

2019

SOCIAL RESPONSIBILITY REPORT

MCC, A PARTNER OF CHOICE

Metallurgical Corporation of China Ltd.

2019 Social Responsibility Report



# About this Report

## Reporting Boundary

- Report Scope: The Report covers Metallurgical Corporation of China Ltd. and its subsidiaries.
- Reporting Period: The report covers from January 1 to December 31, 2019, and also includes additional information beyond the stated reporting period.
- Reporting Cycle: This report is the 11th annual social responsibility report issued by Metallurgical Corporation of China Ltd.



## Compilation Conformance

- *Environmental, Social and Governance Reporting Guide* issued by Hong Kong Exchanges and Clearing Limited
- *Guidelines of Shanghai Stock Exchange for Environmental Information Disclosure of Listed Companies* issued by Shanghai Stock Exchange
- *ISO 26000: Guidance on Social Responsibility (2010)* issued by International Organization for Standards
- *GB/T 36001-2015: Guidance on Social Responsibility Reporting* by General Administration of Quality Supervision, Inspection and Quarantine of the People’s Republic of China and Standardization Administration of the People’s Republic of China
- *GRI Sustainability Reporting Standards (GRI Standards )* issued by the Global Reporting Initiative (GRI)
- *Guidelines on Corporate Social Responsibility Reporting for Chinese Enterprises (CASS-CSR 4.0)* issued by Research Center for Corporate Social Responsibility, Economics Division, China Academy of Social Sciences

## Data Sources

This report truly reflects MCC’s proactive performance of economic, environmental and social responsibilities as well as its realization of overall, harmonious and sustainable development. Data in this report are from MCC’s official documents and statistical reports as well as the summary statistics of social responsibility practices of its subsidiaries. The financial data are from MCC’s 2019 financial statement, while other data are mainly from the year 2019 and partially from previous years. In this report, the unit of monetary measurement is RMB unless specially noted.

## References

For better expression and readability, Metallurgical Corporation of China Ltd. is referred to as “MCC”, “the Company” or “we” in this report, and its controlling shareholder – China Metallurgical Group Corporation – is referred to as “MCC Group”.

## Access to this Report

This report is published in Simplified Chinese, Traditional Chinese and English. In case of any discrepancy, the Simplified Chinese version shall prevail. This report is released in printed edition (with recycled paper) and in PDF, and the latter can be downloaded from the website of MCC (<http://www.mcc.com.cn>).

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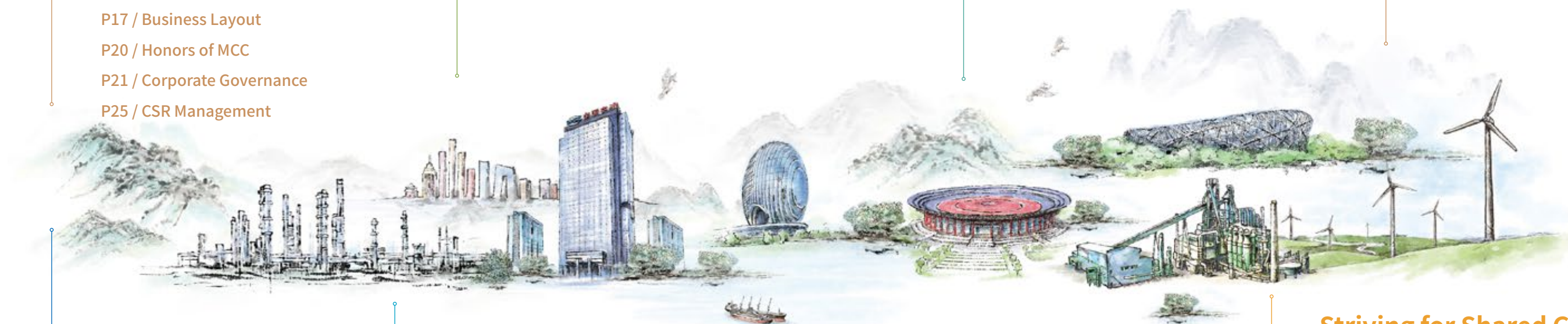
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# Message From the Chairman

This is the 11th Social Responsibility Report of Metallurgical Corporation of China Ltd. (MCC). We sincerely appreciate the community's long-term care and support to MCC.

We always prioritize responsibility and contribution. General Secretary Xi Jinping pointed out that, "Companies that actively shoulder social responsibilities are the most competitive and vigorous ones." MCC closely follows and fully implements important instructions of General Secretary Xi Jinping and the CPC Central Committee's decisions and arrangements, highlights the sense of responsibility, sticks to the strategic positioning of "being the national team of metallurgical construction, the main force of infrastructure construction and the pacesetter of emerging industries, insisting on taking the path of high-tech construction in the long term", and makes unremitting efforts to build itself into the world's top national team for metallurgical construction. MCC incorporates social responsibilities into corporate strategy, and fully practices social responsibilities in the process of

implementing the strategy. In 2019, while prioritizing high-quality growth, MCC fully implemented the new development concepts, i.e. innovative, coordinated, green, open and shared development, pursued both scale and benefits, and raised the quality and returns of development. The total value of newly signed contracts in 2019 reached RMB 787.6 billion, the business revenue was RMB 338.6 billion, and the total profits reached RMB 9.78 billion, all breaking new records. MCC is growing stronger and better in a steady way, fully practicing economic, social and environmental responsibilities.

We highlight the guiding role of innovation, and give full play to the strength as "the national team for metallurgical construction". As the founder of China's "iron and steel backbones", with a global vision for the high international standard of metallurgical industry, MCC gives full play to its cutting-edge core technology, consistent innovation capacity and irreplaceable integration advantages of the whole metallurgical industrial chain to assume the national responsibility of leading China's metallurgical development to new heights and moving towards a leading role in the global metallurgical industry. Centring on green and intelligent development, we continue to optimize the business structure comprised of eight sectors and 19 units. We pool R&D resources to deal with "stranglehold problems" in techniques, announce major R&D projects under the "2020 Scheme", and vigorously promote the commercialization and industrialization of core technologies. In 2019, the newly signed contract value of our projects in metallurgical engineering broke new record and reached RMB 128.1 billion, increasing 15.4% on a year-on-year basis. We have basically undertaken all key metallurgical projects at home and abroad, further consolidating our leading position in the market.

Board Chairman

高文治

About MCC

Pursuing Innovative  
Development to Boost  
Transformation and UpgradingHighlighting Coordinated  
Development to Optimize  
the Business LayoutSeeking Green  
Development to Promote  
Ecological ProgressValuing Openness  
to Form a Global  
Business LayoutStriving for Shared  
Growth to Increase  
People's Wellbeing

We highlight coordinated growth and strive to be the country's main force for infrastructure construction. We have transferred, converted and extended the engineering expertise and multi-disciplinary, and integrated core strength we have gained in years of metallurgical engineering practices into infrastructure construction, to boost new growth and gain new strength. We closely catch up with major national strategies like promoting the coordinated development of the Beijing-Tianjin-Hebei region, development of Yangtze River Delta region and Guangdong-Hong Kong-Macao Greater Bay Area, and integrated development of Yangtze River Delta. In 2019, the newly signed contract value of our projects in five major city clusters accounted for 61.06% of the total value of newly signed engineering projects. National key development regions of strategic importance become the main business battlefield for MCC.

We highlight green growth and strive to be the "leader of emerging industries". Focus on green and sustainable development, we promote comprehensive resource conservation and recycling, and vigorously promote green construction to lead the growth of emerging industries. As for water environment governance, we constantly gain a competitive strength in the industry based on our businesses, such as comprehensive governance of river basin and black and odorous water, as well as municipal sewage disposal. We grow rapidly in fabricated construction, solid waste treatment, beautiful village, smart city and health and elderly care, constantly increasing our market share. We also maintain a relatively high market share in urban integrated underground pipe gallery and theme park to consolidate our leading position in the industries.

We highlight open operation and go global to enhance our value. We are born with the gene of global development, and are among the first batch of "going global" Chinese central state-owned enterprises. In recent years, we have actively responded to the Belt and Road Initiative, and integrated our development into the world economy. We now have 160 overseas organizations in 58 countries and regions and 611 projects worldwide that are under construction. We stick to creating value through opening up, and insist on localized operations. We set up local organizations with local employees, carry out local procurement, respect local culture and customs, actively blend into local community, and share development opportunities and value with local people.

We highlight shared growth and win-win cooperation, and join hands with stakeholders for sustainable development. We have improved the mechanism of strategic customer maintenance, consolidated win-win cooperation with government agencies, large enterprises and local investment platforms, and signed 13 strategic cooperation agreements. We prioritize quality guarantee, and improve the ability of honoring agreements. 2019 was a fruitful year for us considering the quality engineering honors and awards we obtained. We won 27 National High-Quality Engineering Awards and 10 Luban Prizes, both breaking the records. We stick to be people-oriented and show care to employees, secure employee safety and share the fruits of development with employees. We continuously improve the comprehensive quality of employees, and strive to build "a highland for youth to realize dreams and ambitions, a platform for the middle-aged to seek development and fulfillment, and a harbor for retirees to enjoy a peaceful and delightful life after retirement".

Great accomplishments require ambition and tireless effort. 2020 is the final year of building a moderately prosperous society in all aspects. The unexpected COVID-19 outbreak in the beginning of the year disturbed people's peaceful life. Facing the emergent battle without fires, we stayed true to the original aspirations, responded promptly and had taken effective measures to complete the design, renovation and construction of over 40 emergency medical care facilities with high quality and efficiency, as well as the lockdown and renovation of multiple streets and communities, providing 25,000 beds for the coronavirus battle. Over 2,000 medical care personnel have joined the battle at six MCC hospitals in different provinces and cities. We pay equal attention to the prevention and control of the pandemic as well as the resumption of work and production, and strive to meet the annual performance goals without any hesitation. We will devote great efforts to securing victory with perseverance and fighting spirit, showing our sense of responsibility and reliability as a "pillar of the country" in critical times.

Better CSR fulfillment marks a company's sustainable and healthy growth. MCC is willing to join hands with all partners, improve its image as a responsible, respected and trustworthy central state-owned enterprise, and contribute more to building a moderately prosperous society in all aspects and realizing the Chinese dream, i.e. the great rejuvenation of the Chinese nation. We will explore even further and better in the course of fulfilling social responsibilities.





# Feature: Fighting Against COVID-19, MCC is in Action

The pandemic of COVID-19 calls for action, and our responsibility is to fight against it

“

Leaders and Party members must have absolute confidence and the sense of responsibility, take the responsibility and always take the lead to hold the Party flag high in the frontline of pandemic prevention and control as well as work and production resumption.

— Guo Wenqing, Board Chairman of MCC

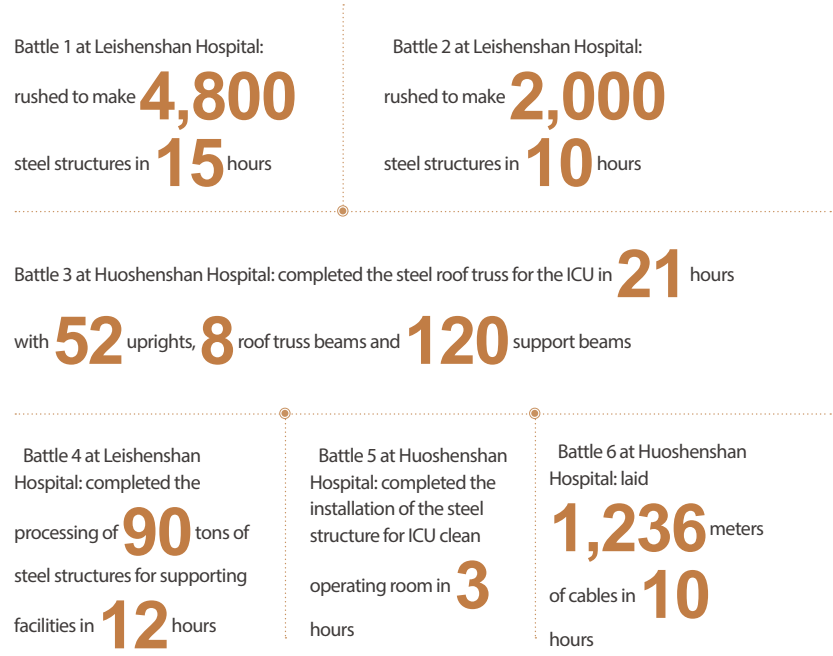
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The Coronavirus Disease 2019 (COVID-19) is a major public health emergency that has spread in the fastest speed, caused the most extensive infection and is the most difficult to contain in the country since the founding of the People's Republic of China. In face of the pandemic's impact on economy and society, MCC has fully implemented President Xi Jinping's instructions as well as the policies and decisions made by the CPC Central Committee, and firmly followed the unified command, coordination and arrangement of the CPC Central Committee. Making full play of its role as “the national team for metallurgical construction” and the “main force for infrastructure construction”, MCC has strictly enforced orders and prohibitions, and coordinated with local governments to battle against the pandemic. Meanwhile, MCC has promoted the resumption of work and production, which has been highly recognized by all walks of life and the mainstream media.

## A builder of medical facilities in the day and night

With prompt action and good organization, the battle cannot fail. When Huoshenshan Hospital, Leishenshan Hospital and Jinyintan Hospital in Wuhan, Leishan Hospital in Ezhou, all the makeshift hospitals, and the stationed pandemic prevention projects of our subsidiaries needed emergency assistance, design and construction, China First Metallurgical Group Co., Ltd., WISDRI Engineering &Research Incorporation Limited, CHINA MCC3 Group Co., Ltd., Shanghai Baoye Construction Corp., MCC Central Research Institute Of Building and Construction, MCC Tiangong Group Corporation Limited, China MCC17 Group Co., Ltd., and CISDI Engineering Co., Ltd. followed the command and responded promptly with good organization and quick actions. They shouldered the great responsibility to undertake the tasks to design, reconstruct and build nearly 40 hospitals in different regions, as well as the renewal projects for multiple closed streets and communities, resolutely fulfilling the political responsibility for pandemic prevention and control.

Located in the hardest-hit area of COVID-19 pandemic and also the frontline of pandemic control, China First Metallurgical Group Co., Ltd. was entrusted with a mission at this critical and difficult moment. Adhering to the MCC principle of “never delaying, never slacking”, the company has promptly assisted the construction of Leishenshan Hospital and Huoshenshan Hospital in Wuhan, raced against time to build Leishan Hospital in Ezhou, helped renovate Hongshan Stadium into a makeshift hospital overnight, and quickly upgraded the facilities and equipment of Wuhan Third Hospital, The Second Hospital of WISCO, and People’s Hospital of Xinzhou District. These actions have demonstrated the mission and responsibilities of the company. It fought 6 battles for Huoshenshan Hospital and Leishanshan Hospital and completed all the tasks with high-quality and high-speed, which was praised by the State-owned Assets Supervision and Administration Commission of the State Council.



Welding the steel member



Making the steel roof truss



Installing cables

### List of emergency medical facility projects designed, supported or built by MCC supported or built by MCC

Municipality/ Province	Emergency Medical Facilities
Hubei province	Leishan Hospital in Ezhou
Hubei province	Huoshenshan Hospital in Wuhan
Hubei province	Leishenshan Hospital in Wuhan
Hubei province	Repair and renovation of 15 hospitals and quarantine facilities
Hubei province	Renovation of 11 makeshift hospitals
Beijing	Xiaotangshan Hospital
Guangdong province	The phase II makeshift hospital project of The Third People's Hospital of Shenzhen
Tianjin	Building quarantine facilities for close contacts of COVID-19 in Binhai New Area
Liaoning Province	Building 14 project of Anshan Health Center
Anhui Province	Quarantine facility of Baiqiao town in Zhengpu Port New Area in Ma'anshan city, Anhui province
Chongqing	The back-up hospital renovation project of Banan People's Hospital of Chongqing for the pandemic
Chongqing	Three Gorges Makeshift Hospital in Wanzhou District of Chongqing (under construction)
Chongqing	Nanpeng Makeshift Hospital (participated in its preparation)

- As of February 29, MCC has sent a total of **550** management and design personnel, nearly **7,000** builders.
- And **2,290** sets of mechanical equipment to support the pandemic control.
- It can provide more than **25,000** beds for the society.
- To fight against the pandemic, MCC specifically allocated RMB **40** million to subsidiaries in Wuhan.
- Learning that China First Metallurgical Group Co., Ltd. and WISDRI Engineering &Research Incorporation Limited rushed to carry out projects for pandemic control, MCC subsidiaries and people from all walks of life sent a large number of materials and supplies to the frontline, provided logistical support and protection for the builders.





# Feature: Fighting Against COVID-19, MCC is in Action

The pandemic of COVID-19 calls for action, and our responsibility is to fight against it

## A protector of health against the pandemic



“Dare to fight the hard battle, and be good at fighting the hard battle”. In this battle against the pandemic, all the leaders of MCC think in big-picture terms, take their responsibility and spare no efforts to overcome the current obstacle. With the Party flag flying high in the frontline of the battle, over 3,200 Party organizations and 5.2 Party members have stood up to fight bravely and work hard. They have built steel walls with courage, resolution and preciseness to fight against the pandemic. Under the guidance of Party organizations at all levels and Party members, all participants have been working day and night, racing against time to fight against the pandemic. They have successfully completed the design and construction of emergency medical facility projects with high quality and efficiency.

When Wuhan, the hardest-hit city, was in urgent need of medical staff's assistance, the medical workers of MCC headed to there for support. They left their families and rushed to hospitals in Wuhan, Panzhihua, and Ma'anshan from thousands of miles away to fight with local medical staff. In addition, a large number of excellent medical staff in six transformed hospitals have risked their life to build a solid line of defense against the pandemic.

As the pandemic control situation got more and more severe, a large number of MCC volunteers took actions immediately. Among them are the deputy secretary of the Chinese Communist Youth League Committee who sent free disinfectants to the frontline as fast as possible, veterans and young Party members who volunteered to help unload supplies in transit hubs of Wuhan, students from technical schools under MCC who rushed to support the production of supplies, as well as young employees who took temperature for people coming to the hospital ... MCC employees have written history with their youth and blood, and supported the backbone of the nation with great sense of responsibility!

By February 29, apart from donations to severely affected areas, MCC also donated to hospitals, communities and related organizations 10,110 N95 masks, nearly 220,000 medical masks, 3,225 medical protective suits, more than 17,800 pairs of medical gloves, nearly 400 goggles, 5,000 bottles of disinfectants, 3,000 bottles of medical alcohol, and a lot of necessities such as nearly 900 boxes of instant noodles, mineral water, milk, ham sausages, pork, rice, oil, soaps, towels, cotton-padded clothes, etc.

N95 masks

10,110

medical masks

220,000

medical protective suits

3,225

pairs of medical gloves

17,800



## A bellwether of work and production resumption during the pandemic



The fight against COVID-19 pandemic is a "touchstone". Never slacking and always ready to fight, MCC takes its responsibility, fears no difficulties and continues to work hard. MCC has fulfilled its very responsibilities at this very moment to coordinate production and operation while fighting against the pandemic.

Following the important instructions of General Secretary Xi Jinping on pandemic prevention and control and the underlying principles of the audio-video conference of the Joint Prevention and Control Mechanism of the State Council, MCC has established a leading group for pandemic prevention and control at the group level, and set up a top-down organizational system covering all the subsidiaries to ensure effective operation and better flow of information, sparing no efforts in pandemic prevention and control. For all the subsidiaries in Wuhan, MCC has issued an emergency mobilization order to call on all employees to unite and work together to win the battle against COVID-19 pandemic. Subsidiaries in Wuhan responded to the order actively, who set up a leading group immediately, formulated thorough plans with tiered responsibilities, improved the communication mechanism, and implemented grid management. They also strengthened safeguards, and took targeted measures. More than 10,000 employees had been firmly guarding “the first line of defense” against the pandemic.

“We will win the battle against the pandemic eventually. We still have our lives and need to move on”. With absolute confidence, MCC has followed the requirements of “providing targeted guidance and measures to different companies and industries”, made every endeavor to overcome difficulties, implemented pandemic prevention and control carefully and effectively, and resumed work and production properly in an orderly manner. With targeted measures for enterprises at different regions and levels, MCC has promoted comprehensive work resumption of enterprises and engineering projects in low-risk areas, and implemented staggering work resumption of enterprises and engineering projects in medium-risk areas while ensuring that enterprises in high-risk areas gradually start work resumption only when the pandemic is under control. Priority is given to work resumption of projects about pandemic prevention and control, people's livelihood and other important issues, so as to ensure the safety, quality and on-time delivery of projects concerning people's livelihood. Work resumption has been accelerated in major projects in Beijing and Tianjin, such as the National Sliding Centre project, the Beijing Universal Studios project, and the project of temporary houses for staff in Beijing's subcenter. Key projects in Xiong'an New Area have been promoted with quality and quantity guaranteed. Key projects in Guangdong-Hong Kong-Macao Greater Bay Area have sped up work resumption. Key projects in the economic circle of southwestern China promote both pandemic prevention and work resumption. Key projects under construction in the Pan-northwest economic zone of China have been fully resumed in an orderly manner.



Building Leishan Hospital in Ezhou





## Feature: Fighting Against COVID-19, MCC is in Action

The pandemic of COVID-19 calls for action, and our responsibility is to fight against it



In order to effectively solve travel difficulties for employees and construction workers, some subsidiaries have provided a one-stop “point-to-point” transportation service, so that employees could “get in the car from their houses, and get off at the sites”, and the companies could realize “joint defense and control” with the hometowns of the workers, working hard to ensure both work resumption and pandemic control. Some projects have cooperated with third-party detection organizations to carry out nucleic acid testing for workers returned, which has greatly reduced the quarantine and observation period of construction workers who have returned recently, greatly lowered the risk of asymptomatic carriers, guaranteed the safety of all workers returned to work, thus ensuring both work safety and pandemic control in project implementation.



