilization of various resources. CRSC will increase environmental protection investment, improve process flow, reduce pollutant discharge, improve construction methods, reduce land occupation, protect vegetation, and implement clean production, adhering to the development path of low input, low consumption, low emissions and high efficiency.



5. Promoting independent innovation and technology progress

CRSC is committed to establishing and optimizing its technological innovation mechanism by sharpening its capacity to be more originally innovative, integrated creative and re-innovative after introduction, digestion and absorption of other technologies. CRSC is focused on the system building of Chinese high-speed railway train control system and auxiliary products by speeding up the construction of technological innovation bases and basic equipment research and development platforms. We are making efforts to speed up the product upgrading and technical equipment modification. CRSC is devoted to protecting intellectual property rights and improving the protection of intellectual property rights system to form a core technology and product system equipped with proprietary intellectual property rights and relatively complete kit. Consequently, CRSC would play as a role model in the industry development and the Group's sustainability.

6. Safety production

CRSC strictly sticks to the system of responsibility in safe production, increases input to ensure safety and prevents big or extraordinarily serious safety-related accidents. CRSC is also dedicated to building an emergency management system to increase its capability to face sudden events. CRSC is committed to providing a safe and healthy working environment. We equip employees with products and equipment that are safe for use. We also focus on implementing and improving processes and controls for preventing work-related accidents, injuries and illnesses.

7. Focusing on employee's legal rights

CRSC signs labor contracts with employees according to the law. We ensures and reasonably adjust the salaries according to the corporate profitability and pay social insurance in full amount. CRSC respects employees and treats everyone fairly without discrimination against their gender, nationality, religion, and age. We embrace the value of vocational training and providing equal opportunities for them. CRSC strives to create more job opportunities for society and pays attention to the formation of employee representative congress mechanism. CRSC is open to democratic management, and we care about every employee's mentality and try to solve their problems together with them.

8. Participating in public welfare undertakings





CRSC is actively taking part in public welfare undertakings such as poverty alleviation, donations and volunteering, and public welfare services in the areas of education, culture and sanitation. During natural disasters and sudden events, CRSC is a firm supporter of local government and railway authorities by proactively providing manpower, financial and material resources.

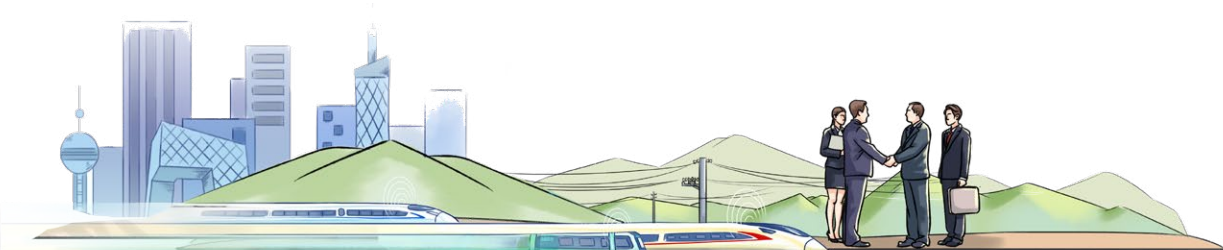


Stakeholder Communication

As the closely groups related to CRSC’s development, stakeholders play an important role through their interaction with CRSC. With establishing effective communication channels and maintaining frequent and effective communication, CRSC takes timely action and responds to stakeholders’ needs.

Stakeholder types	Expectations	Communication channels
<div>  <p>Government</p> </div>	<ul style="list-style-type: none"> To implement macro policies To operate honestly and legally To pay taxes according to law To promote employment To drive local economic development 	<ul style="list-style-type: none"> Work report Conferences Supervision and inspection Information reporting
<div>  <p>Shareholders and investors</p> </div>	<ul style="list-style-type: none"> Good operation performance To preserve or add the asset value To disclose information To reduce operation risks To protect the interests of shareholders and investors 	<ul style="list-style-type: none"> Corporate annual report, middle term report and announcements performance conference general meeting of shareholders investors conference reporting and communication
<div>  <p>Clients</p> </div>	<ul style="list-style-type: none"> to perform contracts product quality and safety to offer premium service to protect clients' information 	<ul style="list-style-type: none"> clients visiting and communication satisfaction survey telephone, e-mail, letter, and on-line feedback
<div>  <p>Employees</p> </div>	<ul style="list-style-type: none"> to protect staff interests to clear the career development route staff caring to offer rational salary and welfare to enhance the management of overseas stall 	<ul style="list-style-type: none"> general meeting of staff representatives training and education daily communication
<div>  <p>Suppliers</p> </div>	<ul style="list-style-type: none"> to be honest and trustworthy open, fair and legal procurement to support suppliers' development information confidential 	<ul style="list-style-type: none"> open tendering carrying out cooperation industrial communication and exchanges

Stakeholder types	Expectations	Communication channels
<div>  <p>Cooperation partners</p> </div>	<ul style="list-style-type: none"> to be honest and obey the law to abide by business ethics win-win cooperation 	<ul style="list-style-type: none"> high-level visit exchanges regular communication and exchanges implementation of agreements or contracts
<div>  <p>Industry</p> </div>	<ul style="list-style-type: none"> fair competition technology innovation research to promote the industrial development 	<ul style="list-style-type: none"> enhancing communication with peers industrial forums and conference research tours and visits
<div>  <p>Environment</p> </div>	<ul style="list-style-type: none"> to abide by laws and regulations of environment to save energy and reduce emissions to save resources to improve the awareness of environment mental protection 	<ul style="list-style-type: none"> application of energy saving technology publicity of environmental protection conceptions environmental information disclosure
<div>  <p>Community</p> </div>	<ul style="list-style-type: none"> to take part in community construction public welfare activities 	<ul style="list-style-type: none"> community publicity symposium



01 Innovation as a Foundation

Based on the innovative R&D system and high-quality R&D talents, CRSC continuously upgrades independent innovation level, speeds up the industrialization of key products, promotes the breakthrough and development of China's rail transit industry and relevant industries and builds the national name card of "China High-Speed Railway".

Improving innovation management system

27

Building platforms for innovative talents

30

Facilitating technology innovation

32

Promoting industrial technological progress

34



Improving innovation management system

As the world's biggest supplier of railway transportation control system, CRSC has built a technology innovation system characterized by “market orientation, R&D platform as the center, and integration of production, research and application”, vigorously developed R&D and innovation of system technologies and related products, maintained the sensitivity of industry development trend and market demand, continuously deepen the innovation of national industry of train control system and ensured the safety of the national rail transit.



CRSC Tianjin Railway Signal Co., Ltd. was recognized by the NDRC as “National Enterprise Technology Center”

CRSCD was rated as “National Model Enterprise in Technology Innovation” by the MIIT

CRSC Engineering Group Electric Company was recognized as “Tianjin Enterprise Technology Center”



On the aspect of R&D fund, CRSC has formulated and implemented the *Regulation on the R&D Project Fund Management*, to regulate the cost estimation and accounting of scientific research, and to determine the responsibility and limit of authority of relevant departments for management of project funds. The Regulation improves the efficiency of the use of scientific research funds and guarantees the sustained and steady development of scientific research work.

On the aspect of intellectual property rights (IPR), CRSC has formulated and released the *Regulation on Intellectual Property Management*, the *Regulation on Trademarks Management*, the *Regulation on Technical Confidential Management* and the *Regulation on Patent Management*, to protect our IPR while respect IPR of others. The Company has incorporated IPR into the employee training program and integrated IPR content into various business trainings, to improve employees' IPR competency. In 2018, CRSC CASCO was awarded the title of “National Intellectual Property Demonstration Enterprise” by the National Intellectual Property Administration.





CRSC held IPR seminar

On July 19, 2018, in order to further enhance the level of creation, use, protection and management of intellectual property rights (IPR), CRSC held an IPR seminar at its headquarters. The seminar invited persons in charge of IPR affairs from CRRC, CRSCD, Casco, etc. to share their experience in IPR management and widely discuss such topics as IPR incentives, "going-global" risks prevention, patent mining of manufacturing and construction companies, benchmarking and system certification, etc.



Building platforms for innovative talents

The innovative development of company relies on the innovative talents. In the long-term practice with projects, CRSC always pays attention to the training of professional and technical personnel and has built a talent innovation platform. Meanwhile, the Company implements incentive measures for scientific and technological achievements, and mobilizes the enthusiasm and creativity of researchers by setting up bonus funds for major R&D projects and the appraisal, evaluation and incentive mechanisms.

CRSC has established academician workstations, postdoctoral scientific research workstations, production and research platforms, provincial and ministerial-level engineering (technical) research centers, and provincial-level enterprise technology centers to attract, train and reserve high-level talents and promote key technological breakthroughs, which is a solid guarantee for the Company's technological innovation and integration of production, education and research.

In 2018, CRSC won 22 provincial and ministerial science and technology awards, including **2** Beijing science and technology awards, **1** silver award of China patent award, **1** contribution award of China standard innovation, the first prize of standard science and technology innovation and **14** science and technology awards of China Railway Society.

By the end of 2018, CRSC has:



69
people awarded as "National Technical Expert"



51
people obtained government special allowance



27
people won the "Zhan Tianyou Award"



68
people won the "Mao Yisheng Railway Engineer Award"

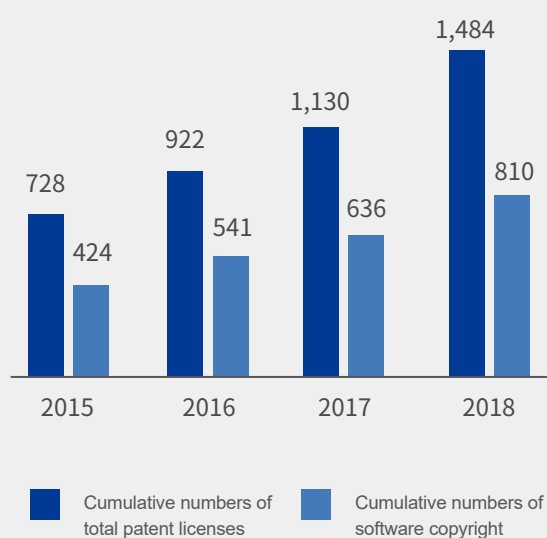


111
people awarded as "Technical Expert of Central Government-owned Enterprises"

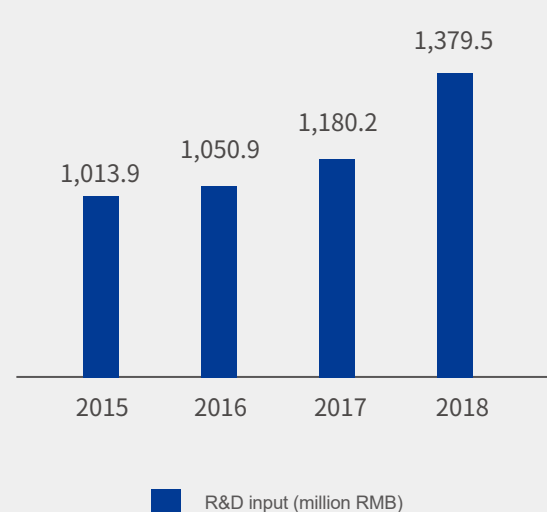


1,217
people have senior title

Patent licensing of CRSC in 2015-2018



R&D input of CRSC in 2015-2018



By the end of 2018, CRSC has:



7
national innovation platforms
and demonstration enterprises



81
scientific research studios



6
academician expert
workstations



2
mobile postdoctoral research
stations



20
recognized laboratories with
CNAS



6
laboratories with CMA
Certification

To further nurture reserve talents for R&D and enhance the level of industrial R&D, CRSC strengthens cooperation with universities and colleges and scientific research institutions to improve the translation efficiency of technologies from combination of production, education and research.