Caring for its employees, MCC has purchased and allocated more medical supplies and spread pandemic prevention knowledge to employees to build a “protective wall” for health. MCC has strengthened management of entrances and exits of projects and office space by monitoring employees’ temperature and registering relevant information. MCC has strictly sterilized office areas, sites, operation rooms, and key areas regularly, and started to “deliver meals to seats” and set “staggered dining time” instead of “dining together”. All employees must wear masks, and some production workers need to wear safety goggles and gloves. In addition, some subsidiaries have implemented flexible working. MCC has communicated with isolated staff promptly to know their needs and bring comforts to them. MCC also paid visits to help them solve difficulties in daily life, and sent letters and money to express empathy for sick employees.



China MCC5 Group Co., Ltd. gives out “protective packages” among immigrant workers



To promote the resumption of work and production, Nudge+ app, the smart office cloud platform of CISDI Engineering Co., Ltd., has provided free solutions for pandemic control and work resumption, helping them fight against the pandemic and work remotely and efficiently. The solutions have supported large and medium-sized enterprises such as China Baowu, MCC, China Coal Technology Engineering Group, and Power Construction Corporation of China, as well as private listed companies to realize both pandemic prevention and control and production and management. The Qingzhu platform of CISDI Engineering Co., Ltd. has launched the “Pandemic Control and Construction Resumption” intelligent management solutions to help safe resumption of work and production in construction sites.



Using Qingzhu intelligent entrance and temperature measurement system of CISDI Engineering Co., Ltd. to check the temperatures of workers



## A responsible company of integrity in overseas actions

In the early stage of the pandemic, China was faced with shortage of all kinds of anti-pandemic materials. MCC encouraged overseas branches to purchase medical supplies such as masks and goggles, so as to lessen domestic pressure from supply shortage and support Wuhan. MCC’ branches in the Middle East, Saudi Arabia, Sri Lanka, Pakistan, MCC’s Indonesia Office, and other overseas organizations such as MCC Overseas Malaysia Company and MCC Overseas Cambodia Company immediately acted and planned to expand overseas supply channels of medical materials and transport medical supplies to severely affected areas.

After the Chinese Spring Festival, MCC prepared a handbook for pandemic control and work resumption, and released a notice about work safety. While carrying out pandemic control, overseas projects must ensure on-time delivery of major projects, implementation of projects under construction, and orderly work resumption of suspended projects. 17 subsidiaries of MCC has over 90 domestic and overseas projects under construction, with contract value of about RMB 65 billion. Employees of the YAMAMA Cement Plant project in Saudi Arabia, the college town project in Kuwait University and other projects have held fast to their positions, demonstrating the integrity of central state-owned enterprises and the responsibility of a big country, and contributing to a stable global industrial chain and a smooth supply chain.

In March 2020, as COVID-19 pandemic has swept the globe, MCC decided to purchase anti-pandemic supplies from China to help pandemic-stricken countries and regions where the Company has projects, and donate those supplies to the local governments and communities, supporting them to overcome the difficulties. The plan has been implemented and will be adjusted in accordance with the pandemic situation.

With the torch of dedication, responsibility and confidence, MCC employees illuminate the dawn of victory for pandemic prevention and control, and we will definitely win the battle against the pandemic.

## About MCC

### Company Profile

MCC is an extra-large enterprise in China, and has become the largest and strongest metallurgical construction contractor and metallurgical operation service provider in the world. In December 2008, MCC Group set up MCC, which was then successfully listed in Shanghai and Hong Kong in September 2009 (A-share Code: 601618, H-share Code: 01618).

MCC is the pioneer and main force in steel industry of China. From the construction of “the cradle of the Chinese iron and steel industry” – Ansteel in 1948 to the construction of WISCO, Baogang Group, TISCO, Pangang Group, Baosteel, the Company has undertaken the planning, investigation, design and construction of the key production facilities for nearly all large and medium iron and steel enterprises in China, thereby making it the founder of the “iron and steel backbones” of China.

According to the strategic position to “being the national team for metallurgical construction, main force for infrastructure construction, leader of emerging industries, and pursuing high-tech and high-quality

development in the long term”, with a global vision for the high international standard of metallurgical industry, MCC gives full play to its cutting-edge core technology, consistent innovation capacity and irreplaceable integration advantages of the whole metallurgical industrial chain to assume the national responsibility of leading China’s metallurgical development to new heights and moving towards a leading role in the global metallurgical industry. Relying on the excellent abilities in research, survey, design, construction and service, MCC accelerates its upgrading and transformation, and establishes the integrated business system of “four beams of eight pillars” to become a leading force in national infrastructure construction. Always pursuing innovation as the new engine and new driver of corporate development, MCC undertakes the tasks of being the pioneer, innovator and leader in developing emerging industries.



#### In 2019

Business revenue  
**338.6** billion

Total profits  
**9.78** billion

Total value of newly signed  
contracts  
RMB **787.6** billion

Number of employees  
**98,566**



#### MCC Strategic Positioning

Being the national team of metallurgical construction, the main force of infrastructure construction and the pacesetter of emerging industries, insisting on taking the path of high-tech construction in the long term



#### MCC Spirit

Never delaying, never slacking



#### MCC Corporate Vision

Focusing on MCC’s main business, building a better MCC



#### MCC Social Responsibility

Developing innovatively and sustainably, Building the future of the world together



#### MCC Motto

MCC, a partner of choice

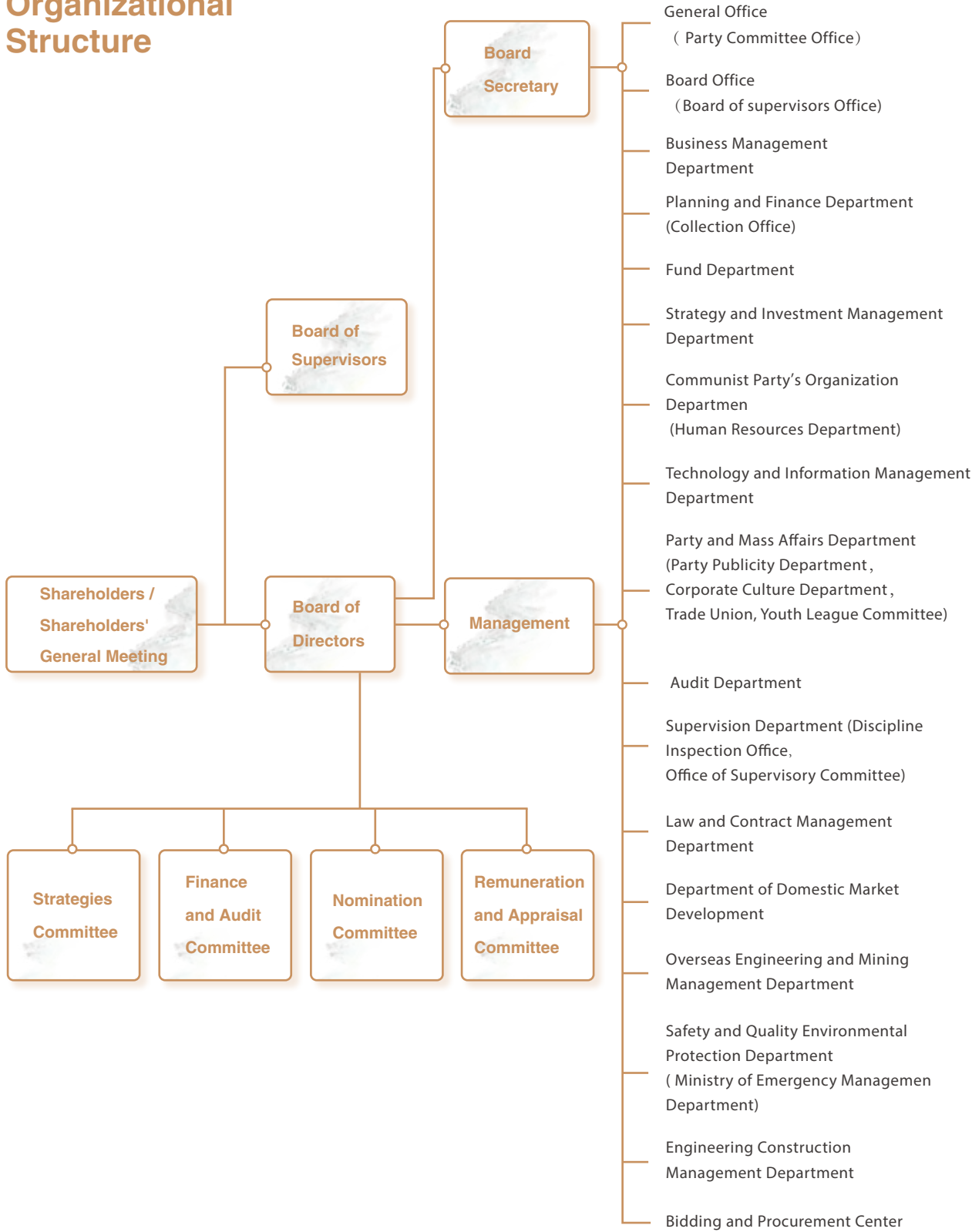


#### MCC Mission

With a global vision for the high international standard of metallurgical industry, MCC gives full play to its cutting-edge core technology, consistent innovation capacity and irreplaceable integration advantages of the whole metallurgical industrial chain to assume the national responsibility of leading China’s metallurgical development to new heights and moving towards a leading role in the global metallurgical industry



Organizational Structure



Subsidiaries

As of December 31, 2019, the Company mainly has 48 second-tier wholly-owned and holding subsidiaries in China and abroad, which are:

1	Central Research Institute of Building and Construction Co., Ltd.	25	MCC Baosteel Technology Services Co., Ltd.
2	Beijing Metallurgical Equipment Research Design Institute Co., Ltd.	26	MCC Communication Construction Group Co., Ltd.
3	China ENFI Engineering Co., Ltd.	27	MCC Rail Transit Co., Ltd.
4	Capital Engineering & Research Incorporation Ltd.	28	MCC Inner Mongolia Construction and Investment Co., Ltd.
5	CISDI Engineering Co.,Ltd.	29	Metallurgical Corporation of Central China Ltd (Henan) Branch
6	WISDRI Engineering &Research Incorporation Limited	30	MCC Utility Tunnel Science and Technology Development Co., Ltd.
7	Huatian Engineering & Technology Corporation, MCC	31	MCC Southern Construction and Investment Co., Ltd.
8	ACRE Coking And Refractory Engineering Consulting Corporation, MCC	32	MCC Hainan Investment & Development Co., Ltd.
9	Zhongye Changtian International engineering Co., Ltd	33	China Huaye Group Company Limited
10	Northern Engineering & Technology Corporation, MCC	34	MCC Real Estate Group Co.,Ltd.
11	Shen Kan Engineering&Technology Corporation, MCC	35	MCC Tongsin Resources Limited
12	WuHan Surveting-Geotechnical Research Institute Co.,Ltd. of MCC	36	MCC Australia Holdings Pty Ltd.
13	China First Metallurgical Group Co.,Ltd.	37	MCC Jinji Mining Development Co., Ltd.
14	China MCC2 Group Co.,Ltd.	38	Ramu NiCo Management MCC Limited
15	China MCC3 Group Co.,Ltd.	39	MCCFC Ltd.
16	China MCC5 Group Co.,Ltd.	40	Mcc Financial Leasing.Co.,Ltd
17	MCC Tiangong Group Co.,Ltd.	41	MCC International Incorporation Ltd.
18	China MCC17 Group Co.,Ltd.	42	MCC Overseas Ltd.
19	China Metallurgical Construction Engineering Group Co., Ltd.	43	Vietnam Engineering & Technology Corporation, MCC
20	China MCC19 Group Co.,Ltd.	44	China MCC International Economic and Trade Co., Ltd.
21	China MCC20 Group Co.,Ltd.	45	MCC Holdings (Hong Kong) Co., Ltd.
22	China MCC22 Group Co.,Ltd.	46	MCC-SFRE Heavy Industry Equipment Co., Ltd.
23	Shanghai Baoye Group Co.,Ltd.	47	MCC West Australia Mining Co., Ltd.
24	China Huaye Group Co.,Ltd.	48	China No. 13 Metallurgical Construction Co., Ltd.

## Corporate Strategy

### Sustainable development opportunities

More new market opportunities are created as the iron and steel industry is undergoing restructuring, transformation and upgrading with more demands for green production and intelligent manufacturing.

National initiatives and strategies like the Belt and Road Initiative, coordinated development of the Beijing-Tianjin-Hebei Region and development of the Yangtze River Economic Belt bring in new demand growth points and drive regional growth, providing broader space and better opportunities for the development of MCC.

China's iron and steel industry is speeding up in making outbound investments, and continuously expanding the scale of international capacity cooperation, creating new market development potential for the Company's metallurgical engineering business.

Rapid development of new urbanization brings favorable opportunities for the Company to develop urban public facilities and new emerging businesses.

Rapid development of new urbanization brings favorable opportunities for the Company to develop urban public facilities and new emerging businesses.

### Sustainable development strategy

#### ● Strategic Goal

Being the national team of metallurgical construction, the main force of infrastructure construction and the pacesetter of emerging industries, insisting on taking the path of high-tech construction in the long term.

#### ● Concrete Measures

##### Enhancing the core competitiveness and influence in the industry

Accelerating the forming of a systematic strength, and continuously enhancing the core competitiveness in metallurgical construction; Speeding up fostering new growth drivers, and continuously forming core competitiveness in infrastructure construction and emerging industries.

##### Promoting market development to realize effective growth in quantity and steady development in quality

Focusing on core businesses, core regions, core clients and core projects Staying confident in "going global", enhancing the capabilities of "going deeper", and improving the capacity of "keeping upgrading" when exploring the overseas market.

##### Effectively preventing and neutralizing major risks

Paying attention to accurate prediction and adjusting at a proper timing; Remedying shortcomings and consolidating the foundation Valuing normalization and developing mechanisms.

### Sustainable development challenges

Changes in the growth model of the macro economy also bring new challenges to the Company's transformation process of its business model.

The market for new metallurgical capacity projects is shrinking, posing challenges to the incremental development of the Company's traditional metallurgical engineering business.

Fierce competition in non-metallurgical engineering markets also poses challenges to the Company when developing businesses other than metallurgical engineering.

Political, legal, environmental and safety risks in overseas operations have brought new challenges to the Company "going global".

##### Accelerating developing technologies for the market and for benefits

Focusing on bottlenecks in development, and striving to make key technological breakthroughs; Highlighting market orientation and orderly promoting the commercialization of research findings; Improving opening-up layout and highlighting synergy and innovation.

##### Comprehensively consolidating the Company's institutional development, system building and governance capacity enhancement

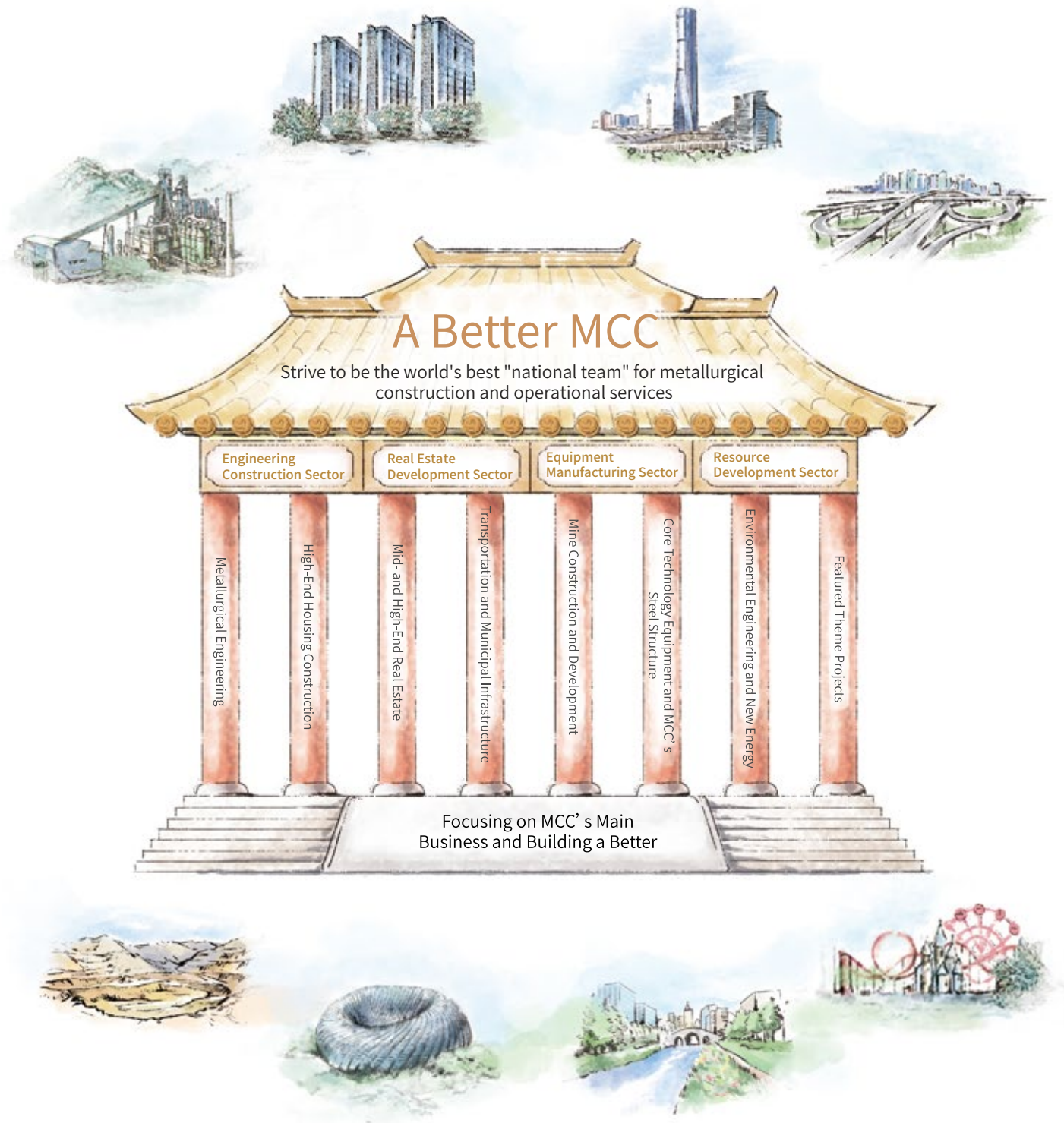
Building an authoritative, pragmatic and highly-efficient headquarters Developing a feasible, effective and efficient institutional system Targeting the "critical minority" to organize governance better.

##### Boosting the team's competitiveness, ambition and vigor

Attaching importance to cultivating young talents; Facilitating the sharing of work experience to boost the vitality and fighting spirit of the team; Focusing on high-level leading talents and striving to enhance the competitiveness of talents.

## Business Layout

### Industrial Structure- Four Beams and Eight Pillars

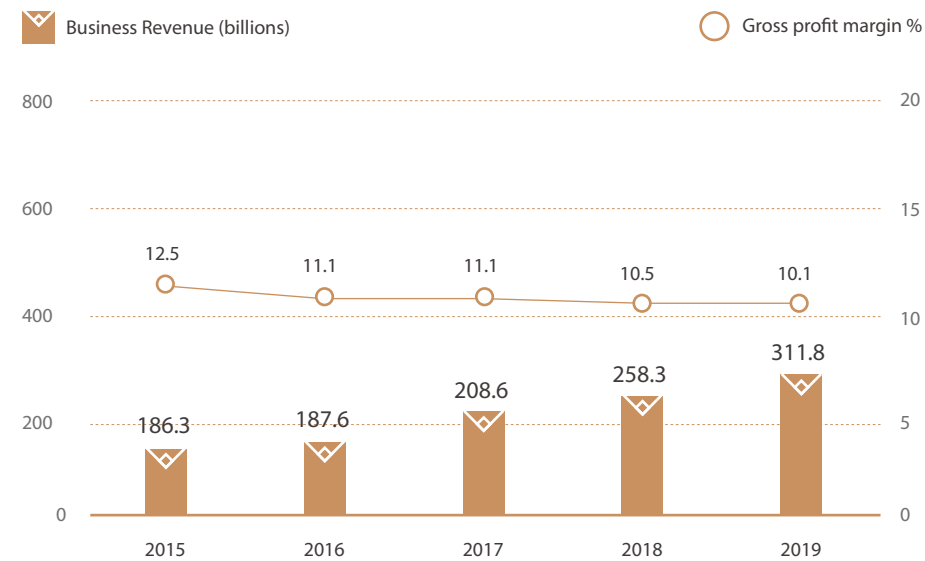




## Four Main Business Sectors

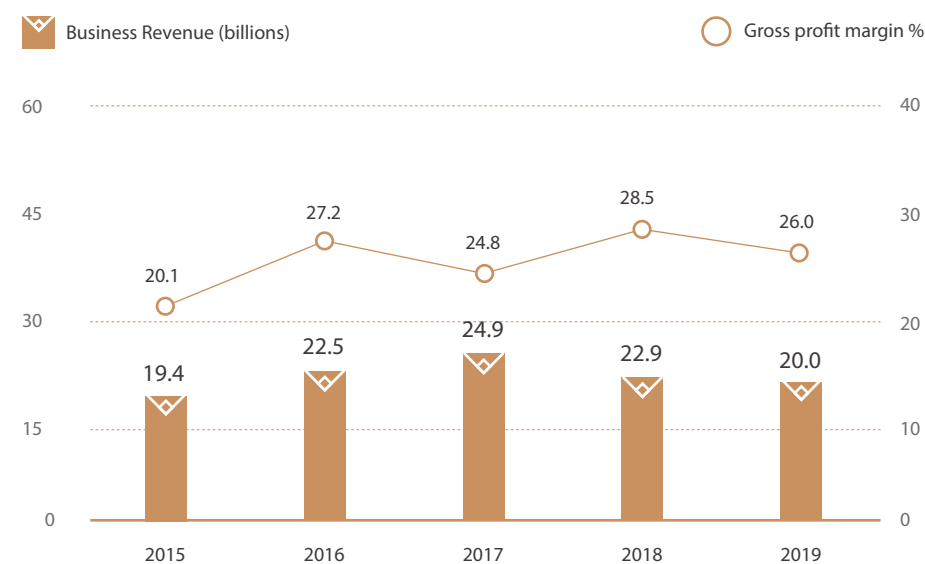
### ● Engineering Construction

MCC is one of the largest engineering contractors in the world as well as the metallurgical engineering contractor with longest operation history and strongest professional design, construction and service capacities in China. Relying on the excellent capabilities in research, survey, design, construction and service, MCC actively promotes its upgrading and transformation, and makes great achievements in the engineering contracting sector.



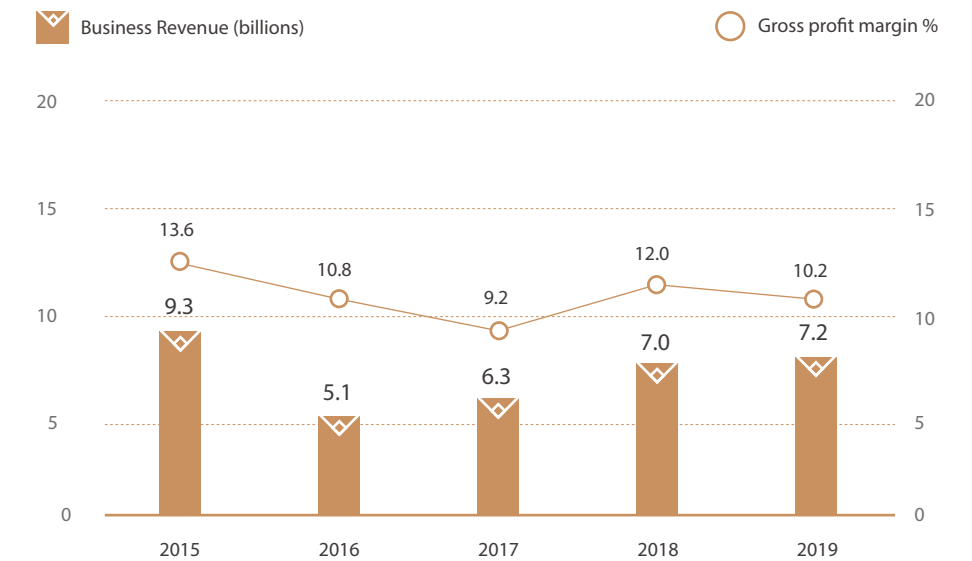
### ● Real Estate Development

MCC is one of the first central state-owned enterprises(SOEs) with real estate being part of their principal business approved by the State-owned Assets Supervision and Administration Commission of the State Council. The real estate development brand of the Company – “MCC Real Estate” has already enjoyed a good reputation.



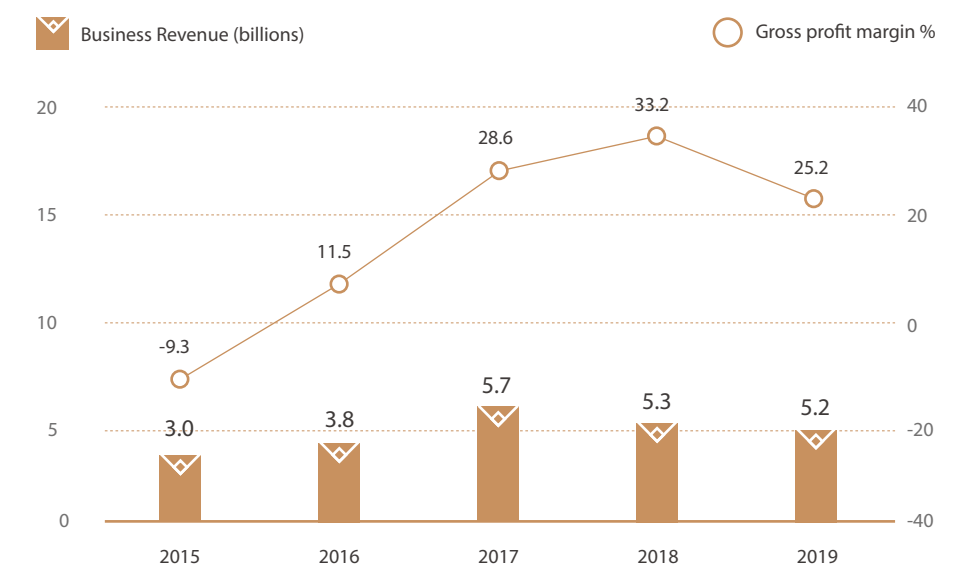
### ● Equipment Manufacturing

MCC is one of large metallurgical equipment manufacturing enterprises in China that can manufacture core metallurgical equipment with its own independent intellectual property rights. In the meantime, the Company is also China's largest steel structure manufacturer which holds a leading position in the R&D, design, manufacturing and installation of steel structure in China.



### ● Resources Development

In this sector, MCC is one of the large Chinese enterprises engaged in overseas resources development. It owns the mining rights of many resource development projects, exploring iron ore, copper, nickel, cobalt, lead, zinc and other metal mineral resources. Besides, the Company is rated the world's Top 10 largest polysilicon production enterprises for several consecutive years, and it is an influential polysilicon production enterprise in the world.



Note: The above data is pre-offset data of each sector.

Honors of MCC

MCC was assessed as **A**-level (best level) of information disclosure by Shanghai Stock Exchange for three consecutive years

MCC won the 2019 "Golden Round Table-the Best Board of Directors" award

MCC won the honor of "High-quality Development Pioneer of Chinese Listed Companies" by the Securities Times in 2019

MCC won the awards of "Most Valuable Investment" and "Best Sustainability Report" in 2019

MCC won the "Top 100 Star Enterprises in China" award of the Summit hosted by China EV 100 and China INFO 100 in 2019

MCC won the 2019 China Securities Golden Bauhinia Award "Outstanding Contributor to Mark PRC's 70th anniversary" award issued by Hong Kong Dagong Wenhui Media Group

MCC was awarded the **AAA** company of China Chamber of Commerce for Import and Export of Machinery and Electronic Products in 2019

MCC was awarded Class-**A** International Contractor 2019 by China International Contractors Association

MCC won **9** Metallurgical Science and Technology Awards by China Iron and Steel Industry Association and the Chinese Society for Metals

MCC ranked **8**<sup>th</sup> in the ENR's 2019 Top 250 Global Contractors and **44**<sup>th</sup> in the ENR's 2019 Top 250 Global Contractors

MCC won the honorary title of **Outstanding Contributor** issued by the International Infrastructure Investment and Construction Forum

MCC won the titles of "China Top 500 Enterprises Charity and Public Welfare" and "China Top 100 Enterprises Poverty Alleviation"

MCC won **10** Luban Prizes for China Construction Projects and **27** National High-Quality Engineering Awards

MCC won **3** National Scientific and Technological Progress Awards

Corporate Governance

MCC attaches great importance to corporate governance, strictly complies with the rules, laws and regulations in regions where the Company is listed. We have developed a corporate governance system with a clear structure and standardized regulations, to better manage the relationship between ourselves and stakeholders and create more value.

Strengthening ESG regulation

In 2019, the Board of Directors clearly pointed out that MCC should fulfill not only responsibilities to the country and society, but also responsibilities of maintaining and increasing the value of state-owned assets and improving the wellbeing of employees. The Office of Board of Directors regularly summarizes the progress of relevant ESG (environmental, social and governance) objectives and the implementation status of issues authorized by the Board of Directors,

and reports relevant progress to directors in written form. The Board of Directors attaches great importance to the compilation of social responsibility reports, and requires that the reports should elaborate the Company's responsible practices in ecological civilization and community development. The previous reports had all been reviewed by the Board of Directors before they were released to the public.

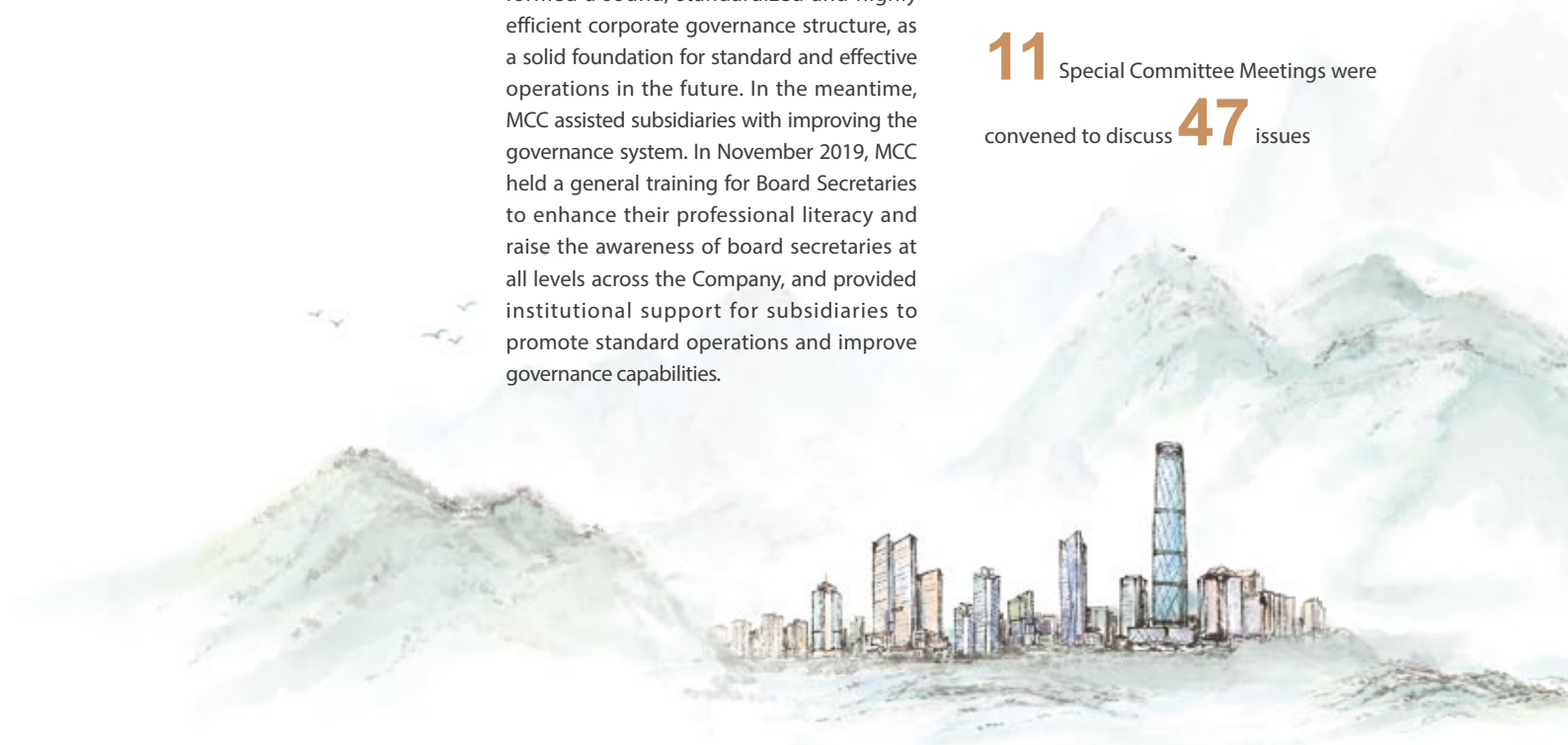
Improving the corporate governance system

MCC steadily builds and improves the corporate governance system and facilitates the upgrading of regulations. In 2019, the Company successfully and lawfully completed the leadership transition of the Board of Directors and the Supervisory Committee, and revised or formulated regulatory rules including the Articles of Association, and thus formed a sound, standardized and highly efficient corporate governance structure, as a solid foundation for standard and effective operations in the future. In the meantime, MCC assisted subsidiaries with improving the governance system. In November 2019, MCC held a general training for Board Secretaries to enhance their professional literacy and raise the awareness of board secretaries at all levels across the Company, and provided institutional support for subsidiaries to promote standard operations and improve governance capabilities.

In 2019

**11** Board of Directors Meetings were convened to deliberate over and listen to **94** proposals and reports

**11** Special Committee Meetings were convened to discuss **47** issues





## Investor relations management

MCC strengthens the analysis and study of the capital market, and increases all-around information exchange with investors through means including standardized information disclosure, performance publication and one-to-one roadshow, to help investors better understand the Company and to ensure that investors are well informed and engaged. In 2019, the Company, for the first time, organized an activity to gather investors and financial media, with the purpose of expanding the brand influence in the capital market.

In 2019, MCC communicated face-to-face with more than 100 investor representatives, analysts and media professionals at home and abroad. Attended 25 strategy meetings and special forums of major securities traders at home and abroad. Received over 10 investor inspection delegations from CR Enterprise and JP Morgan. Responded to over 500 inquiries from medium and small investors.



2019 Interim Results Press Conference (Beijing)

### Case: Being a Pioneering Central SOE by Organizing an International Reverse Roadshow

In January 2019, MCC cooperated with TF Securities to organize the first MCC international reverse roadshow in Vietnam. Investors, fund managers and industrial analysts from domestic and overseas organizations were invited to the roadshow to visit MCC's world-class steel plant in Vietnam — Ha Tinh Formosa Steel Plant, so that the capital market could fully recognize the Company's leading position in the global metallurgical engineering industry chain.



Visiting the world-class steel plant undertaken by MCC in Vietnam

### Case: Taking an Active Part in Social Activities

In June 2019, the opening ceremony of the "National Education Tour for Hong Kong Students" organized by Ta Kung Pao and several other Hong Kong organizations was held in MCC Hong Kong Branch. In the following exchange activities, MCC invited the Hong Kong student delegation of over 40 college, middle school and primary students to visit the National Snowmobile Sled Center Project undertaken by MCC, which is the main venue of Yanqing 2022 Winter Olympic Games, to let young people in Hong Kong feel the prosperity of their motherland. Through organizing visits and exchanges, MCC showed its strength in engineering and technology to the young generation in Hong Kong, and provided strong support to the patriotic education for teenagers in Mainland, Taiwan and Hong Kong.



Young people from Hong Kong visited the National Snowmobile and Sleigh Center Project of MCC

## Anti-corruption and clean governance

The Company steadfastly deepens the struggle against corruption, transforms institutional advantages to governance capacity, and adheres to the principle of "no restricted zones, full coverage and zero tolerance". The Company implements the policy of "fighting every corrupt phenomenon, and punishing every corrupt official", and makes efforts to establish a mechanism against corruption themed "to dare not, cannot and will not conduct corruption", in hope of fostering a healthy political atmosphere of integrity within the Company.

**Enhancing anti-corruption punishment mechanism:** strengthening discipline review and the accountability system, and fully exercising four forms of oversight and discipline enforcement to openly punish those who have violated regulations or rules, maintain the high-handed posture against corruption, and send out the signal of comprehensively strengthening discipline.

**Creating systems and mechanisms to strengthen anti-corruption prevention and control:** building a fundamental and full-coverage supervision system that involves multiple parties to facilitate prevention and control of integrity risks, identifying integrity risk points at different posts, optimizing prevention and control measures, and thus strengthening the checks and supervision over the use of power.

**Building anti-corruption awareness:** Carrying out themed education on "remaining true to our original aspiration and keeping our mission firmly in mind", anti-corruption and integrity education and discipline education to guide Party members to hold discipline in awe and respect and never cross the line, so that strict disciplines will lead to everyday habits and conscious compliance.

In 2019

**0** legal case against corruption filed

**0** legal case against corruption concluded

**2,354** times of anti-corruption training

**94,883** participants in anti-corruption training

## Channels of Whistle-blowing on Corruption:

<http://www.mcc.com.cn>

The contact information such as phone number, e-mail address and mailing address is publicized on the company website. The Company arranges specific personnel to handle petition and whistle-blowing, and requires relevant personnel to strictly comply with the work discipline, keep the work secrets and must not leak the whistle-blowers' personal information. In the process of tracing the threads, the whistle blowers' information should be kept confidential.



## Risk management and control

MCC continuously strengthens risk management and the establishment of the internal control system and strives to seek the balance between business development and risk management. We exercise different layers and categories of management, and further strengthen risk prevention and control in key areas. We integrate the risk management and internal control system, and have developed a risk control matrix to form a corresponding relationship between risk exposure points and control points, and implemented control measures including risk identification, assessment and countermeasures in all internal procedures of the Company's businesses, so as to combine

risk management and internal control in an organic manner, enhance the Company's risk prevention and control capacity and optimize control measures.

In 2019, the Company conducted 1,271 audits including economic responsibilities, engineering projects, investment, internal control, overseas companies (projects), economic benefits, financial revenue and expenditure, and follow-up audits. Specific rectification opinions were put forward for the sustainable and healthy development of the Company.

## Legal compliance

In 2019, MCC further improved the legal system of "two-level management and integration of impetus, execution, and assistance", implemented the system of "holding the first person responsible for law-based governance accountable", and further improved the legal risk prevention mechanism of "Integrating Three Solutions", i.e. coordinating risk prevention, control and remediation. MCC compiled 36 templates for

four major types of contracts in the domestic engineering area, and gave training on and promoted the use of these templates in some of its subsidiaries, which helped urge relevant staff to upgrade their mindset when it comes to contract management, raise risk awareness and enhance risk managing capabilities.

Organized contract template training in **13** subsidiaries, attracting nearly 5,000 participants

Carried out **8** law popularization activities

Attended five sessions of the Rule of Law Lectures organized by the Law and Policy Bureau of the SASAC, with more than **2,000** participants

Provided legal assistance to **270** projects

## CSR Management

### Social responsibility philosophy

Following the social responsibility philosophy of "Developing innovatively and sustainably, paving the future of the world together", MCC is responsible for investors, customers, employees, partners, the government and other stakeholders. The Company effectively manages its impact on the economy, society and environment, and strives to become an enterprise recognized by all stakeholders

### Social Responsibility Management Framework

MCC has established the social responsibility organization system and institutional system to standardize the responsibilities and processes of social responsibility work, and promote the CSR practices in depth with scientific and effective social responsibility management.

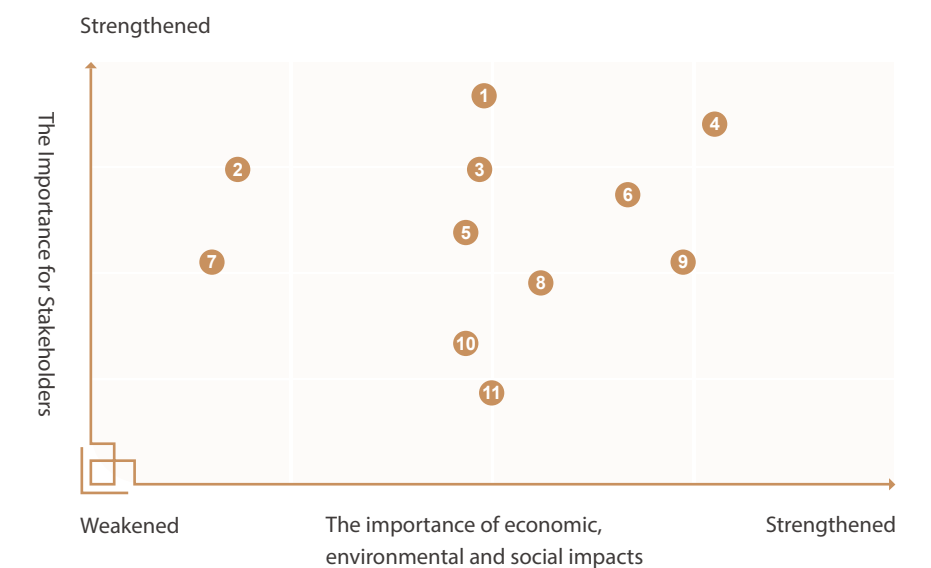
The Board of Directors is the decision-making body and is fully responsible for the social responsibility work of the Company. The management leads the Company's CSR daily work. The Party and Mass Affairs Department is responsible for the overall coordination and daily management of social responsibility work. All branches and subsidiaries determine the designated management organization and assign social responsibility contact.

### Identification of material topics

Considering the macro environment, industry development trend, expectations of internal and external stakeholders and the Company's characteristics, MCC takes reference to international social responsibility standards and guidelines to identify key areas where the Company has impact on the economy and society, and corresponding social responsibility topics. We strive to establish a relationship for harmonious development with stakeholders, and share the Company's development results with stakeholders.

### Analysis and examples of some material topics in corporate social responsibility

- 1 Core industry competitiveness
- 2 Charity
- 3 Win-win cooperation
- 4 Environmental protection
- 5 Governance capability
- 6 Work safety
- 7 Employee development
- 8 Meticulous service
- 9 Technological Innovation
- 10 Preventing and defusing major risks
- 11 Brand influence





Stakeholder communication

MCC takes into account the needs of stakeholders, and integrates the demands of stakeholders into the Company's business strategy and operation to give timely response to the concerns of stakeholders, thus promoting the mutual benefit and win-win results.

C Case: Increasing Brand Awareness

MCC attended the quadrennial METEC in 2019 (the 10th International Metallurgical Trade Fair with Congresses), the largest comprehensive metallurgy trade fair in the world and a leading event for the global steel and metallurgy industries. The Company adopted AR and other innovative technologies to improve the interactive experience and show the unique systematic advantages and strong technological capacity of MCC, so as to lead the iron and steel industry to build an image that highlights higher level and quality.