CRSCD, Army Engineering University of PLA, and Shijiazhuang Tiedao University jointly launched the "Military and Civil Integration Electromagnetic Environment Effects Research Center", which carries out in-depth research around foundation and frontier issues on electromagnetic environment effects, focusing on such aspects as modeling and numerical calculation of electromagnetic environment effects of rail transit systems, electromagnetic environment effects test and evaluation, and electromagnetic protection theory and technology.



CRSC established a joint research team with CETC (China Electronics Technology Group Corporation) and CEC (China Electronics Corporation) to carry out independent innovation in the field of rail transit control.



CRSC teamed up with Tsinghua University and Hefei University of Technology to develop industry-university-research cooperation and interaction, and jointly established a training base for science and technology talents with Beijing University of Posts and Telecommunications.

Facilitating technology innovation

CRSC continuously strengthens independent innovation competency in basic technologies, enhances the capacity in integrated innovation and innovation through reverse engineering, and makes optimal allocation of resources for design, R&D, testing and integration, to realize the complete autonomy of technologies and complete localization of train control systems for high-speed railways and subways in China, thereby providing the core technological support for the national strategies of BRI and high-speed rail "going global".

2018 CRSC Innovation Achievements

First place prize

- Development and Application of Centralized Traffic Control System (CTC3.0) Based on Operation Safety
- Development of Universal All-Electronic Target Controller
- Railway Standard 2.0 Integrated Video Surveillance Management Cloud System

Second place prize

- Research on CBTC System Supporting Connectivity
- CTC3.0-200K On-Bound ATP Equipment
- Integrated Engineering Software Design Platform for Ground Train Control Systems
- Research and Application of LKD2-T3 Train Control Center
- Trackside Safety Platform (TSP)
- Research on Automatic Forming Process of Relay Armature and Yoke

Third place prize

- Development of Railway Real-Name Verification Gate Equipment
- Beijing Metro AFC System Internet + Reconstruction Project
- Research on Non-porous Connection Technology of Track Leads in Track Circuit
- Research on Waterproof Construction Technology of Splicing Joint Grouting of Single Cabin Rectangular Section Prefabricated Integrated Pipe Gallery
- Transponder Guarding Gear
- GW-type External Locking Device for Railway Turnout Conversion Equipment
- Integrated Automated Traffic Control System for Local and Overseas Railways
- Leaky Cable for Train and Ground Wireless Transmission Signal Systems
- Development of Intelligent Train Monitoring System for Hong Kong South Island Line





CRSC self-developed high-speed rail system for autonomous trains passed trial review

In December 2018, the complete set of 350km high-speed rail system for autonomous trains (CTCS-3+ATO) independently developed by CRSC passed the trial evaluation by China Railway Corporation and officially entered the on-site trial phase of Beijing-Shenyang Special Passenger Line.

CRSC has proprietary intellectual property right to the high-speed railway system for autonomous trains, which meets the standards of connectivity and greatly enhances the functions of high-speed train operation control system. Through the use of intelligent control algorithms and train control strategies, the precise control of 350 km/h high-speed trains is realized, and the performance indicators such as control comfort, parking accuracy, energy saving and consumption reduction are comprehensively improved, which is of great significance for reducing labor intensity of drivers, improving high-speed rail operation efficiency, and improving passenger ride experience. At the same time, the application of the system filled the world's technical gap of autonomous driving of 300-350 km high-speed trains and established the international status of China's overall high-speed railway technology.



CRSC self-developed RBC is the first to pass the highest edition of the EU TSI certification

In August 2018, CRSC self-developed high-speed rail RBC (Radio Block Center) obtained the EU ETCS Baseline 3 Release 2 (B3R2) TSI certification, marking that CRSC RBC became the first signal product in China to receive the highest edition of the EU TSI certification after becoming China's first signal product to receive TSI certification (Baseline 2) in 2017. The RBC product developed this time performs better in terms of adaptability and flexibility, laying a solid foundation for the "going global" projects of high-speed rail such as Hungary-Serbia and Moscow-Kazan high-speed railways.

In 2016 CRSC started research on TSI-related standard specifications. After nearly two years, it developed a safe, reliable and advanced RBC product with proprietary intellectual property right that has obtained the highest edition of TSI certification.



Real-name verification gate guarantees traffic safety

The real-name system verification gate independently developed by CRSC is tailor-made for China's high-speed rail with high and concentrated passenger flow. It combines the functions of ticket verification, ID verification, facial recognition, and ticket check. Thanks to stable performance, high recognition accuracy, and fast traffic speed of the system, passengers do not need to use the ticket but just swipe ID card and "face" to complete all verifications, and the gate machine is connected with public security system to greatly reduce the errors of manual identification.



Promoting industrial technological progress

While paying attention to the improvement of own innovation capacity, CRSC actively develops cooperation and communication with partners and promotes, to promote the sustainable development of China's rail transit industry and relevant industries.

As the responsible department of technical standards for National Railway Administration, CRSC actively cooperates with the government, research institutes, and industry associations, participates in the formulation of standards and specifications for China's railway communication signal industry, and leads the standardization of equipment manufacturing and engineering construction in China's high-speed railway communication signal field, thereby promoting industry progress and innovation.

- In 2018, CRSC undertook or participated in **122** compilations such as standards for National Railway Administration, the Ministry of Housing and Urban-Rural Development, China Association of Metros, etc., enterprise standards for China Railway Corporation, local standards, as well as English translations of standards.
- In 2018, a total of more than **210** effective or planned standards on Chinese railway communication signal equipment and supplies were under our administration.
- CRSC has a total of more than **1,800** corporate technology standards.
- CRSC has over the years compiled more than **620** communication signal specifications and standards such as the *Code for Design of Global System for Mobile Communications – Railway (GSM-R)*, *Code for Design of Railway Signals*, *Construction Quality Acceptance Standard for High-speed Railway Communication Engineering*, *Construction Quality Acceptance Standard for High-speed Railway Signal Engineering*, etc.

As of the end of 2018, CRSC in various business areas



Led and participated in the formulation of **235** standards on systems, products and construction, including **26** national standards and **209** industry standards;



Compiled as chief editor **12** of the **32** national standards and **150** of the **259** industry standards in the field of rail transit signal technology where it occupies a leading position.





CRSC leads the development of industry standards

The Company took the lead in formulating the technical standards for the CTCS-0 to CTCS-4 railway train control systems, which established its leading position in the field of railway signal control. The following technical standards of railway industry were formulated by CRSC either as lead or chief editor.

Chinese Train Control System (CTCS) – the top-level control technology solution

- ✓ General Technical Requirements of Railway Train Control System (CTCS)
- ✓ General Technical Requirements of Railway Digital Mobile Communication System (GSM-R)
- ✓ Overall Technical Scheme of CTCS-3 Train Control System
- ✓ Interface Specification between CTCS-3 Train Control System and Railway Digital Mobile Communication System (GSM-R)

CTCS-3 Train Control System - the core technical equipment

- ✓ Technical Conditions of Centralized Traffic Control (GSM-R)
- ✓ Safety Principles of Computer Based Interlocking (CBI) in Railway Stations
- ✓ Technical Conditions of Temporary Speed Restriction Server (TSRS)
- ✓ Technical Conditions of Train Control Center (TCC)
- ✓ Technical Specifications of Radio Block Center (RBC)
- ✓ Technical Conditions of CTCS-3 Onboard Equipment (ATP)

China Railway Signal – the most fundamental safety equipment

- ✓ Technical Conditions of ZPW-2000 Track Circuit
- ✓ Application Principles of Balise for Train Control Systems
- ✓ Series of Specifications of Railway Switch Machines



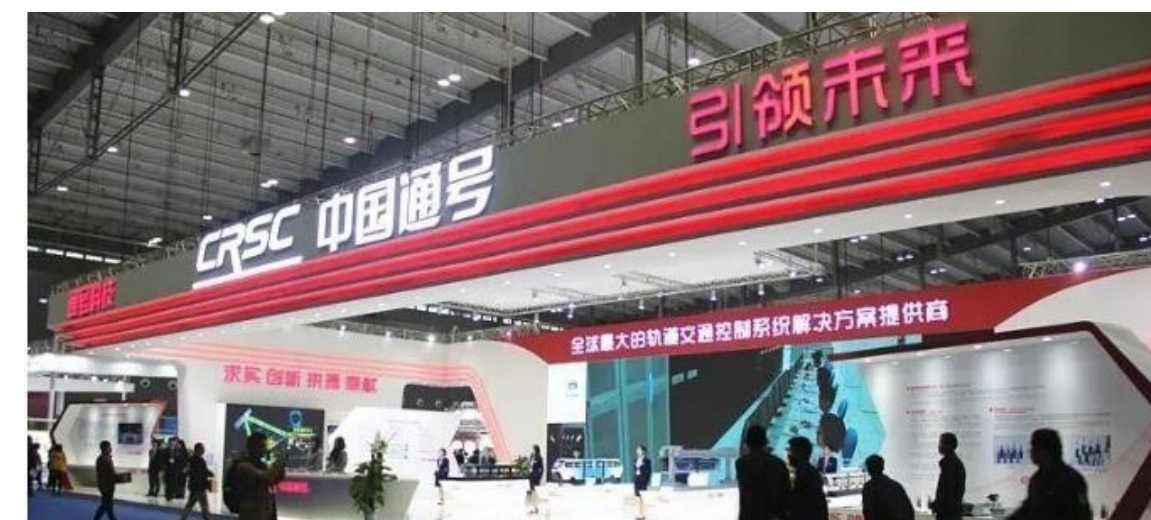
CRSC held a seminar for communication technology exchange

On September 20, 2018, a seminar co-sponsored by CRSC and China Railway Society Communication Signal Branch for exchange on application of intelligent railway communication technologies including Internet of Things, Beidou and broadband mobile communication technology was successfully held in Beijing. The seminar invited more than 120 experts and scholars from more than 40 research institutes and representatives from the communications industry to focus on cutting-edge technologies related to intelligent railway communication at home and abroad, contributing to exchange and cooperation for the development of intelligent railway communication technologies in China.



CRSC made its debut at the 2018 China (Hunan) International Rail Transit Industry Expo

On November 15th, 2018, CRSC was unveiled at the 2018 China (Hunan) International Rail Transit Industry Expo. At the exhibition, it displayed its layout across the industry chain of trams and one-stop service across the industry chain of rail transit control systems including design, equipment manufacturing and engineering, and introduced its cooperation with central government-led enterprises and local governments in helping local infrastructure and economic and social development.



02 Service Creates Value

As the forerunner and leader of China's rail transit control system industry, CRSC relies on profound technical R&D heritage, intelligent equipment manufacturing capabilities, safe and reliable service quality assurance, and project support across the industry chain to provide a solid guarantee for the safe and efficient operation of urban rail transit.