Besides being a window to publicize the Company itself, MCC's booth served as a comprehensive platform where new and existing clients could communicate with each other with efficiency. The exhibition delegation met with the senior management of Arcelor Mittal, Tata Group (India), Gusa Nordeste (Brazil), OYAK Mining Metallurgy Group (Turkey), Metinvest (a client in Ukraine), Magnitogorsk Iron and Steel Works (MMK, Russia), Nippon Steel Corporation (Japan), JSPL (India), VSP Steel (India) and nearly all renowned foreign iron and steel companies, to strengthen exchange and deepen friendship.



Attending METEC 2019

MCC showed up at China International Metallurgical Industry Expo with its intelligent steel manufacturing solution. At this expo, MCC focused on innovation in metallurgical engineering technology and exhibited its business structure and technical strength in metallurgy. MCC also invited visitors to wear AR equipment to experience the intelligent plant to deepen their understanding of the overall solution of MCC for intelligent steel manufacturing.

Besides, the Company established a high-end external publicity platform and stayed in close contact with over 50 state-owned, provincial or ministerial mainstream media in China. 54 MCC videos were broadcasted on CCTV's main channels and website, and by provincial TV stations. MCC also cooperated with CCTV to plan and shoot a series of documentaries, "Steel China", to show the excellent performance of MCC, China's national team of metallurgical construction, in a systematic way.

C Case: Supporting UNCTAD' research on sustainable development standards

As the UN's core mechanism of accounting and corporate governance, the Intergovernmental Working Group of Experts on International Standards of Accounting and Reporting (ISAR) reviews latest developments in the field of international reporting and promotes best practices for corporate governance. In the context of the UN 2030 Agenda for Sustainable Development, MCC was recommended by the SASAC as the sole representative of China to participate in the case study and data analysis of the corporate sustainability reports presented to United Nations Conference on Trade and Development UNCTAD and ISAR. Zhang Ye, Vice President of MCC, was invited to ISAR 36, the thirty-sixth session of the United Nations Conference on Trade and Development, and made a speech themed "Implementing Corporate Responsibility and Creating the World Future Together", in which he introduced the excellent practices of Chinese enterprises in sustainable development.

Stakeholders



Investors



Clients



Employees



Suppliers



The Government and Regulatory Institutions



Competitors/Industry Associations



Communities and the Public



Media



Experts and Professionals

Expectations and Concerns

- |  |   |  |  |
|--|---|--|--|
| <ul style="list-style-type: none"><li>•Return on investment</li><li>•Protection of rights and interests</li><li>•Knowing about the Company's operation</li></ul> | <ul style="list-style-type: none"><li>•High-quality products</li><li>•Improved service quality</li><li>•Equal and mutually beneficial cooperation</li></ul> | <ul style="list-style-type: none"><li>•Protection of legal rights and interests</li><li>•Career development platform</li><li>•Healthy and safe working environment</li></ul> | <ul style="list-style-type: none"><li>•Win-win cooperation</li><li>•Being open and fair and keeping promises</li></ul> |
|--|---|--|--|

Communication and Responses

- |  |  |   |  |  |  |  |  |  |
|--|--|---|--|--|--|--|--|--|
| <ul style="list-style-type: none"><li>•Increasing profitability</li><li>•Shareholders meetings</li><li>•Roadshows</li><li>•Timely information disclosure</li><li>•Improving investor relationship management</li></ul> | <ul style="list-style-type: none"><li>•Close communication with clients</li><li>•Providing sufficient product and service information</li><li>•Enhancing complaints handling mechanism</li></ul> | <ul style="list-style-type: none"><li>•Regular workers' congress</li><li>•Smooth internal communication channels</li><li>•Improving staff training system and providing the staff with occupational protection and physical check</li></ul> | <ul style="list-style-type: none"><li>•Management meeting</li><li>•Daily communication</li><li>•Procurement information disclosure</li><li>•Regular meetings</li><li>•Multi-channel cooperation and research</li></ul> | <ul style="list-style-type: none"><li>•Implementation of government policies and regulatory rules</li><li>•Maintaining and increasing the value of state-owned assets</li><li>•Operating lawfully, paying taxes according to law and creating jobs</li></ul> | <ul style="list-style-type: none"><li>•Fair competition</li><li>•Promoting the industry's development</li><li>•Upgrading the industry's management level</li></ul> | <ul style="list-style-type: none"><li>•Protecting community environment</li><li>•Supporting public welfare</li><li>•Creating job opportunities in the community</li><li>•Boosting local economic development</li></ul> | <ul style="list-style-type: none"><li>•Information disclosure and transparency</li></ul> | <ul style="list-style-type: none"><li>•Promoting development of new industries</li></ul> |
|--|--|---|--|--|--|--|--|--|



# PURSuing INNOVATIVE DEVELOPMENT TO BOOST TRANSFORMATION AND UPGRADING

Innovation is the top momentum that drives growth. Most advanced technologies and managerial expertise are the foundation, potential, hope and key for MCC's high-quality growth in the future. MCC pursues innovative development model under the guidance of its strategies to realize the comprehensive integration of advanced technologies, management and equipment, and thus provide an everlasting momentum to the healthy and sustainable development of the Company.





## Technological Innovation

MCC has gotten a solid grasp of the development trend of technologies and highlighted the guiding role of core technologies. With a global vision for the high international standard of metallurgical industry, MCC gives full play to its cutting-edge core technology, consistent innovation capacity and irreplaceable integration advantages of the whole metallurgical industrial chain to assume the national responsibility of leading China's metallurgical development to new heights and moving towards a leading role in the global metallurgical industry.

## Developing scientific research platforms

MCC further improves its technology innovation system, and strengthens the development of national-level science and technology R&D platforms and the layout and implementation of R&D projects in key areas, so as to enhance its capacity and level of technological innovation.

In 2019, the Standardization Administration of the People's Republic of China approved China ENFI to prepare the construction of the "National Technical Standard Innovation Base (Nonferrous Metals)". MCC became the only central SOE with two National Technical Standard Innovation Bases.

In 2019  
**10** national-level and provincial- and ministerial-level science and technology R&D platforms were approved

The total number of national-level science and technology R&D platforms in MCC reached

**26**

It has **73** provincial- and ministerial-level science and technology R&D platforms

**51** subsidiaries' MCC engineering technology centers

## Protecting intellectual property

MCC has strictly complied with the *Patent Law of the People's Republic of China*, strengthened strategic management of intellectual property, and fostered national intellectual property demonstration enterprises and advantageous enterprises. In 2019, six subsidiaries of MCC were approved to be national intellectual property demonstration enterprises. The total number of MCC's national intellectual property demonstration enterprises reached 16.

In 2019

MCC applied for **9,503** patents, including **4,917** invention patents.

The Company also won **2** China Patent Silver Awards and **7** China Patent Excellence Awards,

obtained **4,589** patent licensing, including licensing for **147** invention patents,

**2,9700** effective patents in total, **7,957** of which were invention patents.

## Fostering technological achievements

While attaching importance to applied research, MCC also emphasizes fundamental, cutting-edge and original technological research, to enhance the ability of independent innovation. In 2019, research achievements sprouted in MCC. The Company won three National Scientific and Technological Progress Awards, and witnessed progress in the level and number of industrial awards for technical advancement.

Awarded three National Scientific and Technological Progress Awards, including one First Prize and two Second Prizes

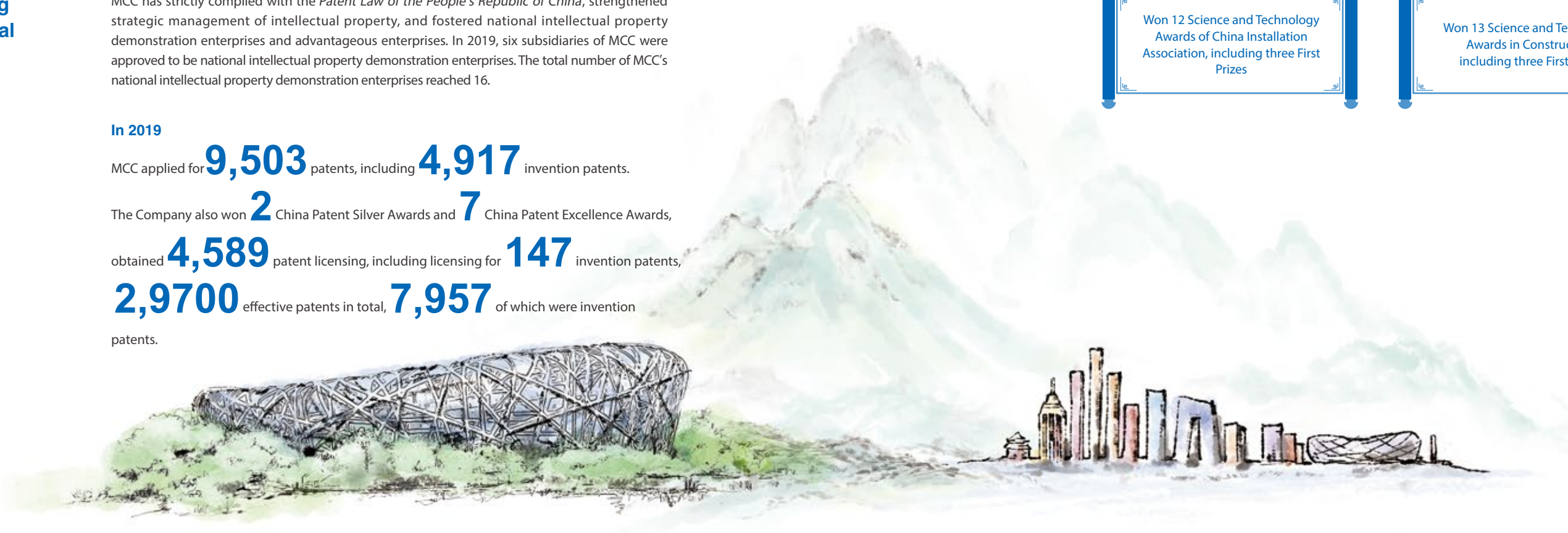
Won nine Metallurgical Science and Technology Awards of China Iron and Steel Industry Association and the Chinese Society for Metals, including four First Prizes

Won five Science and Technology Awards of China Nonferrous Metals Industry Association, including two First Prizes

Won two 17th Tien-yow Jeme Civil Engineering Prizes

Won 12 Science and Technology Awards of China Installation Association, including three First Prizes

Won 13 Science and Technology Awards in Construction, including three First Prizes



**C Case: “Development and Application of Green and Highly-Efficient Electric-Arc Furnace Steel-making Technology and Device” Wins the Second Prize of National Scientific and Technological Progress Award**

CISDI Engineering Co., Ltd. cooperated with University of Science and Technology Beijing and other partners to solve the major and key problems that have bothered domestic and foreign manufacturers that use totally steel scrap for electric-arc furnace (EAF) steel-making for a long time, including high energy consumption, unstable quality and Dioxin contamination. After more than one decade of concerted efforts and innovation, they completed innovative research that combined ultrahigh-power intelligent electricity supply, high-efficiency, thorough and clean smelting, green scrap transporting and preheating, and trans-scale cooperative control with high efficiency. The research result won the Second Prize of the National Scientific and Technological Progress Award in 2019, and was mass applied in domestic and foreign EAF enterprises to support more than 50% of the nationwide EAF steel-making capacity.



**Deepening the corporate reform**

MCC deepens the corporate reform, strengthens operation management and promotes high-quality development. In 2019, CISDI Engineering Co., Ltd., WISDRI Engineering & Research Incorporation Ltd., China Nonferrous Engineering and Research Institute and China MCC17 Group Co., Ltd. were included in the “Double Hundred SOE Reform Campaign”, and overall reform pilots were launched in order; MCC International Incorporation Ltd. and MCC Overseas were merged to reduce homogeneous competition and pool advantageous resources; MCC Southern Construction and Investment Co., Ltd. and MCC Urban Investment Holding Co., Ltd. carried out a mixed reform and obtained the first-level qualification in housing construction and municipal administration, achieving new outcomes in the mixed-ownership reform; MCC formulated and issued the *MCC Guiding Opinions for the Contract Management Pilots for Engineering Projects*, improving the ability of project management and control, and the ability of making profits.

**Refining financial management**

MCC has developed a financial shared services center (FSSC) embodying MCC features and highlighting both management and control, to clearly set up a structure of “two-level platforms” and determine the function of “four centers”, which realizes centralized accounting and standard unification, centralized capital receipts and disbursements and budget control, and provides strong support to the management and control of key project events and links, as well as decision making in financial services and operations. Through sharing financial services, MCC promotes innovations in the financial management and control pattern, pushes financial services to transform from “accounting-focusing” to “value-creating”, and realizes the re-updating of the financial management system.

**Accelerating informatization**

MCC has built a cloud platform for digital science and technology innovation called “MCC Cloud Platform”, compiled the *MCC Cloud Technical White Paper* to formulate standards, and promoted the application of “MCC Cloud Platform” in relevant industries and fields. MCC also has developed a smart construction site cloud called “Qingzhu (Nudge+Construction)” to deepen the integration of information technologies and managerial expertise, thus comprehensively improving the digital level of the Company and the whole industry. The Company actively explores the internal and external markets for its office administration product “Nudge+”, to develop it into a top product in informatization. “Nudge+” has been successfully put into application in a number of central SOEs and government agencies. By the end of 2019, the application has over 800,000 registered users.



Online monitoring system for state-owned enterprises

**Commercializing technology products**

MCC stays market-oriented and focuses on the effective commercialization of technology innovation results. It continuously accelerates the application and industrialization of core technologies, and thus effectively facilitates core technologies and products to enter the market, speeds up developing technologies for the market and for benefits, constantly strengthening the Company's core competitiveness.

In 2019, MCC announced 25 major R&D projects under the “2020 Scheme” regarding green iron and steel, intelligent iron and steel, and smart construction as priorities. The Company aimed to pool resources in science and technology for making breakthroughs in key R&D projects, speed up developing a batch of applicable technologies that are urgently needed by the country and the industry, and make significant progress in systematic technology innovation in two topics, i.e. green development and intelligent development. MCC also vigorously promoted the commercialization and industrialization of core technologies, and released the first batch of 20 prototypes using core metallurgy technologies.

**Cooperation of “industries, universities, research institutes and end users”**

MCC has promoted technological exchanges and cooperation among “industries, universities, research institutes and end users” to optimize the allocation of innovative resources, foster the concentration of innovation factors, and achieve deep integration and synergized innovation of enterprises, universities, and research institutes. The Company has organized CISDI Engineering Co., Ltd. to declare the 2019 National Scientific and Technological Progress Award jointly with University of Science and Technology Beijing, Chongqing University, Harbin Institute of Technology, China Academy of Building Research, Zhejiang University, Central South University and Beijing Urban Construction Group Co., Ltd. Giving full play to the advantages of the universities and enterprises, the Company has made remarkable achievements and won the First Prize and Second Prize of the National Scientific and Technological Progress Award. MCC also promoted CISDI Engineering Co., Ltd.'s cooperation with Suzhou Zhenwu Electric Furnace Co., Ltd., Suzhou Longray Thermal Technology Co., Ltd., and Hangzhou Keyuan Electric Furnace Co., Ltd. to jointly develop international standards, and published one international standard whose compilation was led by MCC.

**Management Innovation**

Reform and innovation are the inevitable demands for companies in the process of fulfilling responsibilities and mission for the country, the inevitable choice in the new era, and the inherent needs for sustainable development. MCC has been innovating in management tools and improving the management efficiency for all the time.



# HIGHLIGHTING COORDINATED DEVELOPMENT TO OPTIMIZE THE BUSINESS LAYOUT

Coordination is the inherent prerequisite for sustainable and healthy development. MCC always adhered to the principles of “focusing on main businesses, growing bigger and stronger, pursuing moderate diversification, and seeking steady growth”. While digging deep into the traditional main business of metallurgical engineering, MCC closely follows the country’s development demands, promotes coordinated development, optimizes the industry layout, and tilts towards infrastructure construction and emerging industries to accelerate building new momentum.





Metallurgical  
Construction

Metallurgical construction is the most competitive and world-class business of MCC. It shows MCC’s persistent practices in fulfilling responsibilities and mission for the country. We focus our strength in the main business and duty of developing metallurgical engineering, carefully plan every step as the national team for metallurgical construction, and have nearly undertaken all key metallurgical engineering projects in China. We also won bids for a batch of model projects overseas, and provided foreign iron and steel enterprises with the latest iron and steel processes, technologies and equipment, the strictest environmental protection practices and the most efficient construction and operation services.

Transitioning to be  
eco-friendly

We focus on green and low carbon practices, energy conservation and emission reduction, and prioritize the construction of green iron and steel plants.

Becoming more  
intelligent

We accelerate the integration of intelligent manufacturing into traditional manufacturing. Starting from solving pain spots for iron and steel enterprises like product quality stability, production safety and management efficiency, we promote the construction of intelligent iron and steel plants.

Improving operation  
services

We deeply integrate professional key technologies into tailor-made operation services to design unique, personalized solutions.

● HBIS Group Industrial Upgrading and HBIS Xuansteel’s Production Capacity Transfer Project

In the HBIS Group Industrial Upgrading and HBIS Xuansteel’s Production Capacity Transfer Project, Capital Engineering & Research Incorporation Ltd. (CERI) was the overall designer. ACRE Coking & Refractory Engineering Consulting Corporation MCC, CERI, Shanghai Baoye Group Corp., Ltd., China Third Metallurgical Group Co., Ltd. (China MCC3 Group) and China MCC20 Group Co., Ltd. respectively undertook the construction of coking, iron-making, steel-making, continuous casting and steel rolling units. Aiming to build a new-generation “green, intelligent, branded” steel plant, MCC supported HBIS Group in building the first coastal iron and steel base equipped with world-class technologies and equipment as well as energy saving and environmental protection capacity, to drive green development in coastal areas.

● Guangxi Liugang Fangcheng Port Relocation Project

In the Guangxi Liugang Fangcheng Port Relocation Project, WISDRI Engineering & Research Incorporation Ltd. was the overall designer. Zhongye Changtian International Engineering Co., Ltd.(Zhongye Changtian), CISDI Engineering Co., Ltd. and WISDRI Engineering & Research Incorporation Ltd. respectively undertook the general contracting engineering of the sintering, iron-making and steel-making units. The project aimed to deepen the iron and steel industry’ supply-side structural reform, comprehensively implement the coastal development strategy, guide Guangxi Liuzhou Iron & Steel Group (Liugang) to start business once again, and become a No. 1 benchmarking project in representing the high-quality development of China’s iron and steel industry. It was a new practice for MCC in pursuing high-quality growth of its main business — metallurgical construction.





### ● The First Large-Scale Centralized Remote Production Control Center in the World — Shaogang's Intelligent Center

CISDI Information Technology Co., Ltd. under CISDI Engineering Co., Ltd. developed the first mass production remote centralized control center in the world — Shaogang's Intelligent Center. The center realized trans-process, cross-regional, long-distance, large-scale centralized control, borderless collaboration and big data-driven decision-making, which improved the labor efficiency by 20%-40%, reduced the blast furnace fuel ratio by 2%-10%, cut the cost of ton iron by RMB 10 to 50, setting a landmark for iron and steel intelligent manufacturing.



### ● Project of Xintai Zhengda 6.78m-high Stamp-Charging Coke Oven

ACRE Coking & Refractory Engineering Consulting Corporation, MCC designed the relocation project of Xintai Zhengda Coking Co., Ltd. to make it a metallurgical and coking company with a capacity of 1.8 million tons in the circular economy industrial demonstration zone of Xintai city, which is a major project for replacing the old drivers of growth in Shandong Province. For the first time, the project used the 6.78m-high super large stamp-charging coke oven, which was independently developed by ACRE Coking & Refractory Engineering Consulting Corporation. With the highest carbonization chamber, the most advanced technology, and the least impact on environment in China and even in the world, the coke oven is energy-saving, eco-friendly and highly automated. After the project was put into production, it could meet environmental protection requirements and achieve comprehensive utilization of energy, which would lay a good foundation for further innovation and sustainable development of the coking industry.



### ● Baowu Zhanjiang's No.3 blast furnace system project

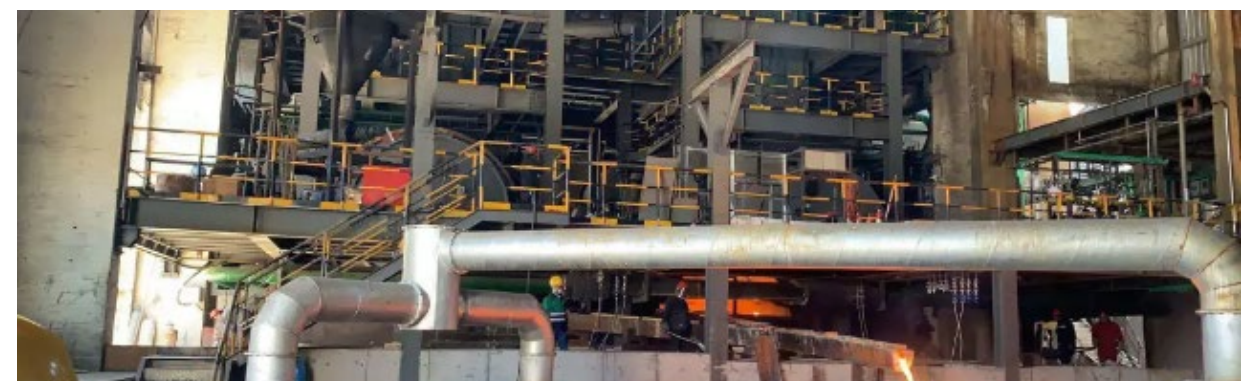
The No.3 blast furnace system project of Zhanjiang Iron and Steel Project is a key step to meet the market's increasing demand for ultra-high strength steel products, adapt to the steel industry restructuring in Shanghai and other regions, and give full play to the technology and cost advantages of Zhanjiang Iron and Steel Project. MCC undertakes the overall design, the design of main unit projects as well as the supply of some complete equipment. Responsible for the construction and installation of the entire project, MCC complies with the latest requirements of smart manufacturing and green manufacturing, and adopts the new standards of ultra-low emission throughout the process, so as to help Zhanjiang Iron and Steel Project build the most advanced, efficient and competitive steel mill with intelligent and eco-friendly manufacturing.