Putting production safety into action

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Creating an emergency management line of defense

42

Ensuring product and service quality

43



Putting production safety into action



CRSC always adheres to the “safety-first” principle and firmly upholds the concept of “quality is life, safety is paramount”. By strengthening top-level design of safety and quality management, strengthening implementation and assessment of responsibilities, and implementing safety and quality responsibilities at all levels, the Company continuously improves quality and safety management and control capabilities and takes a series of solid measures such as the system-wide test case library to ensure quality and safety.

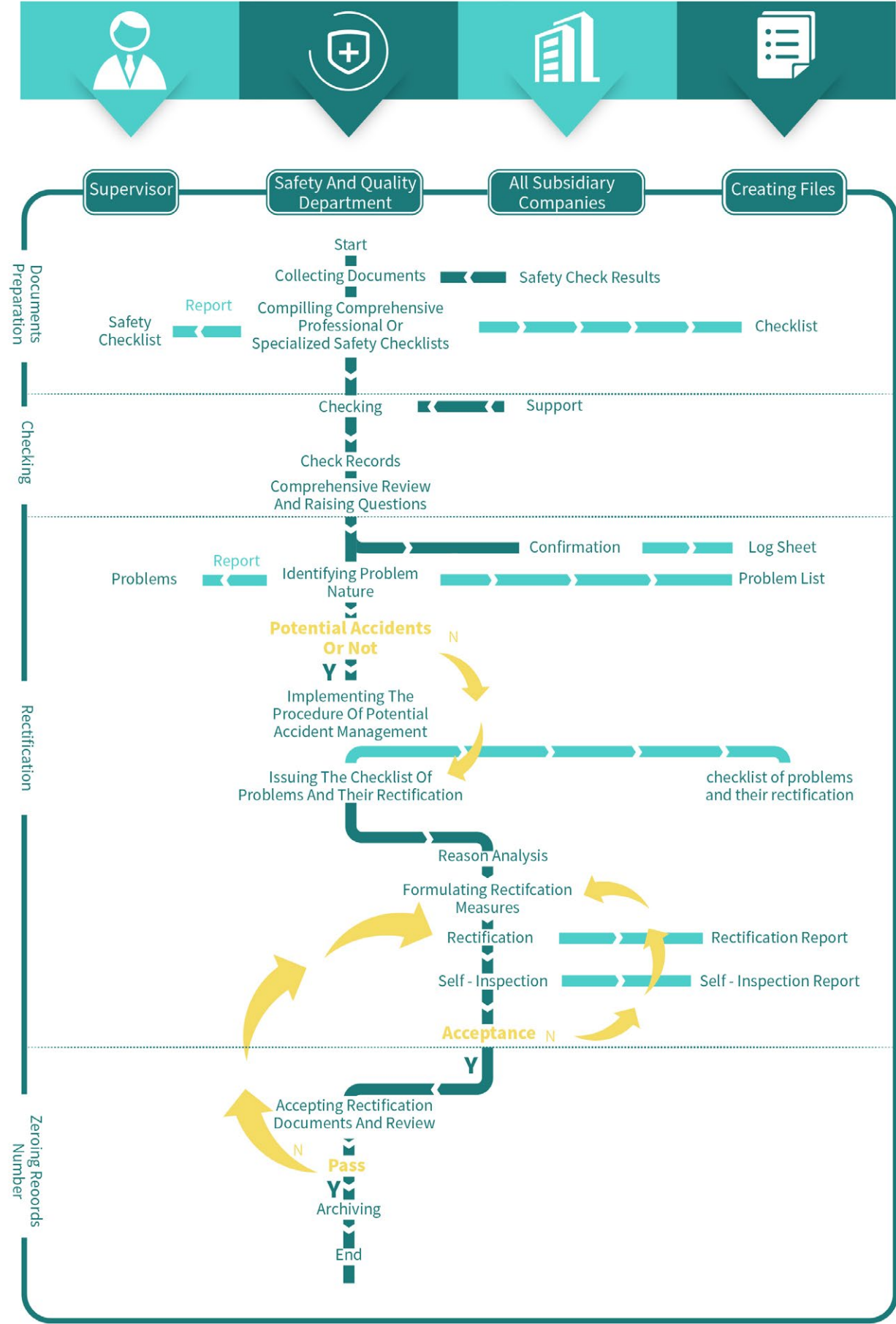
In accordance with the *Production Safety Law of the People's Republic of China*, *National Emergency Plan for Production Safety Accidents*, *Fire Prevention Law of the People's Republic of China* and other relevant laws and regulations, the Company formulated our own production safety rules and regulations such as the *Production Safety Inspection System and Measures* and the *Management of Production Safety Incident Reporting and Investigation*, which stipulate specifically safety management aspects such as production safety management contents, responsibility division, and definition of management functions at various levels.

The Company strengthens the implementation and assessment of responsibilities. We established a safety production committee with the Chairman of the Board as the director and the principal management as its members. The Committee makes safety production decisions and is responsible for safety production. At the same time, the Company's 18 sub-subsidiaries set up safety production management committees that meet regularly according to their responsibilities to ensure the orderly implementation of safety production. The Company implements safety and quality responsibilities at all levels. It signed a total of 18 responsibility warrants for quality and safety, 12,138 letters of responsibility for safety and quality, 3,874 safety production agreements, and 3,384 quality assurance agreements, thereby meeting the quality and safety objectives throughout the year.

The Company vigorously carries out safety inspections to timely check out the problems. Through routine inspections, seasonal inspections, holiday inspections, special inspections, professional inspections, and comprehensive inspections, problems prone to resulting in accidents are instructed to be addressed immediately. In 2018, the enterprises affiliated to CRSC carried out safety production inspection and hidden dangers investigation and management. Inspection and investigation were carried out 7189 times throughout the year. Supervision was carried out in 9 enterprises including CRSC Shanghai Engineering Group, Beijing Railway Signal Co., Ltd., and CRSC Construction Group to discover 15 hidden dangers, all of which were corrected, i.e. the rectification rate was 100%. Spot check was carried out in 7 construction projects including Jishou, Sanshui Tianju, Zhengzhou West Fourth Ring and Tianshui Tram to discover 14 hidden dangers, all of which were corrected, i.e. the rectification rate was 100%. During the year, the Company issued 29 notices of rectification of hidden dangers, all of which were written off after rectification.


In 2018,

CRSC increased its investment in safety production, and its total investment in safety production was about **403** million yuan




CRSC adheres to the policy of “safety first, prevention upfront, comprehensive management”. We pay attention to employees' safety awareness and safety protection capabilities. Employees are required to receive safety training and education regularly. They are firstly trained and then employed. We formulated the *Regulation on Safety Education and Training*, putting forward specific requirements for training content, training frequency, and training targets, etc., while supervising the implementation of safety training in order to minimize casualties and property losses caused by accidents.


The Company requires:



New workers on the construction sites must receive three levels of safety training and education and pass the appraisal;



Full-time safety management personnel must not only be certified before being employed, but each year must also receive no less than 40 hours of safety technique training;



Safety training and education registration system is implemented and safety training and education files for employees are also established, so that employees who have not received safety training and education are prohibited from working on the construction sites.



“Safety Production Month” Education and Training Activities

In June 2018, CRSC held “Safety Production Month”, a series of education and training activities on the theme of “Life First, Safe Development”. The campaign invited two safety production experts from China Academy of Safety Science and Technology and CNOOC Safety Technology Service Co., Ltd. to deliver systematic explanation and training on the “Opinions of the CPC Central Committee and the State Council on Promoting the Reform and Development of Safe Production Fields”, construction and implementation of the Safety Production Responsibility System for All Members, and safety production responsibility investigation, etc., which further clarified the requirements for all employees to implement the “party and government sharing responsibilities, two responsibilities for one post, joint management, and accountability for dereliction of duty”. A total of 218 person-times of the headquarters including Zhou Zhiliang, CRSC party secretary and Chairman, Yin Gang, CRSC deputy party secretary and President, and other leaders and full-time safety production management personnel, and 338 person-times of second-level enterprise groups participated in the “Safety Production Month” campaign.





In 2018, CRSC per capita safety production training reached **10.4** hours. The whole system carried out **1,498** sessions of safety production training with **63,522** participants.

Creating an emergency management line of defense

CRSC constantly improves its emergency management and contingency plan systems. By continuously improving the emergency management system for emergencies, it has further advanced the management pattern throughout the process, in which the Company coordinates all activities for various types of emergencies, including prevention and emergency preparedness, monitoring and early warning, emergency handling and rescue, post-emergency recovery and reconstruction.

In terms of emergency management, the Company has formulated the *Interim Measures for Emergency Management*, *Emergency Management Measures for Accidents and Disasters*, and *Measures for the Management of Overseas Emergencies* to clarify working principles, responsibilities and requirements of emergency management, as well as emergency response mechanisms and procedures. The Leading Group for Emergency Rescue of Major Production Safety Accidents was established to serve as an emergency command center after the occurrence of a major safety production accident, while implementing emergency response procedures according to the controllability, severity and scope of influence of the accident.

In 2018, the Company set up an emergency management leading group led by main leaders, affiliated with four working groups to deal with emergencies of natural disasters, accidents, public health events, and social security incidents respectively. According to the division of responsibilities, the various functional departments of the Company work as emergency management sub-groups to handle special emergencies under the unified leadership and work framework of the Company's emergency management leading group.

In terms of emergency plans, we issued comprehensive and special emergency plans such as *Comprehensive Emergency Plan for Major Safety Incidents*, *CRSC Comprehensive Emergency Plan for Major Production Safety Accidents*, and *CRSC Emergency Plan for Headquarters' Fire Disposal, Evacuation* to realize a closed-loop management of accidents from all aspects such as the setup of emergency management agencies, management and control procedures, reporting procedures and follow-up handling measures. In 2018, the Company carried out fire drills and flood control drills for CRSC Building, and continued to improve emergency plans and emergency management capabilities through drills.



Ensuring product and service quality

CRSC, as the world's largest provider of rail transit control system solutions, undertakes full lifecycle services including product development, manufacturing, construction and installation, integrated commissioning, and operation and maintenance. It is committed to starting from every link to ensure service quality, while reducing operational risk and safety incidents. We provide technical support for the safe and efficient operation of the world's largest high-speed railway network. The company's annual product quality inspection, engineering one-time delivery acceptance rate is 100%, and our equipment failure rate continues to decline.



The Company adopted a number of measures safeguarding the stages of R&D, production, construction, commissioning and operation.

Product Development

The key quality control points and control requirements were defined, and reliability and safety calculations and analysis was performed to ensure that safety standards of the corresponding grades were met.

Production

The Company issued the *Measures for the Management of Product Quality Inspection* and set up a product quality inspection department to complete the whole process from entry inspection, process inspection to ex-factory inspection; product quality inspection files were established to completely prohibit the outflow of unqualified products.

Construction and Installation

The construction and installation standards were strictly followed to strengthen the safety analysis and quality and safety control during the process.

Integrated Commissioning

Product quality inspection and testing was carried out in a serious manner to identify management and technical safety issues and take effective measures during the process.

Operation and Maintenance

All kinds of product manuals and training materials were detailed and safety control measures established.