Hoisting the shell of the No.3 blast furnace of Zhanjiang Iron and Steel Project

### ● The world's first bottom-blown continual copper smelting production line put into operation

The phase III bottom-blown refining project designed by China ENFI for the Baotou Huading Copper Co., Ltd. (hereinafter referred to as "Huading Copper") replaced fixed refining reverberatory furnaces with oxygen bottom-blowing smelting technology. Together with the existing bottom-blown smelting furnaces and converting furnaces, it formed a full bottom-blown continual copper smelting process of "oxygen bottom-blowing smelting + continual oxygen bottom blowing smelting + bottom blowing refining". After the transformation, the project would completely solve the problems of energy consumption and environmental disruption caused by the ladling of high-temperature blister copper melt and fixed refining reverberatory furnaces, thus providing a new model of green smelting for the industry. In July 2019, the bottom-blown refining furnace of the phase III project went into operation and produced acceptable anode copper, marking the operation of the world's first bottom-blown thermal continual copper smelting production line which consists of three furnaces.





## Infrastructure Construction

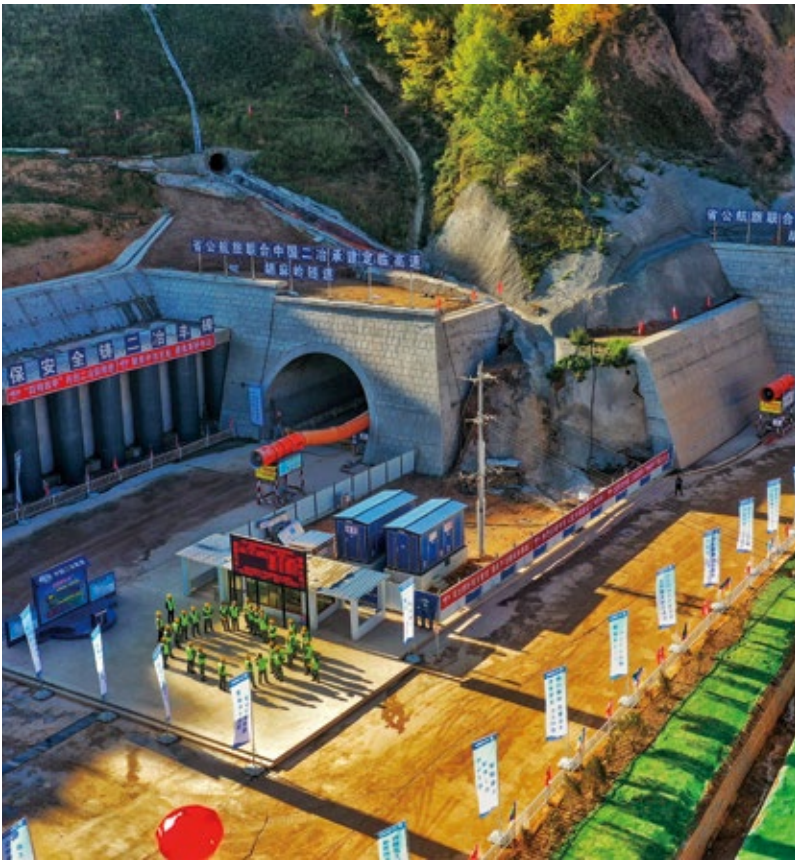
### ● The Racing Track of the National Snowmobile and Sleigh Center Project for Beijing Winter Olympics Completed

National Snowmobile Sled Center Project is the first snowmobile and sleigh track in China, and a key project for Winter Olympics 2022 in Beijing. On September 17, 2019, the racing track of the project was run through, marking the completion of the main structure of this 1,975-meter track, and laying a foundation for the glide test in early 2020.



### ● Right Lane of Humaling Tunnel on Dinglin Expressway Completed

Dinglin Expressway is a convenient and fast passage from eastern Gansu to Linxia, Gannan and southern Qinghai. It is also the first expressway construction project that China MCC2 Group Co., Ltd. and Gansu Provincial Highway Aviation Tourism Investment Group Co., Ltd. cooperated in Dingxi as a PPP project. Humalin tunnel is the most difficult project along Dinglin Expressway. The surrounding rocks are all Grade V soft rocks. The complicated topographical and geological conditions made the construction even more difficult. On September 28, 2019, the right lane of Dinglin Expressway Humalin Tunnel was fully completed, marking the formal completion of a key project of Dinglin Expressway. The project was of great significance to comprehensively improving traffic conditions in Dingxi area, increasing transportation connectivity and promoting the joint development of urban and rural areas in Dingxi area.



As the country's main force for infrastructure construction, MCC closely follows national strategies and focuses on high-end housing construction, expressway, urban area development and transportation municipal infrastructure to boost the development of economic zones like the Beijing-Tianjin-Hebei region, Yangtze River Delta region, Guangdong-Hong Kong-Macao Greater Bay Area and Xiong'an New District, and contribute to the rapid development of national infrastructure and economy.

About MCC

Pursuing Innovative  
Development to Boost  
Transformation and Upgrading

Highlighting Coordinated  
Development to Optimize  
the Business Layout

Seeking Green  
Development to Promote  
Ecological Progress

Valuing Openness  
to Form a Global  
Business Layout

Striving for Shared  
Growth to Increase  
People's Wellbeing

### ● Lanzhou Olympic Sports Center Project

Lanzhou Olympic Sports Center Project is undertaken by China MCC17 Group Co., Ltd., and will become the main venue of the 15th Sports Meeting of Gansu Province after completion. While promoting "fitness-for-all" and boosting the overall development of the sports industry, the project will also inject strong momentum to the urban construction and economic development of Lanzhou. The project was inaugurated in July 2019.



### ● The E-Fund Finance Building Project

The E-Fund Financial Building project is one of the key projects of Hengqin New Area in Zhuhai. Located in the financial island of Hengqin New Area and with an overall floorage of approximately 164,572 square meters, the 266.88m-building is Shanghai Baoye Group Corp., Ltd. highest super high-rise complex project under construction. The super high-rise tower has a cross-shaped tube structure with crown-like decorative lines on the roof. The roof also serves as a helipad. When completed, it would become a first-class financial center building with commercial, residential, and high-end office functions, attract many financial companies and technology companies worldwide, and become an important part of Hengqin New Area's financial ecosystem.





**C Case: Starting a New Chapter for Guangdong-Hong Kong-Macao Greater Bay Area**

In March 2015, MCC Real Estate Group Co., Ltd. won the bid for Zhuhai Hengqin MCC Headquarters Mansion Project offered for open tendering, taking the first step for mapping out business in Guangdong-Hong Kong-Macao Greater Bay Area. Over the past five years, as a leading urban project developer and operator in China, MCC Real Estate unfolded a strategic regional development layout in the Greater Bay Area covering “one bridge, four cities and six properties” and highlighting four cities — Zhuhai, Guangzhou, Shenzhen and Hong Kong. The company has successively developed multiple projects including quality residences and commercial complexes, and has been continuously contributing to the economic and social development in the Greater Bay Area.



Heyue Series of Commercial Real Estate Property — Zhuhai MCC Shengshi International Plaza



Zhuhai MCC Shengshi International Plaza Project

**● New Nanjing Art Museum Project**

The New Art Museum of Nanjing Project will be an important new cultural landmark in Nanjing. The steel structure above ground is composed of core tube structure, truss structure and atrium structure, and the underground steel structure is composed of core tube structure and SRC columns. The objects to be lifted are highly irregular truss structure with super-long span, large cantilever, multistory zigzag structure weighing of 8,016 tons, which is the heaviest lifting project among civil buildings after the National Library of China was renovated in 2008, and the most difficult lifting project in the China. MCC’s steel structure adopts innovative technologies such as the construction simulation calculation and analysis technology, key technology of the overall assembly of multistory large-span special-shaped steel trusses, and key technology of joints making for large and complex space. Using the independently developed “digital pre-assembly of steel structure” software for pre-assembly, and the “Steel Structure Project Information Management Cloud Platform” for whole-process management, it successfully solved five major difficulties, and achieved accurate lifting of 8,016 tons of the entire steel structure.



**Emerging Industries**

MCC has extended its strong, comprehensive and systematic technological strengths in metallurgy and other industrial fields to urban construction. Centering on the country’s key development needs, MCC has successively set up six technology research institutes in urban underground pipe gallery, sponge city, beautiful village, smart city, theme parks, health and elderly care, and water environment. MCC established China’s first professional company in underground pipe gallery and set up the first RMB 100 billion-level urban integrated underground pipe gallery fund, to seek further development in areas like urban underground pipe gallery, sponge city and comprehensive governance of the water environment, so as to meet the growing demand of people for a graceful ecological environment.

By the end of 2019, MCC had won bids for 111 PPP and general contracting projects in underground pipe gallery with a total mileage of 1,227.9 km, including National Demonstration Engineering Project under Ministry of Housing and Urban-Rural Development, China’s first Luban Prize-winning project in integrated pipe gallery — Zhuhai Hengqin Island Pipe Gallery Project, and First Prize of China Construction Engineering BIM Competition — Xi’an Underground Integrated Pipe Gallery Project (255.63 km-long, the longest one in China).

MCC has three health and elderly care research institutes



**● Shenzhen Keyuan Avenue Underground Comprehensive Development and Metro Line 13 Integrated Underground Pipe Gallery Project**

In September 2019, MCC Southern Construction and Investment Co., Ltd. took the lead and cooperated with China MCC20 Group Co., Ltd. and Shanghai Tunnel Engineering Co., Ltd. to win the bid for Shenzhen Keyuan Avenue Underground Comprehensive Development and Metro Line 13 Integrated Underground Pipe Gallery Project. The project mainly includes the underground comprehensive development engineering of Keyuan Avenue, the Metro Line 13 integrated underground pipe gallery project and relevant auxiliary work. Winning the bid for this project marked that MCC was admitted to Shenzhen Metro market for the first time, and became one of the six strategic central SOE partners selected by Shenzhen Metro.





● Universal Beijing Resort Project

The Universal Beijing Resort Project built by MCC will be the sixth Universal Studios theme park in the world, the third in Asia, and the first in China. It will also the first world-class super-large modern theme park built in Beijing. The project combines advanced cultural creativity, tourism and recreation, scientific and technological innovation, ecological and environmental protection technologies and industries in the world with local cultural elements, which can create a space of endless joyful for tourists, and also drive the development and upgrading of upstream and downstream industries such as cultural creativity, fine performing arts, animation production, recreation tourism, shopping and catering business.



● Signing the Contract of China's First Concealed WTE Incineration Project

In 2019, China ENFI successfully signed the Integrated Waste Treatment Phase 1 Project in Xiong'an New District, the Waste Incineration Facility Phase 2 Project in Tongzhou District, Beijing, and other consulting and design contracts of high industrial impact. The project in Xiong'an New District is China's first concealed WTE (waste-to-energy) incineration facility, which responds to Xiong'an New District's development principles of "adhering to world vision, international standards, Chinese characteristics and high-point positioning", and will become a benchmark project for WTE incineration facilities in China. China ENFI has undertaken over 70 consulting and design projects on WTE and solid waste disposal in China, accounting for nearly 30% of the total number of such projects in China, ranking first in the industry.



C Case: Developing an Intelligent Underground Pipe Gallery

Capital Engineering & Research Incorporation Limited (CERI) applied intelligent underground pipe gallery technologies to complete the Intelligent Integrated Underground Pipe Gallery Phase 1 Project in Yunnan Dianzhong New District. Through adopting cloud platform, big data, Internet of Things, and GIS+BIM technologies, CERI developed a full-life-cycle smart management and control platform. With the support of predictive control based on big data analysis and crisis management and decision-making based on the expert system, CERI realized visualized management, automated maintenance and inspection, intelligent emergency response, standardized data management, global analysis, and accurate management and control of the project, improved the intelligent management and control capacity and operation efficiency, and cut the maintenance and operation costs.

The project was included in the "2017 Science and Technology Project Plan of Ministry of Housing and Urban-Rural Development — Science and Technology Demonstration Engineering Project (Informatization Demonstration Project)", and passed the acceptance check conducted by the MOHURD Expert Team in March 2019. The project was promoted nationwide as China's first demonstration project in intelligent underground pipe gallery.



Control Room of the Intelligent Underground Pipe Gallery Project in Dianzhong New District



# SEEKING GREEN DEVELOPMENT TO PROMOTE ECOLOGICAL PROGRESS

Green is a necessary condition for ensuring lasting development as well as an important way in which people pursue a better life. MCC adheres to green, circular and low-carbon development, strives to fulfill corporate responsibilities in ecological environment protection, and has established a long-term mechanism on environmental protection to enhance the capacity of environmental protection management and play a leading role in building a beautiful China.



The Integrated Waste Treatment Project in Xiongan New Area



## Environmental Management

MCC keeps improving environmental management through improving the management system, the supervision system and the awareness of environmental protection, which lays a solid foundation for the comprehensive and standardized implementation of environmental protection.

**Improving the management system:** MCC has established a leading group on ecological environment protection to improve the management system and form an environmental protection management structure comprised of “one measures, four detailed regulations, and one contingency plan”, thus instructing and standardizing energy conservation and environmental management.

**Raising environmental awareness:** MCC keeps raising the environmental awareness of employees through organizing education programs, training activities on energy saving and environmental protection, online courses and internal experience sharing workshops.

**Paying attention to emergency management:** MCC has established an emergency management system for environmental incidents, set up a working group to develop emergency rescue plans to clarify roles and responsibilities clearly, and organize emergency drills to respond to environmental emergencies.

**Advocating for green office:** MCC carries out a stricter management of office consumables to avoid waste, advocates a paperless office to reduce the waste of paper, and promotes sustainable lifestyles and consumption behaviors such as green travel to reduce energy consumption within a reasonable range. MCC headquarters has adopted an electronic meeting system and saved 3,492,802 pieces of paper in total.

**Promoting environmental protection publicity:** MCC takes the opportunity of World Environment Day and National Energy Efficiency Promotion Week to comprehensively promote and implement environmental protection concepts by using LED displays, QQ groups and WeChat groups, with themes such as “prioritizing green development and energy conservation”, thus creating an environmental protection atmosphere that highlights energy conservation and low carbon.



1.China MCC22 Group Corporation organizes a visit to “green construction site”

2.Wukan Surveying Geotechnical Research Institute Co., Ltd. of MCC carries out a campaign on low-carbon lifestyle and environmental protection

3.Shen Kan Engineering & Technology Corporation, MCC designs energy conservation posters



## Green Transformation

MCC actively expands green businesses, increases investment in the green sector, and develops green technologies, applications, services and businesses, to promote the green and circular development of the economy and society.

### Clean technologies R&D

The Company actively explores the R&D and application of green technologies, keeps innovating in clean production modes, and transforms green technologies into green productivity. For example, by adopting the “purification of flue gas pollutants with activated carbon process”, the pollution of sintering flue gas could be reduced in the ferrous metallurgy industry; the enclosed stockyard technology could be used to effectively control dust dispersion and reduce dust emission; and the waste heat recovery and high-efficiency power generation technology for sintered ring cooling machines could be used to recycle the heat of waste gas for power generation.

#### C Case: Developing Clean Technologies to Promote Green Transformation of the Industry

WISDRI Engineering & Research Incorporation Ltd. successfully developed a high-efficiency, clean and intelligent coal gasification power generation technology by using low heating value gas. The research result could be used to realize high-efficiency utilization of energy, reduce waste gas emissions and promote clean production. It was widely applied in over 40 iron and steel companies, including Alliance Steel (M) Sdn. Bhd. and Qian'an Jiujiang Wire Rod Co., Ltd.. Meanwhile, the technology was applied in over 70 domestic and foreign engineering projects, reaching a total installed capacity of 5,641 MW and an annual recycled low heating value gas volume of 140 billion m3, saving 3.35 million tons of coal equivalent compared with traditional high-temperature and high-pressure coal/gas power generation technologies. Compared with coal-fired power generation, to generate the same amount of electricity, this new technology could reduce 8.78 million tons of CO2 emissions, 28,500 tons of SO2 emissions and 24,800 tons of NOx.



100 MW Coal Gasification Power Generation Plant of Qian'an Jiujiang Wire Rod Co., Ltd.



**C Case: Zhongye Changtian Helps with the Sintering Flue Gas Comprehensive Treatment and Renovation Project**

The 2\*265 m<sup>2</sup> sintering flue gas comprehensive treatment and renovation project at Shaanxi Steel Group Hanzhong Iron and Steel Co., Ltd. adopted advanced activated carbon treatment process to replace the existing wet limestone–gypsum flue gas desulfurization process. After the project was completed and put into production, the flue gas particles, SO<sub>2</sub> and NO<sub>x</sub> emission concentration of the flue gas in the sintering machine head were respectively lower than 10, 35 and 50 mg per normal cubic meter. The emission of the flue gas particles was reduced by 1,086 tons annually, and the number for SO<sub>2</sub> and NO<sub>x</sub> emission reduction were 18,000 tons and 3,878 tons; the annual production of concentrated sulfuric acid was 26,000 tons and the social and economic benefits were high.



The 2\*265 m<sup>2</sup> sintering flue gas comprehensive treatment and renovation project

**Environmental  
protection  
businesses**

Attaching much importance to environmental protection, MCC takes advantage of its experience and ability in technology development as well as engineering design and contracting, and carries out various projects related to environmental protection such as the sewage treatment plants, power generation by waste incineration and photovoltaic power generation projects, to improve the living environment and standards of people.

**Promoting environmental  
governance**

MCC adopts soil remediation, solid waste disposal, water body treatment and management, and other technologies and processes to carry out environmental governance projects such as sewage treatment, domestic waste recycling, incineration for power generation, landscape renovation and other eco-friendly projects.

**C Case: Integrating Resources to Gain a Comprehensive Strength in Water Environment Treatment Products**

China MCC5 Group Co., Ltd. took advantage of its strong construction techniques and the capacity of organizing and managing multiple professions, and actively integrated advanced design and technical resources of water resources research institutes, Sichuan University, Sichuan Academy of Environmental Sciences and leading companies in the industry, to develop tailor-made overall solutions on water environment treatment for owners. The company successively undertook a series of ecological restoration, sewage treatment and river basin governance projects in Yibin (known as the first city along ten-thousand-mile Yangtze River) and Luzhou (the last city along Yangtze River in Sichuan). It has made significant contributions to setting up and protecting the ecological barrier in Upper Yangtze River.



Floating caissons at the water intake of Huangxi Water Plant in Hejiang



The sketch of Yibin Minjiang River Ecological Restoration Project

**Fostering circular economy**

The Company actively explores the development path of circular economy, promotes the recycling of renewable resources, and creates green and circular environmental and economic value for the country and regions along the Yangtze River, thus winning wider recognition. In 2019, MCC Baosteel won the Second Prize of CACE (China Association of Circular Economy) Circular Economy Science and Technology Award; the comprehensive utilization technique of anti-floating slag concrete and counterweight products developed by Shanghai MCC Environmental Engineering Science and Technology Co., Ltd., subsidiary of MCC Baosteel, won First Prize of Minmetals Group Patent and Invention Award and “Innovative Achievement” of 2018-2019 Shanghai Circular Economy and Comprehensive Resources Utilization Award.

**C Case: Exploring the Green Circulation Way of Turning Waste into Treasure**

MCC Baosteel has set up a research center for comprehensive utilization of metallurgical slag and invented a series of exclusive formulas and processes. Waste steel slag could be used as raw material to produce four categories of products, namely “powder, sand, brick and soil” (steel slag micropowder, steel slag special molding sand, steel slag permeable pavement brick and steel slag heavy concrete), especially ecological steel slag permeable pavement products, which are ideal materials for sponge city construction and could truly realize the goal of turning waste steel slag into treasure. The former “slag mountain” has disappeared, replaced by patches of green trees and green grass. The project explored a feasible, advanced and green method that highlights circular economy for steel slag treatment in China.



## Green Operation

MCC is deeply aware of the environmental responsibilities it should fulfill as a corporate citizen. It actively responds to the country's call upon "winning the full-scale battle for the protection of blue sky, clear water and clean land", and follows the concept of "building a beautiful China" as the guidance of its own development to continuously improve the environmental management system. The Company gives full play to its professional strengths in green construction, energy saving and consumption reduction, and construction waste recycling, to save resources as much as possible, and strive to save energy and reduce emissions.

## Green construction

The Company strictly abides by relevant laws and regulations and carries out routine inspections, internal and external reviews and environmental compliance assessment programs to ensure that the regulations are effective and normalized. It continuously optimizes the environment of the construction sites to reduce the impact on surrounding communities.

### C Case: Comprehensively Promoting Green Construction

The Company comprehensively promoted green construction and MCC Green Construction Model Atlas, adopted emerging technologies such as Internet and big data to improve the management level of green construction. In 2019, MCC Group applied for 35 green construction projects of the Green Building and Construction Branch of China Construction Industry Association, and 25 green construction assessment projects of China Association of Construction Enterprise Management. The project departments grew plants around the office areas and construction sites for soil stabilization and improving the community environment. Car wash facilities were set up at the entrance and exit of the project sites, and abundant watering carts were allocated to spray water and reduce dust. The project teams all strictly followed local requirements for construction time. Concrete pump trucks and carpenters worked in an enclosed space to avoid disturbing local residents. The irradiation direction and intensity of lights in the construction sites were also adjusted to avoid light pollution.