The Company has formulated management measures and emergency plans such as the *Measures for the Management of Product Quality and Safety Accidents (Failures) and Emergency Plan for Rail Transit Operation Equipment* to timely and accurately cognize, coordinate, investigate and deal with traffic accidents and equipment failures caused by product quality and safety issues. These measures and plans ensure the Company to strengthen product quality and safety management, effectively prevent, control and eliminate potential quality and safety hazards, and quickly respond to emergency, thereby reducing and preventing accidents from occurring and guaranteeing safe and smooth railway transportation. In 2018, the Company revised and compiled 386 safety and quality management systems, 22 manuals, 677 procedures and 984 work instructions. All CRSC subsidiaries engaged in R&D, equipment manufacturing, and engineering services were upgraded to new editions of standards.

All CRSC's companies have passed reviews against ISO9001 quality management system, ISO14001 environmental management system and OHSAS18001 occupational health and safety management system. CRSC has implemented a strict product access system, introduced world-leading technologies and product inspection & testing systems, and established complete quality and safety systems. All 17 design and R&D, and equipment manufacture companies have been IRIS certified, and all 6 design & R&D companies have been CMMI accredited.

The number of cases in CRSC system-wide test case library reached 44,858. All cases included in the library have been applied in practice, which indicates that our ability to solve rail transit problems has reached the global leading level. In 2018, the Company completed 31 general product certifications, 10 general application certifications, and 52 specific application certifications related to product safety.

In 2018, the Company revised and compiled

- 386
safety and quality management systems
- 22
manuals
- 677
procedures
- 984
work instructions
- All CRSC subsidiaries engaged in R&D, equipment manufacturing, and engineering services were upgraded to new editions of standards

CRSC won the first place prize of the QC Competition of Central Government-Led Enterprises

CRSC always adheres to the management philosophy of "quality is life". It attaches great importance to quality control (QC) activities, paying attention to key points and weak links and giving full play to the role of "small, practical, flexible and new" quality control groups. QC activities are required to strictly follow the PDCA management cycle and be carried out in a solid manner using statistical tools and methods according to the nature of work and the tasks of the project. In recent years, QC activities have been carried out in the aspects of product development, construction machinery innovation, construction quality process control, etc., and a number of outstanding achievements have been made and applied to actual construction, making excellent contribution to improving engineering (product) quality and construction efficiency of high-speed railway construction.

In September 2018, the results of the "New Thinking" QC Group "Development of Automatic Test Equipment for Railway Signal Cable Insulation" submitted by CRSC Engineering Group on behalf of CRSC won the first prize of the first QC Competition of Central Government-Led Enterprises, and the "New Thinking" QC Group was recommended by China Association for Quality as the "National Excellent Quality Management Team".



03 Green Creates Bright Future

CRSC consistently strives for harmonious development of society and the environment by adhering to the sustainable development path featuring high technology content, low energy consumption and low environmental pollution. Giving full play to its technological advantages it actively promotes low-carbon and clean operation methods and green and low-carbon transportation solutions to contribute to the sustainable development of society.

Improving efficiency of
resources use

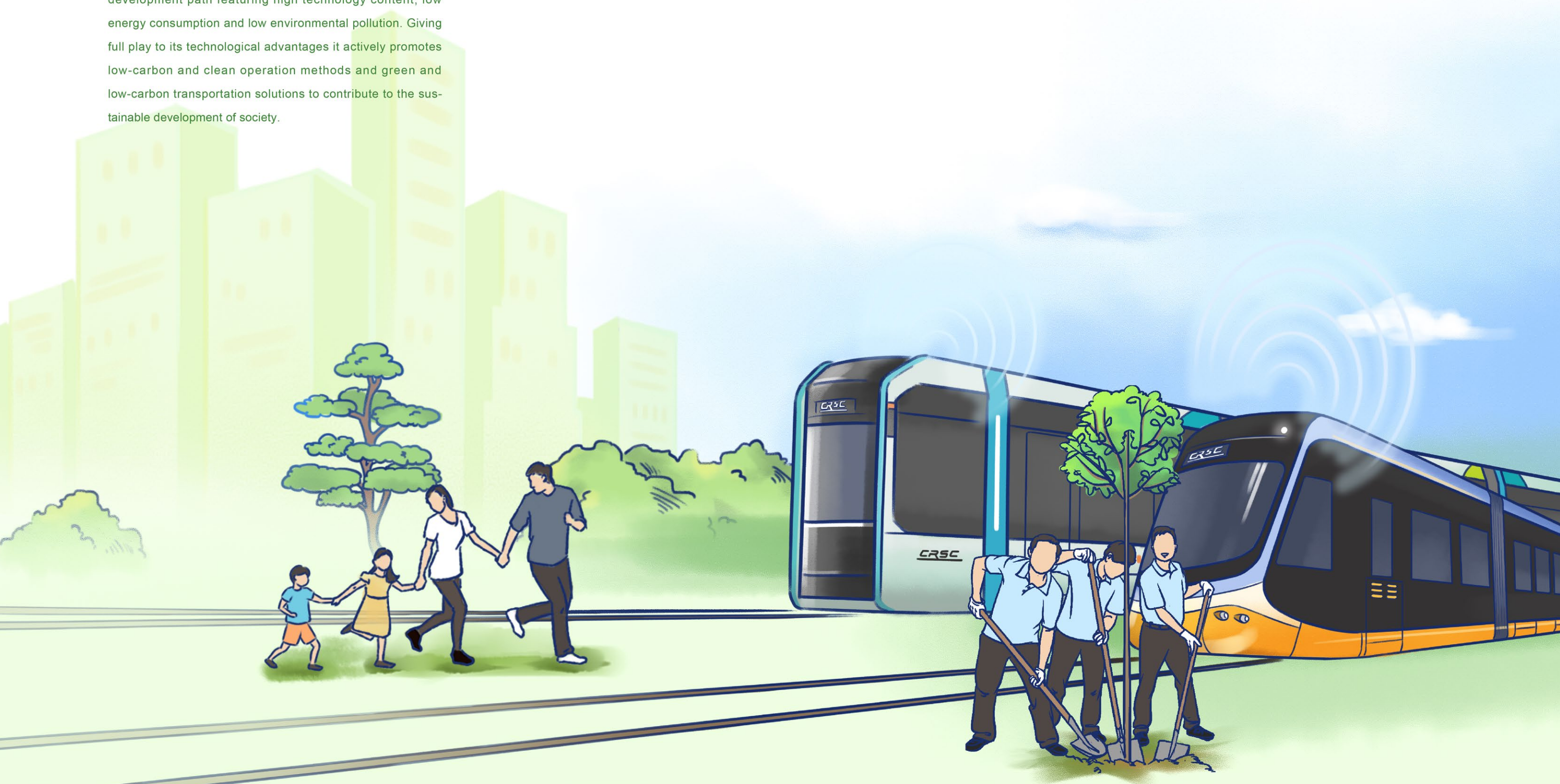
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Managing and
controlling emissions

51

Providing green solutions

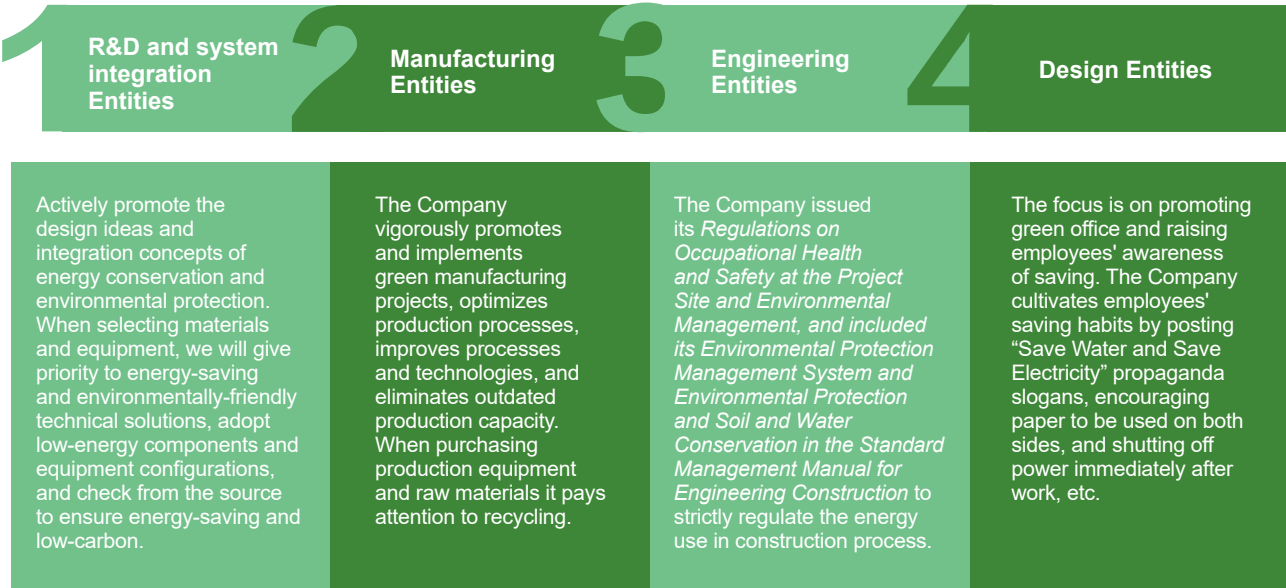
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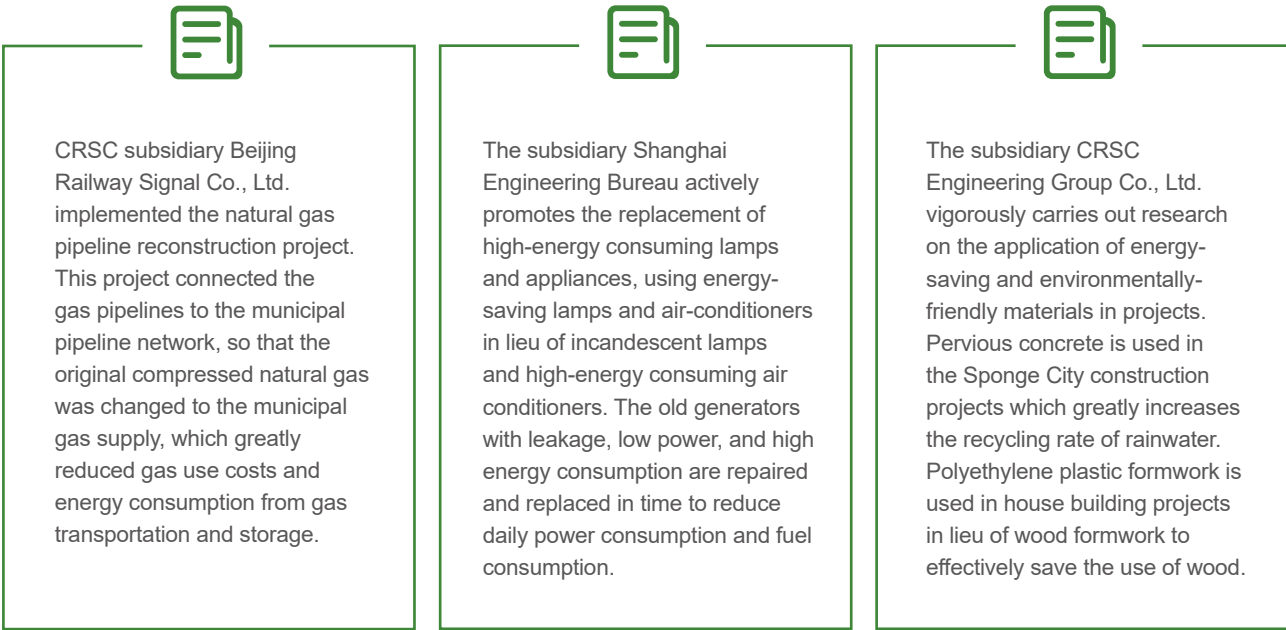
Improving efficiency of resources use

CRSC constantly improves its environmental management system, actively implements clean production and green operations, and implements energy conservation and emission reduction in all aspects such as design, product development, engineering and manufacturing. It strictly controls the use of energy resources and conducts compliance treatment of emissions and wastes to fully meet national and regional standards and requirements.