#### Dust Control

MCC timely covers bare soil through regular water spraying and the use of fog cannon. Earthwork vehicles will be flushed when driving out of the construction site. Walls are equipped with dust suppression spraying systems. The systems are regularly launched, and special personnel are regularly assigned to dynamically monitor the dust emission amount. During the civil construction phase, the main roads and processing sites are hardened or covered

#### Light Pollution Control

Lighting during construction at night must be directed to the site, not to the roads or residential areas around the site. All lighting lamps should be equipped with protective covers, and the lamps should be directed downwards with an angle of 30 degrees.

#### Noise Control

Noiseless cutting technology is adopted; concrete pumping sound insulation shed, carpentry processing shed and other measures are taken to effectively reduce noise pollution; unless continuous construction is required, night construction is strictly prohibited, to effectively control noise.

#### Water Pollution Control

MCC sets up three sedimentation tanks in a proper way based on the actual conditions of the construction site, makes full use of rainwater and foundation pit precipitation to reduce the use of municipal water. The living area is equipped with a water recycling system to reduce sewage discharge. The canteen is equipped with oil separation tank, which is cleaned regularly.



Welding fume extractor and purifier of China MCC19 Group Co., Ltd.



Prefabricated roads paved by Shanghai Baoye Construction Corp.

## Energy saving and consumption reduction

MCC keeps improving the management of energy saving and emissions reduction, and has established relevant rules, formulated and published the *Administrative Measures on Energy Conservation and Environmental Protection of MCC Group*, *Rules for the Implementation of Energy Conservation and Environmental Protection Inspections of MCC Group* and other systems accordingly to standardize the comprehensive utilization of energy.



- Formulating proper construction plans, optimizing mechanical equipment, and using energy with high efficiency
- Setting up a leading group on ecological protection, formulating regulations and rules relating to energy conservation and environmental protection, and defining roles and responsibilities clearly
- Using energy-saving, highly-efficient and environmental-friendly construction equipment and tools, studying and widely applying clean production technologies and processes



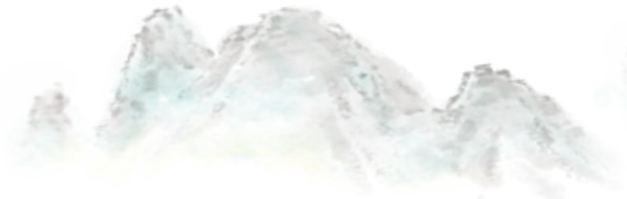
- Adopting advanced water conservation processes at the construction sites, installing water recirculating systems and metering devices such as rainwater collection ponds to collect surface water for fire-fighting, maintenance, washing and a part of domestic water.
- Installing domestic water saving systems and instruments and putting up posters with slogans on water conservation in the office and living area of the construction sites



- Promoting the use of high-strength and high-performance materials to improve the material efficiency
- Promoting reuse of materials such as tailor-made fences, container offices and demountable fences



- Planning temporary facilities reasonably according to project features and practical conditions of the construction sites
- Optimizing deep foundation pit construction plans to reduce excavation and filling
- Replacing hardening with vegetation growing to reduce the hardening area





C Case: Adopting Multiple Measures to Save Energy and Reduce Consumption

CISDI Caofeidian International Ore Trading Center (Phase 1) Project attached great importance to environmental impact assessment in the initial stage, highlighted the concept of environmental protection in planning, design and construction, learned from and promoted experience of green construction demonstration projects, and comprehensively improved the management level of green and methodical construction.



Solar water heaters at the construction site

- Water conservation: Through collecting and using rainwater and recycling reclaimed water, the project has reduced water consumption and saved over 2,020 tons of water.
- Energy conservation: The construction site was equipped with two multisource solar water heaters for workers to take shower. About 350 tons of hot water could be saved every year. Energy-saving lamps were also used in the office area and construction site.
- Publicity and implementation: *The Notice on Celebrating 2019 National Energy Efficiency Promotion Week and Low-Carbon Day* was drafted and released to promote low-carbon lifestyles and an energy-saving atmosphere.

Waste emissions reduction

MCC strictly abides by relevant regulations, adheres to circular economy and waste recycling. At the same time, MCC subsidiaries have formulated targeted solid waste management systems based on different business features, strengthened solid waste management, and improved the comprehensive utilization capacity.

Non-hazardous Waste Discharge

- Non-hazardous solid waste produced during the Company's operation mainly include office waste, domestic waste, construction waste and leftover materials, etc. Solid waste is classified and disposed of according to different categories like construction and production, domestic and office, or others.
- 100% of domestic waste is cleaned and transported by local environmental sanitation department. Concrete, steel, formwork, timber and some temporary facilities are recycled and reused.
- MCC keeps optimizing the construction organization and production processes, improving the use efficiency of turnover materials, and using existing buildings on site or recyclable materials to build temporary facilities.

Hazardous Waste Discharge

- MCC strictly regulates the management of hazardous waste, uniformly recycles, stores and disposes of waste paint barrels, entrusts qualified hazardous waste disposal companies to transport and dispose of such waste, and reports relevant information to the local environmental protection department to keep records.
  - MCC renovates hazardous waste rooms and installs hazardous waste signs, develops relevant management systems, and properly notifies employees of the hazards of hazardous waste
- The hazardous waste rooms are strictly required to implement "three preventions", and specific industrial solid waste storage areas are set up according to relevant environmental requirements



China MCC22 Group Corporation recycles leftover materials for landscaping

C Case: Side-blown Molten Pool Melting Technology Turns Industrial Waste to Wealth

Industrial wastes are highly corrosive and toxic, and are difficult to dispose of. Various wastes in our country grow at an average rate of 10% every year, with an annual output of over four billion tons. Based on the characteristics of industrial wastes such as low calorific value, complex composition and high water content, China ENFI developed a side-blown molten pool melting technology and obtained independent intellectual property right. Compared with similar technologies, this technology stands out for high heat utilization rate, high operability rate, high safety and environmental benefits. It was first used to treat waste diachylon in mining areas, and was proved to be a new energy-saving and low-carbon lead recycling process. After years of practice and optimization, it has become the first choice for technological upgrading in non-ferrous metallurgy as well as solid waste detoxification and recycling.



China ENFI-developed side-blown molten pool melting technology used in Yantai Guorun Copper Smelting Project

Ecological Protection

MCC has fully identified potential impacts that the operation process may have on the ecology, geology and water and soil resources of the construction sites, and has actively participated in environmental protection, ecological restoration and local environmental remediation to help prevent and control urban pollution.

C Case: Landscaping of Yuliangzhou Island, Xiangyang City

China First Metallurgical Group Co., Ltd.( CFMCC) adopted the high and steep hard slope greening and restoration technology, laid galvanized steel wire mesh, mixed and sprayed planting soil, grass seeds, seeds of flowering shrubs, nutrients, accelerating agents and rooting agents on hard rock surfaces, and assisted the rooting of plants, to provide growth conditions for plants and thus realize ecological restoration of hard slopes. On the one hand, the landscape of high and steep hard slopes could be effectively maintained and restored, and the ecological environment could be protected. On the other hand, the soil and gravel could be effectively protected by setting anchor rods and spraying concrete.



Landscape belt of Yuliangzhou Island, Xiangyang City, Hubei



Flood Protection and Ecological Rehabilitation Project undertaken by CFMCC in Binjiang river, Ezhou city

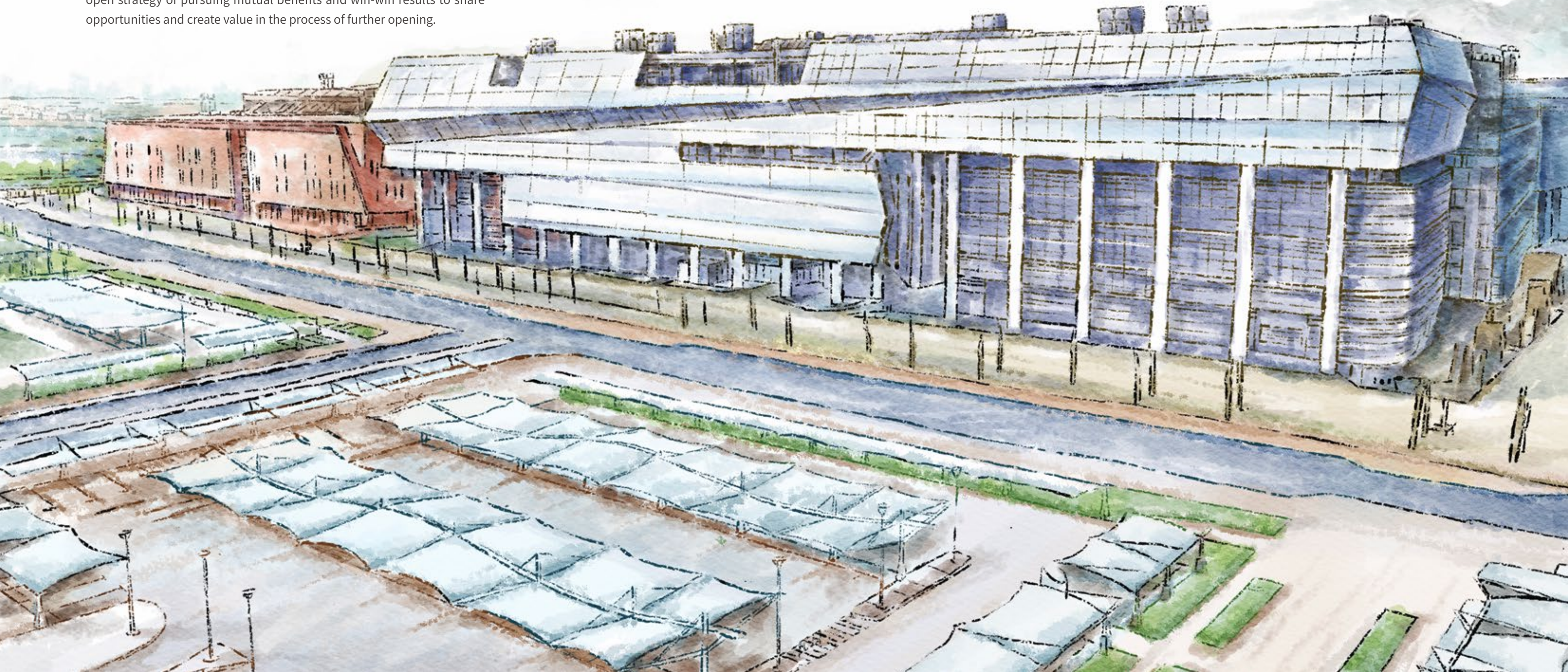


Urban and Rural Comprehensive Infrastructure Construction and Renovation Project + Beifeng Mountain Landscaping Project in Ebian Yi Nationality Autonomous County undertaken by CERl



# VALUING OPENNESS TO FORM A GLOBAL BUSINESS LAYOUT

Opening up is the only way for a country to prosper and develop, and also a way for enterprises to thrive. MCC follows the trend of China's deep economic integration into the world economy, and adheres to an open strategy of pursuing mutual benefits and win-win results to share opportunities and create value in the process of further opening.





# Global Business Layout

MCC has firmly grasped the strategic opportunity brought about by the Belt and Road Initiative, adhered to the strategy of giving priority to the overseas market and promoting internal coordination, and scientifically planned the global business layout. By the end of 2019, MCC has 160 overseas organizations (including offices, branches, local companies, etc.) in 58 countries and regions. Among them, 95 organizations are in 32 countries and regions along the Belt and Road, accounting for 63%. MCC's overseas projects cover 64 countries, and 611 projects are under construction.

As for projects overseas, MCC has won the bidding for a batch of model projects overseas such as the JSR Coke Oven Project of Tata Steel in India, design and equipment supply for the European Super Large Blast Furnace Overhauling Project as well as the Tete Steel and Vanadium Project in Mozambique. MCC has provided foreign iron and steel enterprises with the latest iron and steel processes, technologies and equipment, the strictest environmental protection practices and the most efficient construction and operation services, demonstrating to the world the confidence and strength of the national team for metallurgical construction. Also, with its technical advantages in the metallurgical industry, MCC stands out in many fields including high-end housing construction, transportation and city infrastructure, and theme projects. In 2019, MCC won bids for the Phnom Penh Complex Project in Cambodia, and the Household Waste Incineration Power Plant Project with a daily treatment capacity of 4,000 tons in Vietnam. The School of Petroleum and School of Science of the College Town Project in Kuwait are basically completed. The Colombo Outer Circular Highway - Northern Section II (OCH-NS II) Project in Sri Lanka is completed and opened to traffic ahead of schedule. Overseas market expansion is making progress.

MCC's resource development business focuses on the mining, processing and smelting of metal mineral resources such as nickel, copper, lead, and zinc. It has a total of 6 mineral resources projects in Papua New Guinea, Pakistan, Afghanistan, Argentina and Australia. In 2019, Papua New Guinea Ramu Nickel-Cobalt Project has produced 33,091 tons of nickel. Pakistan Saindak Copper Gold Project has produced 13,049 tons of crude copper. Pakistan Duddar Lead-Zinc Project has produced 74,729 tons of zinc concentrate and 13,481 tons of lead concentrate. These projects have achieved smooth operation and made a significant contribution to the development of local economy and society.



1.China MCC17 Group Co., Ltd.'s projects of College of Engineering and Petroleum and College of Science and Technology in Kuwait College Town were completed, winning high praise of the Prime Minister of Kuwait

2.MCC19 Indonesia OBI Nico Project (Phase 1) wins Luban Prize for China Construction Projects (overseas construction)

3.As the Colombo Outer Circular Expressway in Sri Lanka is completed and opened to traffic



About MCC

Pursuing Innovative Development to Boost Transformation and Upgrading

Highlighting Coordinated Development to Optimize the Business Layout

Seeking Green Development to Promote Ecological Progress

Valuing Openness to Form a Global Business Layout

Striving for Shared Growth to Increase People's Wellbeing

## Alps Residences Project in Singapore

Alps Residences Project of MCC Central Research Institute of Building and Construction is located in Tampines, Singapore, which has a total construction area of 16,660.40 square meters and overall floorage of 43,850 square meters. The design takes inspiration from the Alps, and makes the project a landmark in the area. In the acceptance check based on CONQUAS, the project got a perfect score for structure and a record-setting total score of 94.93. On September 30, 2019, Alps Residences Project received completion license, and was officially delivered and went on sale. Our quality project and great service have been recognized by all our clients.



## Papua New Guinea Ramu Nickel-Cobalt Project

The Papua New Guinea Ramu Nickel-Cobalt Project is the largest Chinese-invested and world-class resource project integrating mining, ore dressing and smelting in the South Pacific region. MCC entered the Ramu project in 2003. It successively signed development framework agreements with the Papua New Guinea government and foreign partner companies, and signed the master agreement, joint venture agreement and mining development agreement on Ramu project.

Through unremitting efforts, the Ramu project team has totally mastered the production process and managerial expertise for nickel laterites, and has achieved unique accomplishments in the hydrometallurgical processing of nickel laterite ores, filling the blankness of Chinese enterprises' practices in leaching nickel laterite ores by high pressure acid leaching (HPAL) and such mass industrial practices. The production rate and profitability of Ramu project are ranking high in the world. The project introduces nickel, cobalt and chromium into Papua New Guinea, enriching the categories of mineral resources in the country. In 2019, the project realized a cumulative production of 33,093 tons of nickel.



In 2019, the project realized a cumulative production of 33,093 tons of nickel.



## Giving Back to Local Communities

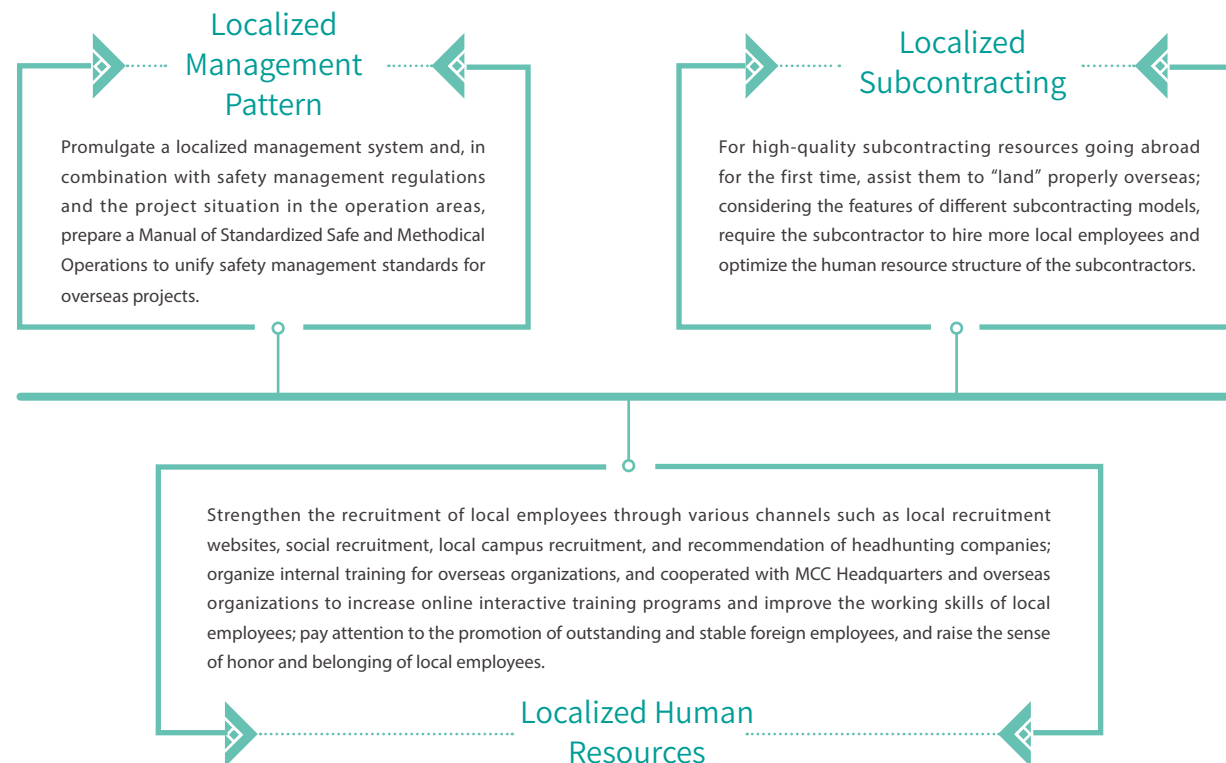
MCC has always been paying attention to both its own development and the sustainable growth of the areas where its businesses are operated. Being a responsible corporate citizen in the local area, we care about people's livelihood and social progress, share development opportunities and value with local communities, and take an active part in community construction.

### Localized operations

MCC implements localized strategies. We set up local organizations with local employees, carry out local procurement, and continuously promote the construction of regional centers and overseas organizations. In 2019, the total number of local employees reached 20,418, accounting for 64.39% of the total overseas workforce.

#### C Case: Localized Operations Drive Local Employment

The Singapore Branch of MCC Central Research Institute of Building and Construction (CRIBC) continuously promotes localized management, and deepens the integration of Chinese-invested companies into the local market. In 2019, the company had 274 employees from ten countries and regions in the world, only 16 of which were sent by the company's headquarters in Beijing, reaching an employee localization rate of 94.1%.



## Responsible practices overseas

While doing business in countries along the Belt and Road, the Company actively practices its overseas responsibilities, helps improve the living conditions of local residents and realizes harmonious coexistence with local communities by funding public welfare undertakings such as education and medical care.



China MCC20 Sri Lanka OCH Project Department visits local orphans and cares them during festivals



The Singapore Branch of MCC Central Research Institute of Building and Construction provides services to Benevolence Hospital



MCC International donates schoolbags to children of employees from the Pelletizing Project in Venezuela

### C Case: Pakistan Saindak Project

The Pakistan Saindak Project of MCC Tongsin Resources Limited adheres to the principle of "developing one project, benefiting all local communities" and the concept of pursuing co-existence and common prosperity of local communities, to strive to ensure local people's access to employment, education, medical services, poverty alleviation and social assistance

**Creating local jobs:** Stable employment and income guarantee happiness. By the end of 2019, the company had 1,651 Pakistani employees, providing jobs to over one thousand families.

**Promoting local education development:** To create favorable learning environment to faculty and students in Saindak School, the company repainted the walls, increased teaching facilities and improved the living conditions of faculty. The company also subsidized schools in Taftan, Nok Kundi and Dalbandin, including donating desks, chairs and school supplies.

**Contributing to the development of local health care services:** Saindak Hospital received 11,607 patients in 2019, and reduced or exempted medical service fees of PKR 11.76 million. Saindak Hospital also offered free physical examinations to 1,527 Pakistani employees. The company bought dental instruments, sent local doctors to receive training in China, and improved medical facilities to provide better medical services to local people.

**Improving local people's livelihood:** During the Ramadan and Dasain Festival, the company and local tribal chiefs visited poverty-stricken residents and sent them rice, cooking oil and other daily supplies. The company spent nearly USD 70,000 to build a dam to meet local villagers' demand for drinking water and agricultural water, and to bring more convenience to local people.

**Donating to help disaster victims and funding institutions:** The company donated nearly PKR 11.4 million to disaster-stricken areas and victims in the Kashmir earthquake, Balochistan flood and Isabela flood for post-disaster reconstruction. It donated PKR 0.8 million to the series celebration activities in Chagai, and donated PKR 0.1 million to the Prevention of Blindness Trust of Pakistan.



Cultural integration

MCC shows full respect to local culture and traditions and actively integrates into local communities by visiting residents during festivals and organizing all kinds of cultural and sports activities. We strive to live in harmony with local people with different cultural backgrounds, religious beliefs and lifestyles, and hope to realize the common prosperity and shared growth.



- 1
- 2
- 3
- 1.MCC Tongsin Resources Ltd. holds a reception themed “celebrating the 70th anniversary of the founding of the PRC and the 30th anniversary of the launch of Saindak Project”, and invites relevant departments of the local government, the Frontier Force Regiment of the Pakistan Army and local tribal chiefs to the grand event
- 2.Pakistani employees from MCC Huaye Duddar Mining Company (Pvt.) Ltd. send Chinese New Year greetings to Chinese colleagues
- 3.Employees from MCC3’s Malaysian Branch Company are making dumplings and celebrating Chinese New Year

Client Service

Focusing on client demands, MCC continuously strengthens client demand management, and innovates in channels of client service to comprehensively show the overall advantages of clients in a better way, and meet the expectations of clients by providing better engineering services.

Center on Client Demands

Open up Communication Channels

Protect Customer Privacy

Provide Value-added Services

MCC fully understands the customers’ needs and expectations for all aspects of the product and makes continuous improvements; provides "point-to-point" quality services, and carefully creates personalized solutions

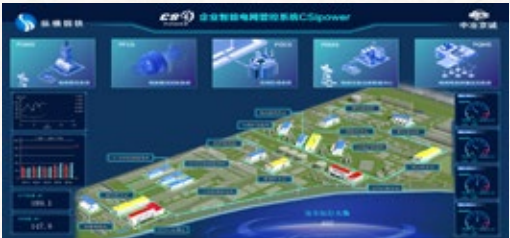
Through organizing field visits, making survey of client demands and other diversified methods, MCC continuously deepens the communication with clients. At the same time, an interactive platform of sharing a series of MCC stories was established.

MCC attaches great importance to the safety of customer information, informs customers of the fields and scope of its use of customer information, and avoids leakage of customer information.

MCC provides value-added services based on system solutions, core equipment and intelligent services.

Case: Centering on Client Demands to Help Enterprises Reduce Costs and Increase Benefits

The enterprise-level smart grid control platform developed by CERI has been successfully applied in Hebei Zongheng Group Fengnan Iron and Steel Co., Ltd.. The platform enables unattended operations and the unified monitoring, management, operation, maintenance and scheduling of subsystems through comprehensive and intelligent control of substations at all levels. After the project was successfully launched in 2019, 13 110 kV substations realized unattended operations, saving the cost of recruiting about 117 employees on duty, saving tens of millions of yuan in operating cost, electricity bills and network system configuration annually, thus cutting over 50% of operation and maintenance expenses and significantly shortening the time needed for accident analysis.



User Interface of the Enterprise-Level Smart Grid Control Platform (CSIPOWER)

Case: Tangshan Legang Raw Material Yard Project Wins Praise from Owners

Tangshan Legang Raw Material Yard Project undertaken by China Metallurgical Construction Engineering Group Co., Ltd. was known as the first “1000m steel corridor” in the raw material area. Since the space for assembly and hoisting was too limited, site construction was extremely difficult. The project team studied the situation thoroughly and decided to adopt the method of sectional production, ground assembly and double-crane hoisting. The project team successfully overcame the construction difficulties and ensured the orderly progress of multiple construction tasks, winning unanimous praise from the owners.



Tangshan Legang Raw Material Yard



## Win-Win Cooperation

### Cooperation and exchange

MCC attaches great importance to making full use of its core competitiveness, and actively explores new modes of external cooperation, such as cooperation with the government, financial institutions, enterprises, partners and other stakeholders, in hope of complementing each other and sharing benefits.

The Company has always adhered to the principle of “equal consultation, mutual benefits and win-win cooperation” to strengthen cooperation with governments at all levels, enterprises, financial institutions, scientific research institutions and colleges, and actively build a platform for strategic cooperation and sharing. In 2019, the Company successively signed 13 strategic cooperation agreements with local governments, troops and large state-owned enterprises such as Meishan city, Lanzhou city, Yunnan Construction and Investment Holding Group Co., Ltd., Beijing Urban Construction Investment & Development Co. Ltd., and the Logistics Department of the People’s Armed Police.

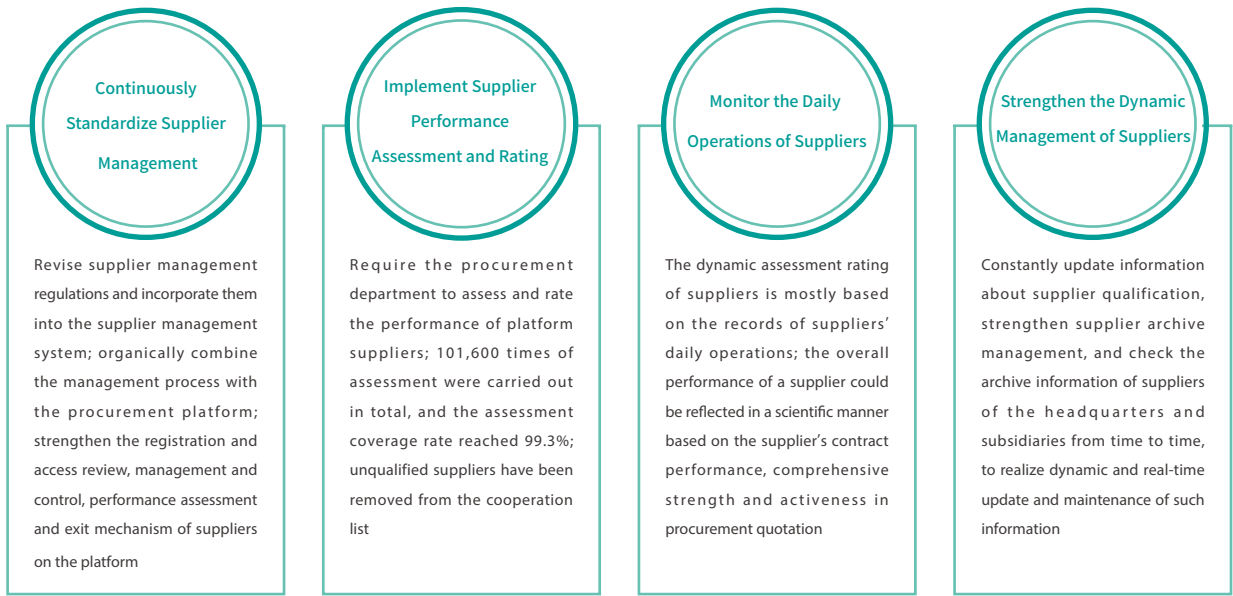
Improving the mechanism of strategic customer maintenance and docking, and consolidating the government-enterprise cooperation with Guangdong, Hebei, Heilongjiang, Guizhou and other provincial and municipal governments;

Strengthening win-win cooperation with bureaus and companies supported by provincial and municipal government platforms, such as Bureau of Public Works of Shenzhen Municipality, Zhengzhou Urban Construction Investment Group Co., Ltd., Gansu Provincial Highway Aviation Tourism Investment Group and Yunnan Construction and Investment Holding Group Co., Ltd.;

Strengthening the docking and communication with China Three Gorges Corporation, Beijing Enterprises Holdings Limited, Zhongguancun Development Group and other large enterprises, signing a number of strategic cooperation agreements, and expanding the “social circle” with high quality.

### Supplier and sub-contractor management

MCC improves supply chain management in various aspects like bidding, subcontracting and procurement, and innovates in working modes to develop an open, transparent, highly-efficient and responsible supply chain management system. We keep improving the system of rewards and punishment to reward excellent subcontractors in engineering construction and put the subcontractors with poor performance into the “blacklist”, so as to avoid performance-based risks across the supply chain, and improve the database of high-quality suppliers and subcontractors.



### Case: Organizing 2018 Business Partner Conference and Awards Ceremony to Encourage Suppliers to Improve CSR Performance

In 2019, China MCC22 Group Corporation held 2018 Business Partner Conference and Awards Ceremony themed “Joining Hands for a Common, Better Future”. The conference invited representatives of more than 100 partner companies to focus on core topics such as value communication, innovative cooperation, common development and win-win cooperation. At the same time, through granting awards, China MCC22 Group Corporation encouraged suppliers to be more innovative and standardized in operations, actively incorporate social responsibilities and capacity building into development plans, and continuously improve their performance in quality, safety and environmental protection.



China MCC22 Group 2018 Business Partner Conference and Awards Ceremony



# STRIVING FOR SHARED GROWTH TO INCREASE PEOPLE'S WELLBEING

Sharing is the essence of socialism with Chinese characteristics. MCC insists on sharing development outcomes with customers, employees and communities, so that all stakeholders could feel more fulfilled. MCC keeps strengthening the driving force for development, improving people's livelihood, and advancing steadily towards common prosperity together with stakeholders.





## Quality Engineering

MCC insists on delivering high-quality engineering projects, and strictly complies with the Product Quality Law of the People's Republic of China, the Construction Law of the People's Republic of China and other laws and regulations on product quality and liability. Through strictly carrying out quality control and project management, MCC ensures that the quality of its projects was in the leading position in the industry.

### Engineering quality management

MCC puts engineering quality management first. Through improving the quality management system, carrying out engineering quality inspections, participating in various engineering quality award competitions, the Company promotes quality management by highlighting the importance of awards. Holding the dedicated spirit of "never delaying, never slacking", MCC delivers satisfactory performance to engineering projects' owners. In 2019, MCC was awarded "Excellent Enterprise in Quality Management" by Beijing Zhong Jian Xie Certification Centre Co., Ltd.

#### Striving to win engineering quality awards

In 2019, MCC set annual targets for winning national quality awards, managed the whole preparation process by facilitating applications and conducting process inspections, and won multiple awards.

#### Improving the quality management system

In 2019, in order to ensure project quality, MCC revised the Quality Management Measures to clearly assign roles and responsibilities of quality management organizations at all levels, and define requirements for reporting and handling quality accidents as well as improving quality management system.

#### Carrying out engineering quality inspections

MCC conducted special quality inspections for projects that are expected to win Luban Prize and civil building projects, covering 621 projects under construction of 25 subsidiaries. The Company also required its subsidiaries to conduct self-inspections of overseas projects, including 104 projects of 23 subsidiaries.



2019  
Quality Honors

- 10 Luban Prizes for China Construction Projects
- 27 National High-Quality Engineering Awards
- 7 awards at the Fourth National Quality Innovation Competition
- 7 Quality and Technology Awards from China Association for Quality
- First Prize of the achievement of the Central State-owned Enterprise Quality Management Team for the first time
- Honorary title of *Outstanding Promotion Unit for Promotion of Total Quality Control In 40 Years*



Guangdong Zhanjiang Iron and Steel Base won the Gold Prize of National High-Quality Engineering Awards in 2019.

## Project management

Project management is the key to maintain high quality and efficiency of construction projects. MCC centers on the goal of "promoting high-quality and high-level development in engineering construction management", continues to push forward the standardization and informatization of project management, and enhances the awareness of project teams to pursue excellence and improve project management capability.

### Strengthening project management and control

MCC promotes the establishment of the main platform for project control, and carries out special follow-up inspections for the main platform. MCC has organized and completed full-coverage inspections of 20 major projects.

### Cultivating project management talents

MCC holds training workshops for all kinds of project management talents. In 2019, nearly 5,000 project management personnel participated in the training. The total number of trainees over the past three years exceeded 10,000.

### Increasing exchange in project management

In 2019, MCC organized two engineering project field visits to promote experience exchange in managing high-quality projects and major projects to improve the capacity of project management.



MCC Special Training Workshop for Project Managers in Changsha, 2019



MCC Engineering Project Field Visit to the Flood Protection and Ecological Rehabilitation Project in Binjiang river, Ezhou city.

## Work Safety

MCC strictly abides by relevant laws and regulations, continuously improves work safety management, and carries out safety training as well as exchange and publicity activities, to provide safety guarantee for production and operations of the Company.

### Safety management system

MCC has formulated various safety management systems to optimize safety assessment management and further improve the safety management system. In 2019, the Company integrated the inspection of *Responsibility List Template for Production Safety* into annual priorities, revised management systems relating to work safety, and further strengthened safety inspection.

In  
2019

8 projects were awarded *Standardized Site of Construction Engineering Projects on Work Safety* by the Safety Branch of China Construction Industry Association



## Safety inspections

Signed the Certificate of Responsibility for Production Safety Objectives with **36** subsidiaries

MCC scales up its efforts in construction site supervision, identifies and timely eliminates safety hazards on site, and comprehensively promotes the work safety standardization of construction sites. MCC headquarters and its subsidiaries have signed the *Certificate of Responsibility for Production Safety Objectives*, put forward rectification measures for identified problems, and required subsidiaries to carry out self-inspections of overseas projects on work safety performance.

The project safety inspection coverage rate is **100** %

MCC headquarters and subsidiaries conducted safety inspections on **1,901** projects

MCC headquarters carried out safety inspections on **23** subsidiaries

## Safety awareness

MCC organizes work safety training for managers at various levels, and urge all subsidiaries fulfil the corporate responsibility to organize training. We also carry out the "Work Safety Month" activities to publicize work safety knowledge, and organize emergency drills to improve the work safety awareness and emergency response ability of employees.

**513** safety trainings conducted

**730,094** participations of safety trainings

**5,833** times of emergency rescue drills conducted

**175,096** participations in emergency rescue drills



Opening ceremony of MCC's "Work Safety Month" campaign in 2019



A trichlorosilane leakage accident emergency drill conducted by Luoyang Zhonggui High Technology Co., Ltd. SinoSico, a subsidiary of China ENFI.

## Occupational health

MCC strictly abides by the Law of the People's Republic of China on the Prevention and Control of Occupational Diseases and relevant regulations to strengthen the prevention and treatment of occupational diseases, popularize the knowledge of occupational disease prevention, and create a safe and healthy working environment for employees. MCC subsidiaries also strengthen occupational disease hazard inspection and actively eliminate safety hazards. We organize the "Publicity Week on the Law of the People's Republic of China on the Prevention and Control of Occupational Diseases" to popularize occupational health tips, and continuously improve the occupational health management capacity across the whole company. In 2019, there was no new confirmed or suspected cases of work-related diseases, and no work-related acute poisoning accident in MCC.



Occupational First Aid Training in China MCC5 Group Co., Ltd.

## Employee Development

### Lawful and scientific employment

Employees are the driving force for the company to achieve sustainable development. MCC has continuously improved human resources management, insisted on lawful employment and protected the rights and interests of employees. MCC provides guarantee for employees' professional development and their physical and mental health, and sends warmth to employees in need.

In 2019, MCC recruited 5,040 fresh graduates through campus recruitment and 4,334 employees through social recruitment, with an aim to introduce high-quality professionals to sustain its development that highlights high technology and high quality, and continuously improve the human resources structure.

As of the end of 2019, MCC had a total number of 98,566 on-job employees, and 130,064 retirees. 20.53% of the total workforce and 26.77% of the management staff are female.



### Rights and interests of employees

#### Equal employment

MCC opposes any form of employment discrimination, signs labor contracts with all employees in accordance with the law, and follows employee turnover work procedures in accordance with laws and regulations. The labor contract signing rate of MCC reached 100%.

MCC strictly complies with the laws and regulations including the *Labor Law of the People's Republic of China*, the *Provision on the Prohibition of Child Labor*, and the *Law of the People's Republic of China on the Protection of Minors* to respect the rights and interests of laborers, oppose forced labor and prevent the use of child labor.

#### Remuneration and welfare

MCC provides a competitive remuneration system with a remuneration management system based on job value and KPI contribution, and pays on time social security and housing provident fund fees for employees on time.

#### Democratic management

MCC keeps improving the Trade Union and Employee Congress systems, and gives full play to the role of democratic decision-making, management, and supervision.



## Career development

To promote the employee's career development, MCC has opened up scientific and diversified career development channels for employees, and created various trainings and promotion opportunities to fully stimulate enthusiasm and creativity of employees.

### ● Job promotion

At MCC headquarters, we continuously develop the position system and strengthen qualification management, and have formulated systematic promotion rules and qualification criteria. We have set up a professional qualification assessment system, a review committee and a database of reviewers, compiled qualification criteria for different posts, and opened up multiple career development channels that are horizontally (the position system) and vertically (the rank system) unblocked for employees.

In the metallurgy field, we conduct top-level design of metallurgical human resources at two levels - headquarters and subsidiary, which provides strategic guarantee for the construction of the Company's talent team.

### ● Employees training

The Company provides occupational training for employees in different positions (such as management personnel and skilled workers) and at different levels to cultivate industry leaders, and help employees improve their theoretical knowledge, managerial expertise and working skills. In 2019, a total of 73,998 employees participated in various kinds of education and training offered by MCC, and the total participations reached 214,085.



Opening Ceremony of the 2019 MCC Overseas Business Training

### ● Case: Holding 2019 Overseas Business Training

To standardize the overseas business management and improve the comprehensive working abilities of employees engaged in overseas business, the Company organized 2019 Overseas Business Training. A total of over 70 employees from 28 branches and subsidiaries of MCC attended the training. In the training, the participants learned more about foreign laws, financial management, financing and insurance, and other professional knowledge, and were inspired to better improve overseas business.

### ● Cultivating industry leaders

MCC made a survey and investigation of high-level talents in the Group Company, and basically formed a high-level talent database which comprises 19 categories and includes a total of 821 high-level talents. In 2019, MCC made new breakthrough in cultivating national-level scientific research talents, for three MCC employees were included in the list of the ninth batch of National Engineering Survey and Design Masters of the Ministry of Housing and Urban-Rural Development.

The MCC ACRE clean and high-efficiency coking technology R&D team won the honorary title of *Outstanding Scientific Innovation Team in Chinese Central State-owned Enterprises*.

As of the end of **2019**

- MCC had **2** members of the Chinese Academy of Engineering
- 12** National Engineering Survey and Design Masters
- 4** Engineering Experts included in the National New Century Talent Project

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### ● Training young managers

MCC has strengthened the selection and training of outstanding young managers to promote and appoint the post-75 and post-80 managers with outstanding moral values, mindset, ambition and potential through selection, open competition and other methods. We carry out high potentials training programs to prepare a management talent pool for the sustainable development of the Company.

In 2019

7 “post-80s” were selected as leaders of MCC subsidiaries or heads of MCC headquarters departments.

A total of 15 subsidiaries have “post-80s” in the leading body.

### ● Case: The First Reserve Managers Training Program Organized by MCC Central Research Institute of Building and Construction

MCC Central Research Institute of Building and Construction (CRIBC) made a first attempt to incorporate the reserve managers training program into the overall management training system. In November 2019, CRIBC organized the reserve managers training program themed *Enriching Political Experience and Improving Ideological Standards — How to Adapt to the New Role*. 88 trainees at management positions attended the training. CRIBC invited experts to give lectures, and organized team building activities, experience sharing sessions, group discussions, debate competitions and group presentations to effectively improve the comprehensive working abilities of the talents.



The First Reserve Managers Training Program organized by MCC Central Research Institute of Building and Construction.

### ● Cultivating professional talents

In 2019, MCC actively fulfilled its central state owned enterprise's responsibilities, undertook and completed with high standards the task of training top contestants for Welding and Construction Metal Work competitions in the 45th WorldSkills Competition. In the competition, a contestant from MCC won the Silver Medal in Construction Metal Work, creating the best score for Chinese contestants in that item. The MCC contestant won the Goal Medal in Welding again, marking China's

championship in Welding for three times in a row. MCC organized the National Metallurgical Construction Industrial Vocational Skills Competition and MCC Group's Seventh Vocational Skills Competition. A total of 16 industry peers sent teams to participate in the competition, where the professional talents received further training in the competition and effectively improved their working abilities. MCC also revised and improved the *Administrative Measures for Chief Technicians in MCC Group* to improve the sense of fulfillment and honor of technical talents.

As of the end of **2019** MCC had

- 3** gold medalists in WorldSkills Competition
- 1** Chinese Skills Award winner
- 65** National Technical Experts
- 6** National Skill Master Studios



The Chinese contestant Zhao Fubo clinched the Gold Medal in welding competition at the 45th WorldSkills Competition.



### C Case: Achievements of Technical Talent Cultivation Highlighted in the National Metallurgical Construction Industrial Vocational Skills Competition

In 2019, the National Metallurgical Construction Industrial Vocational Skills Competition and MCC Group's 7th Vocational Skills Competition was co-held by MCC Group and China Metallurgical Construction Association. The competition was divided into two parts, for electricians and crane-men. The two parts were respectively organized by the duo of Shanghai Baoye and China MCC19, SANY Heavy Industry Co., Ltd. After participating in the theoretical knowledge and practical operation rounds of competition, top three winners of each competition division could apply for the honorary title of *National Technical Experts* from the Ministry of Human Resources and Social Security. The competition promoted the training of technical personnel in the metallurgical construction industry, and improved the professional knowledge and operational skills of relevant technical personnel. MCC was further convinced that technical personnel could become talents through practice and training in their professional fields.



The 2019 National Metallurgical Construction Industrial Vocational Skills Competition (Shanghai Division)

### Employee care

MCC attaches great importance to the physical and mental health of employees. We regularly organize activities for employees, help the employees in need and care for the female employees and retirees.

#### ● Work-life balance

The Company arranges the working hours of employees according to relevant laws and regulations, and offers flexible working arrangements for a part of the employees in accordance with the government policies on flexible working schedule to help them to achieve work-life balance. We also carry out diversified and colorful cultural and sports activities to create a people-oriented working environment.