The Company established an environmental protection management system which has passed the ISO14001:2015 certification. To clarify the environmental protection responsibilities at all levels, the Company has formulated and implemented environmental management measures to promote and guide our subsidiaries and projects to carry out environmental protection. In accordance with the *Environmental Protection Law of the People's Republic of China* and other related national laws and regulations, we have formulated the *Interim Measures for the Management of Energy Saving and Emission Reduction* and established annual targets for energy saving and emission reduction. We encourage the application of new technologies for energy saving and emission reduction and promotes the use of energy-efficient and energy-saving products to achieve effective conservation of resources and energy. We also issue notices to strengthen the management of energy conservation and emission reduction and enhance the Company's achievements in energy efficiency and emission reductions in manufacturing, engineering and administration.



CRSC promotes our subsidiaries to carry out energy-saving renovation, promote new technologies, new materials and new technologies for energy conservation and emission reduction, and encourage the production and use of energy-efficient products.



In 2018, the Company actively responded to the government's call to quickly implement the *2018 Beijing Blue Sky Action Plan*. It organized employees to participate in voluntary tree planting activities. A total of **311** seedlings of various varieties were planted to green an area of over **12,000** square meters.



CRSC Energy Consumption in 2018

Energy types		Electricity (MWH)	Liquefied gas (m³)	Gasoline (tons)
Construction	2017	38,541.4	0	5,594.8
	2018	19,236.9	83,174.0 ¹	3,147.5 ²
Manufacturing	2017	30,787.1	0	177.4
	2018	32,707.1	0	158.3
Administration	2017	48,301.8	20,335.0	790.4
	2018	36,663.0	33,366.9	1,097.4
Total	2017	117,630.3	20,335.0	5,772.2
	2018	88,607.0	116,541.0	4,403.3

Note 1: In 2018, the Company's engineering construction segment further expanded the statistical scope for liquefied gas consumption, diesel and heat consumption in the office, and improved the information collection system, resulting in the use of liquefied gas, diesel and heat in the office in engineering construction increasing significantly from 2017;

Note 2: In 2018, the Company's engineering construction segment reduced the amount of gasoline used through energy conservation and emission reduction projects and standardized management of company vehicles;

Note 3: In 2018, the Company's engineering construction segment reduced its own diesel consumption through subcontracting and outsourcing;

Note 4: In 2018, according to the needs of business development, the Company's engineering construction segment undertook more construction projects in the northern region with a longer heating period, resulting in an increase in the use of purchased natural gas.

Types	Total water consumption (tons)	Water consumption per 10,000 yuan (tons)	Comprehensive energy consumption (ton of standard coal)	Comprehensive energy consumption per 10,000 yuan (ton of standard coal)
2017	949,091.6	0.3	43,681.9	0.01
2018	1,691,950.8	0.4	28,896.3	0.01

Note: In 2017, the Company's total water consumption statistics included only the subordinate companies in the park. In 2018, the Company expanded the statistical scope of total water consumption by adding the water consumption of subordinate companies outside the park, resulting in total water consumption in 2018 and water consumption per 10,000 yuan of revenue increasing significantly from 2017.

Energy types		Diesel (tons)	Heating power (million KJ)	Natural gas (m³)
Construction	2017	8,973.7	10,239.8	82,400.0
	2018	2,476.7 ³	14,989.9	130,365.0 ⁴
Manufacturing	2017	52.7	65,634.0	1,704,800.0
	2018	47.2	70,157.0	1,183,900.0
Administration	2017	0	0	1,898,378.9
	2018	12.5 ¹	2,134.9 ¹	1,873,107.3
Total	2017	9,026.4	75,873.8	3,685,578.9
	2018	2,536.4	87,281.7	3,187,372.3

CRSC Packing Material Consumption in 2018

Packing Material Types	Manufacturing packing material			Construction packing material		
	Carton (tons)	Timber (tons)	Plastic (tons)	Plastic (tons)	Carton (tons)	Metal (tons)
2017	532.1	2,580.7	118.4	42.7	25.0	599.6
2018	238.6	3,055.2	41.4	68.0	8.0	114.0



Managing and controlling emissions

The Company strictly complies with the *Law of the People's Republic of China on Prevention and Control of Atmospheric Pollution*, the *Law of the People's Republic of China on the Prevention and Control of Water Pollution*, and the *Law of the People's Republic of China on the Prevention and Control of Environmental Pollution Caused by Solid Waste* and other related laws and regulations to strengthen the management of emissions .

The Company adopts strict compliance treatment of exhaust gas such as sulfur dioxide and nitrogen oxides, and regularly maintains and renovates the exhaust gas treatment equipment to ensure compliance with the standards.



CRSC Exhaust Gas Emissions and Effluent Discharge in 2018

Emission types	SO2(tons)	NO _x (tons)	COD(tons)	NH ₃ (tons)
2017	17.2	0.7	2.1	0.4
2018	0.2	0.5	2.2	0.6

Note: In 2018, due to the development of coal-to-gas and coal-to-electricity projects, the emission of sulfur dioxide decreased.

Hazardous wastes mainly include hazardous chemicals, electroplating sludge, organic solvents, and emulsions, etc. produced during the manufacturing process. For hazardous wastes, the Company implements partitioned storage and hand them over to a qualified third party for treatment.

CRSC Hazardous Wastes Treated in 2018

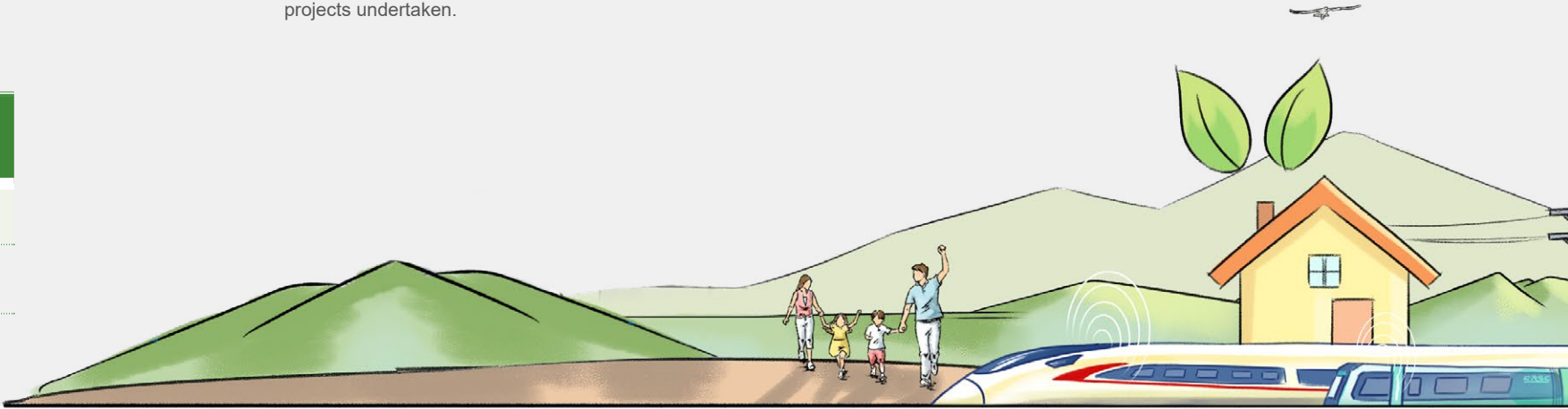
Type of hazardous waste	Hazardous chemical waste (tons)	Others (Electroplating sludge, Organic solvents, Emulsion, Waste oil, etc.) (tons)
2017	11.8	112.5
2018	6.6	161.1

Non-hazardous wastes mainly include office waste, construction waste, construction packaging materials, packaging materials used in the manufacturing process, etc. They are regularly collected and treated in compliance with standards.

CRSC General Wastes Treated in 2018

Type of general waste	Manufacturing					Construction		Administration			
	Timber (tons)	Plastic (tons)	Metal (tons)	Carton (tons)	Others (tons)	Construction waste (tons)	Waste paper (kg)	Waste lamp (piece)	Electronic waste (unit)	Cartridges and other printing supplies (piece)	Light bulb (unit)
2017	274.0	532.7	1,830.3	84.6	-	6,766.1	50,126.2	2,565	215	1,943	-
2018	215.3	246.5	1,506.2	95.5	93.9	48,929.0	17,810.9	2,454	628	5,926	60

Note: The amount of construction waste disposal of the Company in 2018 varied according to specific conditions of the construction projects undertaken.



CRSC Greenhouse Gas Emissions in 2018

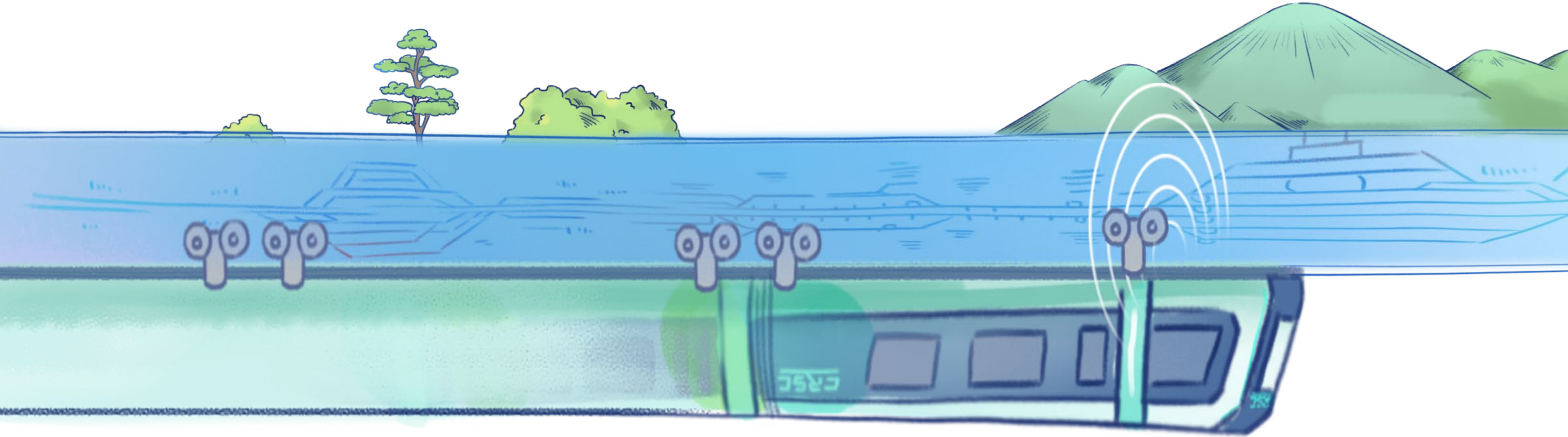
Scope	Scope 1 (tons)	Scope 2 (tons)	Total (tons)	CO ₂ emission equivalent per 10,000 yuan (tons)
2017	54,119.1	131,534.3	185,653.4	0.05
2018	29,067.2	75,677.2	104,744.4	0.03

Note: With regard to greenhouse gas emission data, the Company in 2018 further revised and improved the calculation method by referring to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories, 2017 Baseline Emission Factors for Regional Power Grids in China and other documents, and on this basis, updated the data disclosed in 2017.

Providing green solutions

The development of green modes of transportation such as high-speed rail and subway has become an important force for realizing low-carbon development of society and economy. As the backbone of national rail transit construction, CRSC integrates green low-carbon concept into product research and development, and develops energy-efficient products by changing process and technology to expand to new energy-saving and environmental protection industries. It gives full play to its own core technological advantages of rail transit industry to make travel modes more environmentally friendly and traffic conditions smoother, leading the rail transit equipment industry to develop in a green and intelligent direction.

With our core technology in the field of green travel, CRSC continuously integrates solutions for green transportation and updates technologies in the areas of energy grading and utilization, industrial parks transformation and upgrading, information-based monitoring and intelligent management, online simulation control, and intelligent and green buildings, etc. We have launched Sponge City, monitoring and alarm system for underground pipe gallery, integrated application system for intelligent building, centralized monitoring system for power and environment, railway infrastructure equipment such as screen door, PM2.5 air purifier (device), high-speed railway turnout conversion equipment like digital simulation platform, and so on.



04 Good Environment for Talents

CRSC always adheres to the principle of “recruiting, appreciating, nurturing, and treasuring talents” and regards employees as the most valuable treasure of the Company. CRSC implements the talent strategy of “open access and elite concentration”, respects and cares for employees, supports democratic governance and creates equal working environment. CRSC provides diversified training opportunities, to facilitate the promotion and development of employees.

Protecting employees’
rights and interests

57

Assisting in talent
development

59

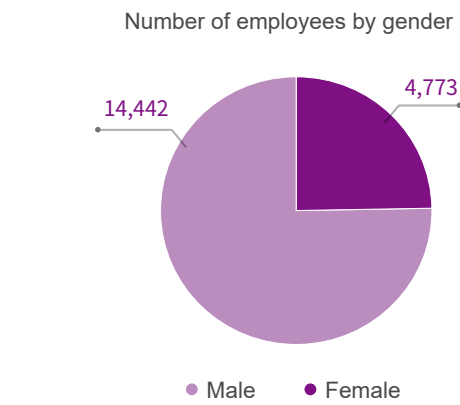
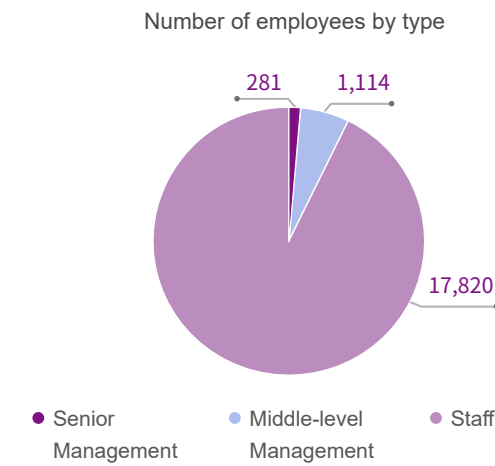
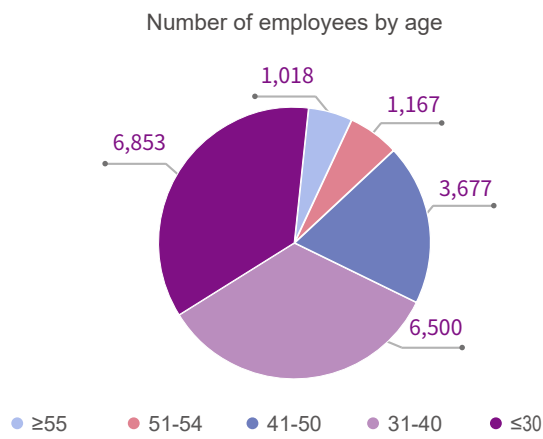
Caring for employees’
health and living

61



Protecting employees' rights and interests

In strict accordance with the relevant laws and regulations such as the *Labor Law of the People's Republic of China*, *Labor Contract Law*, and *Trade Union Law*, CRSC formulated the *Recruitment Management System* and *Measures for the Management of Labor Protection*, to strictly prohibited child labor and forced labor and eliminates all discriminations including gender, ethnicity, religion and age, and protect the basic rights and interests of employees.





the Company had a total of **19,215** employees on labor contract



there were **4** foreign employees



4 employees on labor service agreement



employees dispatched by third parties **1,111**

CRSC turnover employees in 2018

Types		Numbers		Rate(%)	
By age	≥ 55	32		3.1%	
	51-54	14		1.2%	
	41-50	90		2.4%	
	31-40	421		6.5%	
	≤30	596		8.7%	
By gender	Male	913		6.3%	
	Female	240		5.0%	
By region	Mainland China	1,153		6.0%	
	Overseas	0		0	



On the aspect of talent motivation, the Company adheres to the strategy of “open access and elite concentration”. We have formulated medium and long-term human resources planning and established a reasonable talent echelon to systematize personnel reserves. In line with the corporate development strategy, CRSC has developed mechanisms for talent recruitment, training, use, assessment and incentives, to comprehensively improve human capital value.

On the aspect of employee welfare, the Company has established regulations such as *Interim Measures for Staff Attendance and Vacation Management* and the *Measures for the Management of the Supplementary Medical Insurance for CRSC Headquarters*, to stipulate adequate five social insurance and one housing fund for employees. We also formulated the *Company formulated the Measures for the Management of Staff Salaries at CRSC Headquarters* to standardize compensation management.

For democratic management, the Company has formulated the *Measures for the Implementation of Congress of Workers and Staff*, *Measures of the Collection and Implementation of Proposals by Workers' Congress*, *Voting Procedures of Workers' Congress*, and *Working System for Workers' Congress Joint Conference*, to further standardize the democratic management such as the Workers' Congress and ensure the vital interests of employees are submitted to the congress for consideration or deliberation.





CRSC held the second session of the first employees' congress

In February 2018, CRSC successfully held the second session of the first employees' congress cum 2018 annual working conference. The conference reviewed the development history of CRSC in the past five years, fully summarized the past work on democratic promotion, and drew on past experience to deploy future work on democratic construction.



Assisting in talent development

In order to support the development of employees, CRSC has formulated the *Measures for Training Management*, which stipulates that Human Resources Department is responsible for making annual training plan, implementation, statistics and follow-up of training, to continuously improve and design training program which is more suitable for employees.



CRSC held a project manager training class

On August 20-21, 2018, CRSC held a project manager training class in Beijing to attract nearly 100 project managers and key management personnel from the first line of engineering construction to participate.

The training class invited excellent project managers and experts of the Company to teach in person. The training content covered the application of "BIM + Intelligent Building" in engineering projects, construction of high-quality projects, construction safety, labor subcontracting, responsibility cost management, etc. Targeted guidance was also offered for problems in practice to comprehensively improve the overall management of the Company.



CRSC held responsibility cost management training

On June 10, 2018, CRSC held a special training session on responsibility cost management at its headquarters in Beijing. It focused on cost management situation analysis and case analysis of responsibility cost management, and gave profound yet easy-to-understand explanation to help students improve in cost management theories and practice. New ideas and methods for responsibility cost management were also provided.

The training attracted a total of more than 180 people to participate including heads of relevant departments and management personnel at the headquarters, chief accountant of each subordinate enterprise, competent leaders of responsibility cost management, heads of financial and responsibility cost management departments, etc.



CRSC Employee Training in 2018

By gender

Training Rate (%)

Average Training Hours (h)



69%

17.9 h

Male



81%

17.8 h

Female

By employee type

Training Rate (%)

Average Training Hours (h)



68%

37.9 h

Senior Management



76%

21.4 h

Middle-level Management



72%

16.2 h

Staff



CRSC has established clear employees' promotion mechanisms and ensure publicity and transparency of promotion channels. The Company has formulated *Interim Measures for the Selection and Appointment of Leading Personnel*, *Measures for the Management of Transfer and Secondment of Leading Personnel*, and *Measures for the Management of Reserve Cadres*, to regulate job evaluation and promotion and provide employees with professional support on training and internal rotation, helping employees achieve personal development.

In order to further motivate the development of employees, the Company formulated *the Administrative Measures for Innovation Studios for Advanced and Model Workers* stipulating innovation leaders, innovation teams, equipment and venues, working systems and mechanisms, research projects and targets, and standards for innovative results. In 2018, a total of 10 innovation studios for advanced and model workers were set up by various grassroots units. Among them, six studios such as Jiangming were named as the Company-level Innovation Studio for Advanced and Model Workers after being inspected and accepted. In the selection of model workers, 1 National Pioneer Worker, 2 Locomotive Medals, 20 Advanced Female Employees and 2 Advanced Female Employee Organizations were selected, and 1 Beijing March 8 Red Flag Medal was recommended.

At the same time, the Company carried out a series of labor competitions with the theme of "Contributing to the New Era with a Sense of Ownership". The grassroots units further enriched the competition content with own characteristics, such as CRSC Xi'an Rail Transit Industry Corporation's labor competition with the theme of "Technology Innovation for Market Expansion, Contribution with Cost Reduction and Efficiency Increase, Lean Production as Foundation, and Safety and Quality as Guarantee", the 100-day labor competition by CRSC Construction Group with the theme of "Working Hard 100 Days to Deliver Target Nodes of Traffic Station with Safety and High Quality", etc. In 2018, all units of the whole system organized 49 labor competitions, with a total of 14,500 participants.

Caring for employees' health and living

CRSC advocates for work-life balance and actively carries out various cultural and sports activities, to enrich employees' spare time and enhance their sense of belonging, and to increase corporate cohesion.

Helping needy employees

With regard to needy employees helping, the Company has formulated the *Measures for Implementation of Assistance and Relief* and initially established a three-tier assistance system based on "the grassroots level, the Group level and the Company level". According to establishing files for employees with difficulties and taking special aid measures such as living subsidies, medical assistance for major diseases, and school subsidies, we helped the employees with living difficulties, illness, and those who cannot afford their children attending school. For employees suffering from serious illness, besides the medical insurance stipulated by the state and the Company, the Company's labor union extends one-time medical assistance for the part of expenses that employees personally bear.

In 2018, files were established for 510 employees with difficulties in the Company and a total of 1.252 million yuan was allocated as financial aid for them.

Caring for female employees

In order to protect the safety and health of female employees during work, the Company implemented the *Special Regulations on the Protection of Female Employees* and formulated the *Measures for the Implementation of Labor Protection for Female Employees* to strengthen "four-phase" protection for female employees and protect effectively the special rights and interests of female employees.

The Company also invited women's health experts to teach health knowledge to female employees in order to increase the awareness of female employees on their own health.

Caring for the health and life of front-line workers

The Company continuously carried out activities to build "Home of Staff" and "Small House of Staff", to conduct key constructions on entities that located in remote areas with poor infrastructure and relatively concentrated personnel. In 2018, the Company has allocated more than 450 thousand yuan for constructions and 360 thousand yuan for 17 key engineering projects, which has greatly improved the working and living conditions of front-line workers.

The Company launched "two festivals" sending warm activities during New Year and Spring Festival, raising warm funds of more than 4.63 million yuan, paying visits to 612 difficult families, 231 front-line teams, 225 advanced models and 5,613 front-line workers. We also conducted cool sending activities during summer vacation, paying visits to 189 construction project departments and 558 front-line teams, with a total of 13,542 workers.

Sports and cultural activities

The Company actively carries out cultural and sports activities with distinct themes and various forms, which cultivates the cultural and artistic interests of employees and promotes communication and exchange between employees. In 2018, the Company successively carried out a staff speech contest with the theme of "Chinese Dream, CRSC Bond, and Beauty of Work: Learning and Implementing Xi Jinping's Thought on Socialism with Chinese Characteristics for the New Era and the Spirit of the 19th National Congress of the CPC", the fourth "March 8" essay competition with the theme of "Literate CRSC: A Civilized Family", and the first "Xingjian Cup" badminton competition, and so on.



CRSC Top Ten Youth Singers Contest concluded successfully

On December 25, 2018, the CRSC Top Ten Youth Singers Contest held by the CRSC China Youth League Committee was successfully concluded. After fierce competition, 22 contestants entered the finals to win champion, runner-up and second runner-up, as well as Award of Best Popularity, Award of Best Manners on Stage, and Award of Best Potential, each won by one contestant.

The CRSC Top Ten Youth Singers Contest is an annual event of CRSC. The event started in November and attracted extensive participation of all groups and members of CRSC at all levels. More than 100 entries were received. The event provides a good platform for employees to show their talents.



05 Cooperation Promotes Development

CRSC actively responds to the national “One Belt, One Road” and “going out” strategy, and strives to build a responsible industrial chain, integrate corporate social responsibility into supply management. We enthusiastically participate in poverty alleviation, helping the poor, donation, volunteers and other social welfare undertakings, to promote society and economic progress.

Actively response
to the BRI

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Create responsible
industry value chain

66

Support for the poverty
alleviation plan

68



Actively response to the BRI

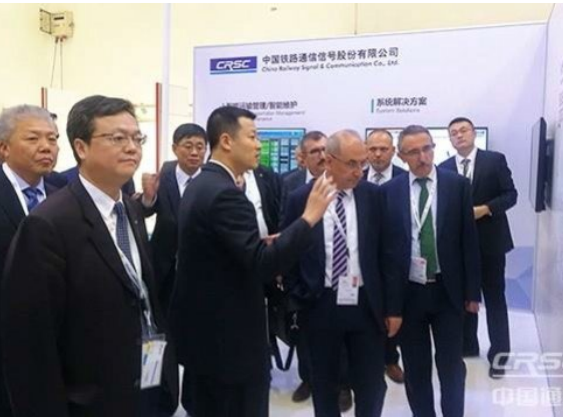
As an important member of the “Chinese High Speed Rail Going Global Alliance”, CRSC has vigorously promoted China's high-speed rail to the world and provided a “China Program” for the development of global rail transit. Under the “Belt and Road” initiative, CRSC is participating in such projects as Indonesian Jakarta-Bandung high-speed rail, Pakistan's Orange Line Metro Train, India's freight line reconstruction, etc., and actively tracking international cooperation projects such as Russia Moscow-Kazan high-speed rail, California High Speed Rail, Sino-Thai Railway China-Laos Railway, Hungry-Serbia Railway, etc. CRSC is working hard to promote China's high-speed rail to go global as a whole to show the world the great achievements of China's high-speed rail and national economic and social development.

CRSC values cooperation with our peers, and actively participates in industry forums and summits to continuously enhance our reputation in domestic and overseas markets and influence in the global industry. We vigorously promotes the “Belt and Road” initiative by accelerating the pace of “going global”.



CRSC made its debut at the World Congress on High Speed Rail in Turkey

In May 2018, CRSC was unveiled at the World Congress on High Speed Rail co-hosted by International Union of Railways (UIC) and the Turkish National Railways (TCDD). CRSC displayed its proprietary high-speed rail CTCS-2/3 train control system, intelligent maintenance system and intelligent transportation management system, overall solutions across the industry chain, abundant domestic and overseas cases, and mainstream signal products that had obtained EU TSI certifications. At the same time, it promoted and demonstrated the CTCS-3+ATO high-speed rail system for autonomous trains developed and verified in the lab recently and the future development of the high-speed rail industry, which attracted attention and strong interest of visitors.



Guests from 7 countries along the “Belt and Road” visited CRSC

In September 2018, government agencies, state-owned enterprises, and local university student delegations from countries along the “Belt and Road” - Serbia, Azerbaijan, Cuba, Guyana, Bulgaria, Belarus, Iran, and Nepal - visited CRSC. During the visit, CRSC explained the three-dimensional modeling and practical working principles of China's agile high-speed rail operation and maintenance system for visiting guests, and introduced the progress of the construction of Hungary-Serbia railway, technological breakthroughs of China's high-speed rail “autopilot” and CRSC one-stop service across the industry chain of rail transit, helping the delegation to understand China's reform and development achievements and technological breakthroughs and construction and operation experience of China's rail transit industry.



CRSC actively participated in the first China International Import Expo (CIIE)

In November 2018, CRSC participated in the first China International Import Expo (CIIE). CRSC Casco Signal Co., Ltd. and CRSC (Xi'an) Rail Transit Industry Co., Ltd. signed contracts with companies from Germany, France, Switzerland, and Austria on rail transit control system's on-board PCB, driver display unit, train speed measuring device, axle counting equipment and wave soldering industrial equipment, etc. to further expand area of cooperation, cooperation scale and cooperation level with foreign companies.



Create responsible industry value chain

CRSC integrates corporate social responsibility into supply chain management, focuses on establishing a responsibility industry chain, adheres to the principle of equality and mutual benefit, strictly controls over the supplier access and assessment systems and promote the sustainable development of the supply chain.

The Company issued governing documents for supplier management such as *Supplier Management Measures*, *Interim Measures for the Management of Supplier Credit Evaluation*, and *Measures for the Management of the Blacklist of Suppliers*. These special management systems stipulate the procedures for suppliers' access, evaluation, and exit, and gradually expand the evaluation content to realize comprehensive consideration, including quality, cost, delivery speed, and supplier's own environment, security and other aspects.

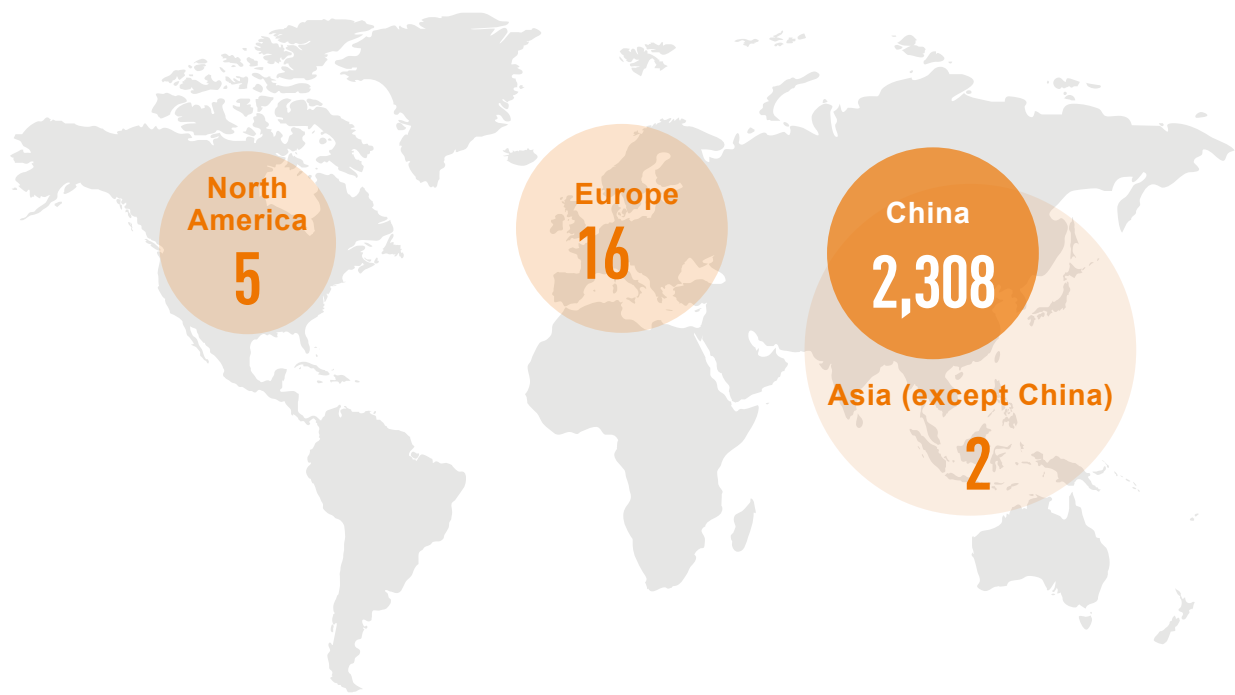
The Company requires suppliers (to):

- have a good business reputation, a sound financial accounting system;
- have the necessary professional skills, production and supply capacity to fulfill the contracts;
- have effective certifications such as one for management system, and no adverse credit record in the past two years;
- must provide financial audit reports issued by certified public accountants;
- must not have been criticized in a circulated notice by the state, industry and the Company for quality responsibility accidents in the past two years, and must not have been included in the blacklist of suppliers.

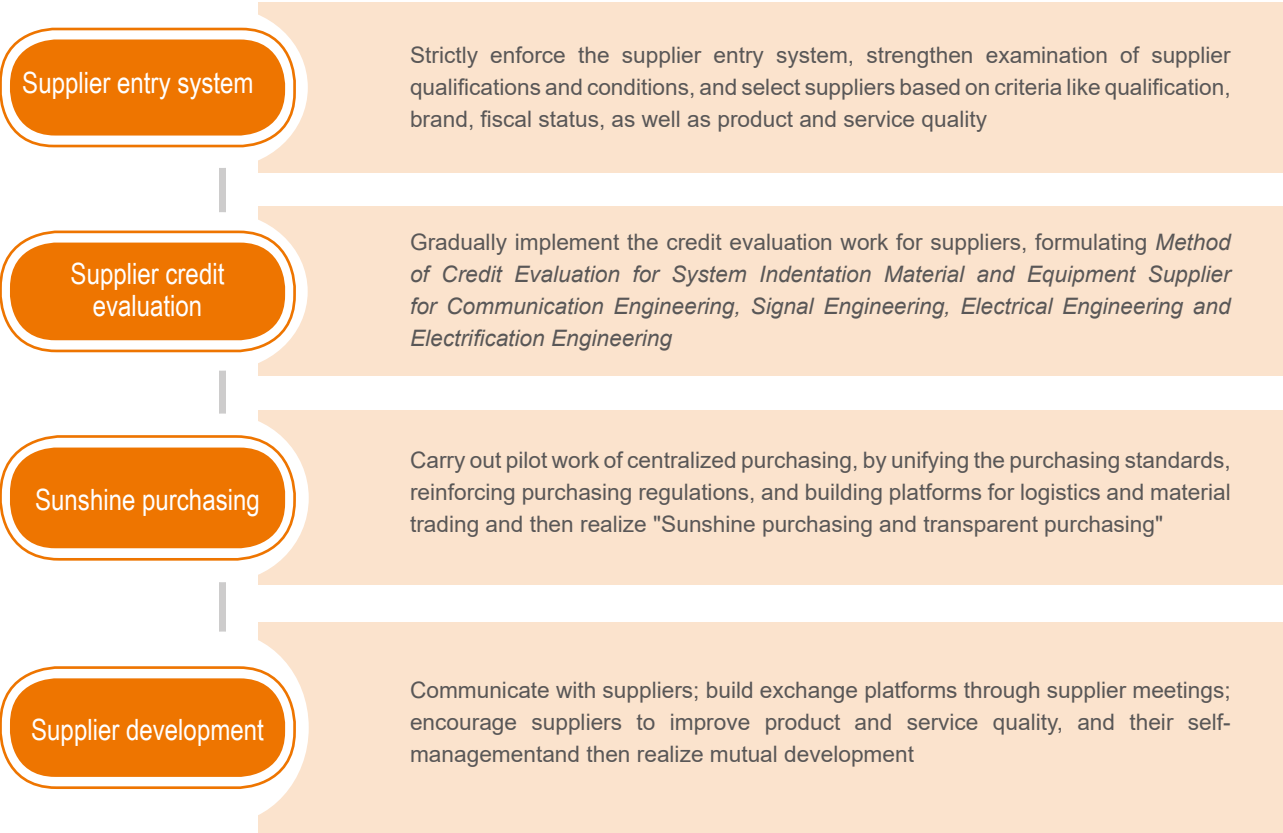
In 2018, CRSC carried out procurement management to enhance benchmarking, carried out procurement of general materials in the engineering sector, and established a procurement management assessment mechanism. The single source procurement decreased significantly compared with last year.



Number of suppliers by geographical region in 2018



Supplier management system



Support for the poverty alleviation plan

CRSC actively responds to the country's strategy of getting rid of poverty by fulfilling corporate social responsibility. It is committed to helping the development of poverty-stricken areas in terms of education, health care, economy, and people's livelihood, and promoting the development of public welfare activities.

Fixed-point poverty alleviation

CRSC attaches great importance to poverty alleviation in designated areas and strengthens investigation and research. In 2018, Zhou Zhiliang, party secretary and Chairman of CRSC, and his party went to Sheqi County, Henan Province to inspect the poverty alleviation work. They made in-depth investigation of the progress of poverty alleviation work by visiting registered households with difficulties, analyzing the causes of poverty, and studying poverty alleviation countermeasures, and urged cadres responsible for poverty alleviation to work in strict accordance with prescribed procedures.



In 2018, the Company invested 3.1 million yuan in poverty alleviation funds and held two training sessions attended by 186 grassroots cadres and 160 technicians. Companies affiliated to CRSC continued to increase investment in infrastructure in poverty-stricken ethnic areas such as Tibet, Xinjiang, Qinghai and Guizhou. CRSC made actual investment throughout the year of more than 1.6 billion yuan and brought care and warmth to the people of Sheqi County.

CRSC's poverty alleviation work has won the praise and gratitude of the masses and cadres in Henan Province. The Company will continue to take the initiative to help the sustainable development of capacities and industries in poverty-stricken areas.

Poverty alleviation actions:

Poverty alleviation through industrial development

- A "cooperative + poor household" model was established to guide the development of the Golden Pear Project. The Company invested RMB 399,900 to build three 150-ton storage warehouses to solve the problem of storage of golden pears, which greatly reduced the loss from dull sale. The warehouses are rented in lay-up period to increase income of village collectives.
- A "company + poverty alleviation workshop + farmers" cooperation model was established to encourage poor households to grow sweet potatoes. The Company invested 400,000 yuan to build a 600-square-meter poverty alleviation workshop and a cold storage to realize the value-added processing of sweet potato on the spot and help the poor to be employed.
- Henan Miaolan Packaging Materials Co., Ltd. was introduced to build a factory in Jinzhuang Town to provide more jobs for registered poverty-stricken people in surrounding areas. The actual investment this year was 5 million yuan.
- CRSC helped develop characteristic industries by guiding the establishment of Yinong Grain Specialty Cooperative and expansion of Qirun Walnut Planting Cooperative, and helped expand the planting area of high-quality tobacco leaves by 75 acres.

Poverty alleviation through consumption

- The Company's labor union issued an initiative to purchase agricultural products in poverty-stricken areas. The whole system actively purchased 340,144 yuan of agricultural products in Sheqi County and 480,000 yuan of pure water in Tibet Autonomous Region, and helped sell 336,000 yuan of agricultural products in designated poverty-stricken counties.

Poverty alleviation through education

- CRSC actively carried out the "Golden Autumn Student Aid" activity, and funded RMB 170,000 to fund 80 college students from registered poverty-stricken families.
- CRSC launched the "Relief for Orphans" initiative, and funded 119,000 yuan to help 119 orphaned primary school students, insisting on warming every disabled family with love.
- The CRSC Youth League Committee launched the "Helping the Poverty Alleviation" charity fundraising event and set up a "Love Station" to donate more than RMB 540,000 and school supplies to Sheqi County.
- Concerned about the life of grassroots teachers in rural areas, the Company made condolence payments to teachers with difficulties.

Poverty alleviation through healthcare

- A special fund of 125,000 yuan was invested for the "Same Boat Project: Aid to Those with Emergencies and Difficulties" action.
- Condolence payments were made to families with disabilities, low-income households and CPC members with living difficulties, and so far 52,000 yuan has been paid.
- We actively contacted medical institutions to offer free diagnosis in villages on spot and do physical checkups free of charge for villagers.
- The "Public Welfare Insurance Project for Poverty Alleviation through Healthcare" was introduced. In the past three years, we have funded 3 million yuan for Sheqi County, which is used for supplementary reimbursement of hospitalization expenses for main labor force (18-60 years old) of poverty-stricken families in the county.

Poverty alleviation through living standard increase

- We invested 235,000 yuan to build a 50-ton sewage treatment system for Yuanlaozhuang Village, which completely solved the problem of production and domestic sewage discharge for 485 households with 1,875 people.
- We funded nearly 100,000 yuan to install 48 LED solar street lamps in Yuanlaozhuang Village.
- We coordinated to invest 120,000 yuan to build a health and medical station for Yuanlaozhuang Village.

Poverty alleviation through the Party's building

- A "party building + poverty alleviation" model was established under which the Company party committee allocated 100,000 yuan of special party fees to strengthen the construction of the party branch of Yuanlaozhuang Village, which stimulated endogenous motivation and work vitality of village officials and party members to get rid of poverty.
- We regularly play anti-poverty inspirational films, hold commendation meetings for poverty alleviation, and hold training classes on poverty alleviation policy to update the concept of development and strengthen the resolve and confidence to get rid of poverty.

Volunteer service

CRSC implements the specific measures of *Volunteer Service Regulations* issued by the State Council. In December 2018, the "Shared Dream Building" Youth Volunteer Service Group was set up to promote the spirit of youth volunteer service and give full play to the demonstrative leading role of advanced and model youth volunteers.

After the establishment, the park-based Youth Volunteer Service Group will contribute CRSC youth strength to building CRSC Rail Transit R&D Center into Energy-saving Park, Green Park, Civilized Park and Public Welfare Park. The Youth Volunteer Service Group will work with the Park Administration Center to provide quality volunteer services to 12 companies with more than 3,000 people stationed in the park.



HKEX ESG Reporting Guide

General Disclosures and KPIs		Locations in the Report
A: Environment		
Aspect A1: Emissions		
General disclosure		P51
A1.1	The types of emissions and respective emissions data.	P51
A1.2	Greenhouse gas emissions in total (in tons) and, where appropriate, intensity (e.g. per unit of production volume, per facility).	P53
A1.3	Total hazardous waste produced (in tons) and, where appropriate, intensity (e.g. per unit of production volume, per facility).	P51
A1.4	Total non-hazardous waste produced (in tons) and, where appropriate, intensity (e.g. per unit of production volume, per facility).	P50, P52
A1.5	Description of measures to mitigate emissions and results achieved.	P51, P52
A1.6	Description of how hazardous and non-hazardous wastes are handled, reduction initiatives and results achieved.	P51, P52
Aspect A2: Use of resources		
General disclosure		P47
A2.1	Direct and/or indirect energy consumption by type (e.g. electricity, gas or oil) in total (kWh in '000s) and intensity (e.g. per unit of production volume, per facility).	P47
A2.2	Water consumption in total and intensity (e.g. per unit of production volume, per facility).	P49
A2.3	Description of energy use efficiency initiatives and results achieved.	P47, P48
A2.4	Description of whether there is any issue in sourcing water that is fit for purpose, water efficiency initiatives and results achieved.	P47
A2.5	Total packaging material used for finished products (in tons) and, if applicable, with reference to per unit produced.	P52
Aspect A3: Environment and natural resources		
General disclosure		P47
A3.1	Description of the significant impacts of activities on the environment and natural resources and the actions taken to manage them.	P47
B: Society		
Employment and Labor Standards		
Aspect B1: Employment		
General disclosure		P57
B1.1	Total workforce by gender, employment type, age group and geographical region.	P57
B1.2	Employee turnover rate by gender, age group and geographical region.	P58
Aspect B2: Health and safety		
General disclosure		P39, P40
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B2.2	Lost days due to work injury.	/
B2.3	Description of occupational health and safety measures adopted, how they are implemented and monitored.	P41

General Disclosures and KPIs		Locations in the Report
Aspect B3: Development and training		
General disclosure		P59
B3.1	The percentage of employees trained by gender and employee category (e.g. senior management, middle management).	P60
B3.2	The average training hours completed per employee by gender and employee category.	P60
Aspect B4: Labor guidelines		
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B4.1	Description of measures to review employment practices to avoid child and forced labor.	P57
B4.2	Description of steps taken to eliminate such practices when discovered.	P57
Operational practices		
Aspect B5: Supply chain management		
General disclosure		P66
B5.1	Number of suppliers by geographical region.	P67
B5.2	Description of practices relating to engaging suppliers, number of suppliers where the practices are being implemented, how they are implemented and monitored.	P66, P67
Aspect B6: Product responsibility		
General disclosure		
B6.1	Percentage of total products sold or shipped subject to recalls for safety and health reasons.	inapplicable
B6.2	Number of products and service related complaints received and how they are dealt with.	inapplicable
B6.3	Description of practices relating to observing and protecting intellectual property rights.	P28
B6.4	Description of quality assurance process and recall procedures.	P43, P44
B6.5	Description of consumer data protection and privacy policies, how they are implemented and monitored.	inapplicable
Aspect B7: Anti-corruption		
General disclosure		P20
B7.1	Number of concluded legal cases regarding corrupt practices brought against the issuer or its employees during the reporting period and the outcomes of the cases.	P20
B7.2	Description of preventive measures and whistle-blowing procedures, how they are implemented and monitored.	P20
Community		
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General disclosure		P68
B8.1	Focus areas of contribution (e.g. education, environmental concerns, labor needs, health, culture, sport).	P68 - P70
B8.2	Resources contributed (e.g. money or time) to the focus area.	P68 - P70



Feedback

Distinguished readers:

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- ☐ Community
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