1 2  
3

1. Group Jump Rope Competition at Northern Engineering & Technology Corporation, MCC

2. MCC Huaye held the 2nd Table Tennis Competition for Employees.

3. MCC held a Singing Performance for celebrating the 70th Anniversary of the Founding of the People's Republic of China.

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#### ● Caring about female employees

MCC protects the rights and interests of female employees and adheres to the principle of "equal pay for equal work regardless of gender" to create equal career development channels. We also organize activities for female employees such as health lectures and voluntary services, outward bound, fun sports meeting, hiking, flower appreciation, baking and tea ceremony lectures, and movie activities, thus providing a heart-warming working environment for employees.



The Trade Union of MCC Overseas organizes an oil painting salon to celebrate International Women's Day



China MCC19 Group Co., Ltd. organized a flower arrangement lecture to celebrate International Women's Day.

#### ● Supporting employees in difficulty

In the process of development, MCC never forgot to support employees in difficulty with financial assistance. We plan a "Golden Autumn Education Aid" program to provide education subsidies to children of employees in difficulty, and always properly treat personnel placement issues in enterprise reform and development.



China MCC20 Group Co., Ltd. granted education subsidies to children of employees in difficulty.

#### ● Caring for retirees

From time to time, the Company holds special symposiums for retirees, organizes them to visit important exhibitions and watch movies, and designs all kinds of cultural and sports activities for them, such as poetry reading, calligraphy and painting, trying to enrich their life after retirement.



## Social Harmony

A company cannot achieve sustainable growth without the stability and harmony of society. MCC never forgot its original aspiration and responsibilities. We give back to society with love with a series of social welfare activities and poverty alleviation efforts, in hope of supporting the development of communities and poverty-stricken areas.

## Community development

MCC has given full play to its business advantages to continue affordable housing projects, including participating in various types of projects, such as, the renovation of urban shantytowns, public rental housing, the renovation of state-owned industrial and mining shantytowns, affordable housing and price-limited commercial housing projects, and the renovation of rural dilapidated buildings. It also participates in traffic construction in poverty-stricken areas and strives to increase people's wellbeing.



By the end of 2019, MCC  
had undertaken a total of

**35**  
affordable housing projects  
which were either under  
construction or completed



with a planned total investment of  
RMB **35.70** billion  
with a planned construction area

of **7.8773** million m<sup>2</sup>

At the end of 2019, Guizhou Ziwang Expressway undertaken by MCC Communication Construction Group Co., Ltd was opened to traffic, which connects Ziyun Miao and Buyi Autonomous County and Wangmo county, two severely poverty-stricken counties in Guizhou, and has reduced the travel time between the two counties from 2.5 hours to 50 minutes, greatly promoting the regional economic development.



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1. In December 2019, the Suizheng Expressway in Guizhou, undertaken by MCC Communication Construction Group Co., Ltd, was opened to traffic. The project will help with the resource development and the coordinated development of economy and society along the line. It will be of great significance in pulling the northern Zunyi region out of poverty.

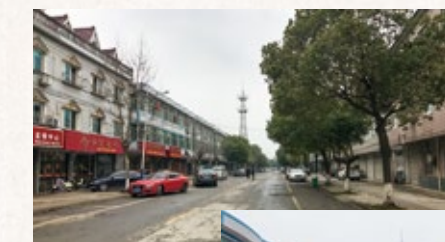
2. In June 2019, Building 1 to Building 18 of Fengyu Neighborhood, Zhanjie Town, Qingzhen City, Guizhou Province, a population relocation project for poverty alleviation undertaken by China MCC3 Group Co., Ltd., was delivered to the first wave of households.



### Case: Township "Beautifying Revolution"

China MCC2 Group Co., Ltd. launched a comprehensive environmental improvement project for small towns. It has completed public works such as rural roads and citizen centers in Lianshi Town, Nanxun District, Huzhou City, Zhejiang Province around three themes — environmental sanitation, urban order improvement and landscape improvement of villages and towns. It has developed a city of "green mountains and lucid waters" in all directions, improving the environment and bringing back the charm of the township.

Before construction



After construction



Remarkable improvement in the environment after the Road Renovation Project in the downtown area of Lianshi Town



Social welfare activities

MCC engages in public welfare undertakings and carries out volunteer activities to contribute to a harmonious society and harmonious co-existence and common prosperity with local communities. In 2019, MCC ranked 123rd among China Top 500 Enterprises in Charity and Public Welfare and 95th among Top 100 Chinese Enterprises in Poverty Alleviation.

Support education	The Vocational School under China MCC5 Group Co., Ltd. gave training to kindergarten teachers in Luding County. Zhongye Changtian organized public welfare activities on “Supporting Education and Pursuing Dream”.
Health care assistance	MCC Hospital offered free clinical services on International Volunteer Day to serve over 300 residents from local communities. China MCC17 Group Co., Ltd. offered free lectures on <i>Summer Health Tips for the Elderly</i> in the Home-Based Care Service Center in Nanhu Community, Maanshan City, Anhui.
Environmental protection	MCC Baosteel organized volunteer activities to call on employees to learn from the Lei Feng on environmental protection. Volunteers from Metallurgical Corporation of Central China Ltd (Henan) Branch carried out environmental protection campaigns themed <i>Creating a More Beautiful City without Garbage</i> .
Care for the elderly	Volunteers from MCC Tiangong visited senior patients with Alzheimer’s disease. Volunteers from the Wanxin-Chunjiang-Mingyue Three-Section Project in Wuhu undertaken by China MCC20 Group Co., Ltd. visited and showed care to elderly people without family in the community.
Care for children	China Metallurgical Construction Engineering Group Co., Ltd. organized and participated in a child care activity named <i>Radio Waves of Love</i> . China MCC22 Group Co.,Ltd. organized <i>Caring for Star Kids</i> to show care to autistic children.
Urban services	CFMCC and WISDRI Engineering & Research Incorporation Limited organized employee volunteers to clean up the surrounding environment for venues in the 7th CISM Military World Games in Wuhan, and provide volunteering services during the games. The Xiamen Branch of Shanghai Baoye cooperated with New Xiameners Library to provide volunteering services to the children of migrant workers.
Donations	Volunteers from China MCC22 Group Co.,Ltd. donated gifts to poverty-stricken teenagers in Fengrun District, Tangshan, to satisfy the needs of children in studies and life. China Metallurgical Construction Engineering Group Co., Ltd. sent daily supplies to 34 poverty-stricken households with zero labor force and zero employment in the Resettlement Community of Chengnanyi in Tongren.



- 1

2

3
- 1.MCC Huatian Engineering & Technology Corporation organized a campaign named *Tiger Swallowtail Butterflies* and to pick up garbage in Zijin Mountain.

2.China MCC20 Group Co, Ltd.carried out education aid activities in Shuitian Primary School, Baisha Town, Wanyuan City, Sichuan Province.

3.Volunteers from MCC Tiangong Group Co.,Ltd. visited senior patients with Alzheimer’s disease.



Poverty alleviation

In the process of implementing the national targeted poverty alleviation strategy, MCC has taken the initiative to take on social responsibilities of a central SOE, actively input talents, funds and channel resources based on its own strengths and the actual situation in poverty-stricken areas, and assisted in boosting the economic and social development of these areas.

In 2019, MCC headquarters purchased local products from poverty-stricken counties that were worthy of over RMB 280,000, and handed out the products to employees for the festivals such as New Year’s Day, Spring Festival, Labor Day, Mid-Autumn Festival and National Day. As of December 2019, MCC subsidiaries had spent RMB 5 million to buy poverty alleviation products.

Case: Pairing up to Build a “Beautiful Village”

MCC Tiangong paired up with Hujiazhuang Village, Baodi District, Tianjin to strive to pull the village out of poverty. MCC Tiangong has assigned officials to the village for poverty alleviation. After two years of efforts, Hujiazhuang Village has undergone tremendous changes in living environment and infrastructure.

-A total of RMB 301,200 has been invested since 2017 to build a village Party-Mass Service Center;

- Coordinated and obtained RMB 5.4228 million of financial funds from Tianjin and Baodi District to complete the road hardening, street lighting and leisure and fitness plaza construction in the village;

- Assisted the local government to complete the construction of livelihood projects such as domestic sewage pipe network, toilet renovation, tap water upgrading and renovation, and coal to gas projects.



Before the road hardening    After the road hardening

Case: Providing Vocational Education to Help Students in Poverty-Stricken Areas

In 2019, Panzhihua Technician College went to six counties in Yunnan, Guizhou and Hunan provinces to recruit about 100 poverty-stricken students to make systematically study welding processing, cold-working metal plate processing, electrical automation, mechatronics, automobile maintenance and other majors, so as to train these poor students into technician talents and enable them to obtain stable income after graduation.



Opening Ceremony of the Training Program for Poverty-Stricken Students organized by Panzhihua Technician College, in response to China Minmetals’ “Mining Heart” Program on Poverty Alleviation through Education



# APPENDIX

## 2019 Key Performance Indicators

### Key Economic Indicators

Key Indicators	2019
Business Revenue	RMB 338.6 Billion
Total profits	RMB 9.78 Billion
Total value of newly signed contracts	RMB 787.6 Billion
Total value of newly signed metallurgical engineering contracts	RMB 128.1 Billion
Engineering construction business income <sup>1</sup>	RMB 311.8 Billion
Real estate development business income <sup>2</sup>	RMB 20.0 Billion
Equipment manufacturing business income <sup>3</sup>	RMB 7.2 Billion
Resources development business income <sup>4</sup>	RMB 5.2 Billion

### Key Environmental Indicators<sup>5</sup>

#### Emissions and Relevant Statistics

Key Indicators	2019
Total emissions of SO <sub>2</sub>	23,064 (tons)
SO <sub>2</sub> emissions in resource development	22,232 (tons)
NO <sub>x</sub> emissions	1,696 (tons)
Hydrogen chloride emissions <sup>6</sup>	37,694 (kg)
Dust emissions	35 (tons)
Fluoride emissions	91 (kg)

<sup>1,2,3,4</sup>The income of each business sector is the pre-offset data of each sector.

<sup>5</sup>In the environment section, the energy consumption and pollutant discharge are categorized according to business sectors including the “engineering service”, “equipment manufacturing”, “resource development” and “other industries”. The business sectors are slightly different from the sectors categorized in the 2019 Annual Report of MCC, which include the “engineering contracting”, “MC estate development” “equipment manufacturing” and “resource development”. Among them, the energy consumption and waste discharge in “real estate development” sector is included in the “engineering service” sector in the Report; the energy consumption and waste discharge in environmental protection business (waste incineration and sewage treatment) of the “engineering contracting” sector as well as in nonferrous metals business (polysilicon business) of the “resource development” is included in the “other industries” sector here. The classification is to comply with the sectors classified in the monthly report of energy conservation and emission reduction.

<sup>6</sup>The statistics of hydrogen chloride emissions also include emissions from China ENFI’s subsidiaries with waste incineration business.

### Emissions of Greenhouse Gas

Key Indicators	2019
Emission of greenhouse gas in China <sup>7</sup>	5,838,286(tons)
Emission intensity of greenhouse gas in China <sup>8</sup>	0.17(tons per RMB 10,000 income)
Emission of greenhouse gas in oversea resource development <sup>9</sup>	494,938(tons)

### Hazardous Waste Discharge

Business sectors	Hazardous waste categories	Output in 2019 (unit)	Output per RMB 10,000 income (unit)
Equipment manufacturing	Waste oil	27,096(L)	0.0008(L)
	Waste paint bucket	28 (tons)	0.0008 (kg)
	Emulsion	119 (tons)	0.0035 (kg)
Other industries	Ash in waste incineration	21,119 (tons)	0.0006 (tons)
Resource development	Waste oil	339,735(L)	0.0100(L)

<sup>7,8</sup>The data is from the energy conservation and emission reduction report, which covers the greenhouse gas produced in domestic production and operating activities including greenhouse gas emitted through the consumption of fuels (scope 1) and electricity (scope 2).

<sup>9</sup>The data covers greenhouse gas emitted through the consumption of fuels (scope 1) and electricity (scope 2) in overseas mining and production activities of our 3 mines overseas. The calculation of scope 1 greenhouse gas emissions is based on relevant heating power conversion factors in *Sustainability Reporting Guidelines, Version 3.0*, and greenhouse gas emission factors in *2006 IPCC Guidelines for National Greenhouse Gas Inventories Chapter 2 – Stationary Combustion*; The scope 2 greenhouse gas emissions are calculated with tools according to the Greenhouse Gas Protocol.



Non-hazardous waste discharge

Business sectors	Non-hazardous waste categories	Output(unit)	Output per RMB 10,000 income (unit)	Amount of recycled waste (unit)	% Recycled
Engineering service	Waste concrete	545,019 (cubic meter)	0.0161(cubic meter)	265,623 (cubic meters)	48.74 %
	Waste steel	265,165 (tons)	0.0078(tons)	106,974 (tons)	40.34 %
	Waste bamboo and wood	396,673 (cubic meter)	0.0117(cubic meter)	214,086(cubic meter)	53.97 %
Equipment manufacturing	Leftover material	10,432 (tons)	0.0003 (tons)	4,245 (tons)	40.69 %
Other industries	Bottom ash from waste incineration	191,115 (tons)	0.0056 (tons)	191,115 (tons)	100 %
	Sludge from waste water treatment	456,983 (tons)	0.0135 (tons)	/	/
Resource development	Earth-rock stripping	9,668,866 (tons)	0.2855 (tons)	/	/

Other waste discharge

Business sector	Other waste categories	Output in 2019 (unit)	Output per RMB 10,000 income (unit)
Resource development manufacturing	In deep-sea landfill	4,173,120 (tons)	0.1232 (tons)
	Slags (Tailings)	4,380,000 (tons)	0.1293 (tons)

Energy consumption

Energy categories	Consumption (unit)
Electricity	601,568 (10,000kWh)
Heating power	437,750 (MKJ)
Gasoline	151,817 (tons)
Diesel	370,594 (tons)
Natural gas	4,895 (10,000cubic meters)
Heavy oil	110,083 (tons)

Resources Consumption<sup>10</sup>

Business sectors	Resource categories	Consumption (unit)
Engineering service	Concrete	48,395,601 (cubic meter)
	Building blocks	23,883,528 (cubic meter)
	Steel	17,026,011(tons)
	Timber formwork	8,996,333 (cubic meter)
Equipment manufacturing	Steel	175,589(tons)
Other industries	Flocculant	1,539(tons)
	Silicon powder	5,479(tons)
	Antalkali	13,255(tons)

Water Resource Consumption

Key Indicators	2019
New water consumption <sup>11</sup>	68,540,000 (tons)
Repeated water <sup>12</sup>	352,040,000 (tons)
New water consumption intensity <sup>13</sup>	2 (tons per RMB 10,000 income)
Emissions of COD	135 (tons)
Emissions intensity of COD	0.0040 (kg per RMB 10,000 income)
Emissions of ammonia nitrogen	17 (tons)
Emissions intensity of ammonia nitrogen	0.0005 (kg per RMB 10,000 income)

<sup>10</sup>The data disclosed by resource consumption is resource consumption of domestic production and operation activities.

<sup>11 12 13</sup>The statistical method of the indicators of new water consumption and repeated water consumption is carried out according to the statistical requirements of the new water consumption.



Key Social Indicators

Technological Innovation

Key Indicators	2019
Number of national level science and technology R&D platform	26
Number of provincial and ministerial level science and technology R&D platform	73
Number of subsidiaries’ MCC engineering technology center	51
Number of effective patents	29,700
Number of newly applied patents	9,503
Number of national award on science and technology	3
Number of Chinese Patent Award of Excellence	9
Number of Metallurgical Science and Technology Award	9
Number of Science and Technology Award of China Nonferrous Metals Industry Association	5

Health and Safety

Key Indicators	2019
Number of subsidiaries that have signed <i>the Certificate of Responsibility for Production Safety Objectives</i>	36
Project safety inspection coverage rate	100 %
Number of projects that has been inspected on safety	1,901
Number of subsidiaries that has been inspected on safety	23
Number of articles about work safety published in monthly magazines	238
Number of participation of safety training	730,094
Total hours of safety training	21,868,278.3
Number of safety training conducted	513
Number of improved emergency rescue plan	8,855
Investments in emergency rescue	RMB 64.67 million
Times of emergency rescue drills conducted	5,833
Number of participants in emergency rescue	175,096
Number of participations of occupational health training	95,116
Percentage of employee physical examination file coverage	100 %
Number of work-related fatalities	12
Lost days due to work-related fatalities	72,000

Responsibility on Employees

Key indicators	2019
Number of on-the-job employees	98,566
Number of turnover employees	7,315
Number of other employees	6,694
Labor contract signing rate	100 %
Proportion of on-the-job employees under 35	41.66 %
Proportion of on-the-job employees at the age of 36 to 50	42.2 %
Proportion of on-the-job employees at the age of 51 or above	16.14 %
Proportion of on-the-job employees with the master’s or higher degree	11.88 %
Proportion of on-the-job employees with the bachelor’s degree	48.51 %
Proportion of on-the-job employees with junior college education	16.50 %
Proportion of on-the-job employees with high school, technical secondary school and vocational school education	14.37 %
Proportion of on-the-job employees with junior high school education or lower	8.74 %
Number of newly recruited fresh graduates	5,040
Number of newly recruited talents from society	4,334
Number of employees trained	73,998
Number of participants in anti-corruption training	2,354

Community Investment

Key indicators	2019
The headquarters of MCC bought products from poor areas	RMB 280,000
The subsidiaries bought products from poor areas	RMB 5,000 ,000



UN Sustainable Development Goals Mapping Table

UN Sustainable Development Goals	Our Actions	UN Sustainable Development Goals	Our Actions
 1 Goal 1 no poverty	Organizing volunteer activities to help vulnerable groups in the community; supporting poverty alleviation through consumption by purchasing special local products in poor areas.	 9 Goal 9 industry, innovation and infrastructure	Focusing on high-end housing construction, expressway, urban area development, transportation and municipal infrastructure construction; Leveraging the cutting-edge core technology, irreplaceable integration advantages of the whole metallurgical industrial chain and consistent innovation capacity, to assume the responsibility of leading China's metallurgical development and related fields to new heights.
 2 Goal 2 zero hunger	Carrying out donation activities to donate food and other necessities for the poor.	 10 Goal 10 reduced inequalities	Actively fulfilling overseas development responsibilities and helping improve the living conditions of local community residents.
 3 Goal 3 good health and well-being	Strengthening the prevention and control of occupational diseases, popularizing the knowledge of prevention and control of occupational diseases to create a safe and healthy working environment for employees.	 11 Goal 11 sustainable cities and communities	Giving full play to the business advantages, and continuing to engage in the indemnificatory housing projects Carrying out environmental treatment projects such as sewage treatment, organising domestic waste, ecological restoration, landscape reconstruction, and other environmental protection projects.
 4 Goal 4 quality education	Organizing various forms of donation activities; providing poor students with the opportunity to receive vocational and technical education to obtain stable employment income.	 12 Goal 12 responsible consumption and production	Promoting the R & D and application of green technologies, constantly innovating in the clean production modes to transform green technologies into green productivity.
 5 Goal 5 gender equality	Paying attention to the protection of the rights and interests of women employees, adhering to equal pay for equal work between women and men, and creating a fair career.	 13 Goal 13 climate action	Improving the management of energy conservation and emission reduction, reasonably planning the construction schemes, optimizing the allocation of machinery and equipment, and making efficient use of energy.
 6 Goal 6 clean water and sanitation	Implementing the upgrading projects of water and sewage pipe network in poverty-stricken areas and providing better medical services for community residents.	 14 Goal 14 life below water	Carrying out ecological restoration, sewage treatment and river basin treatment projects.
 7 Goal 7 affordable and clean energy	Doing R&D on technologies, such as the waste heat recovery of sinter-circle-cooling machines and efficient power generation, and using the waste gas and heat for power generation.	 15 Target 15 life on land	Participating in environmental protection, ecological restoration and local environmental remediation to reduce the impact of the projects on life on land.
 8 Goal 8 decent work and economic growth	Protecting the rights and interests of employees; caring for women employees and difficult employees; providing vocational training for employees at different posts in different levels, and training industry leading talents to help employees improve their theoretical training, management ability and skills.	 17 Goal 17 partnerships for the goals	Actively expanding the external cooperation mode, strengthening the cooperation with the government, financial institutions, enterprises, partners and other stakeholders to achieve complementary advantages and benefit sharing.

Index of report indicators

SEHK--Environmental, Social and Governance Reporting Guide Index

A. Environmental			
General Disclosure & KPI	Indicator Description		Chapter Reference
Aspect A1 : Emissions			
General Disclosure	Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to air and greenhouse gas emissions, discharges into water and land, and generation of hazardous and non-hazardous waste		Seeking Green Development to Promote Ecological Progress
KPI	A1.1	The types of emissions and respective emissions data	2019 Key Performance Indicators
	A1.2	Greenhouse gas emissions in total (in tonnes) and, where appropriate, intensity (e.g. per unit of production volume, per facility)	2019 Key Performance Indicators
	A1.3	Total hazardous waste produced (in tonnes) and, where appropriate, intensity (e.g. per unit of production volume, per facility)	2019 Key Performance Indicators
	A1.4	Total non-hazardous waste produced (in tonnes) and, where appropriate, intensity (e.g. per unit of production volume, per facility).	2019 Key Performance Indicators
	A1.5	Description of measures to mitigate emissions and results achieved	Energy saving and consumption reduction
	A1.6	Description of how hazardous and non-hazardous wastes are handled, reduction initiatives and results achieved	Waste emissions reduction
Aspect A2 : Use of Resources			
General Disclosure	Policies on the efficient use of resources.		Seeking Green Development to Promote Ecological Progress
KPI	A2.1	Direct/ indirect energy consumption by type (e.g. electricity, gas or oil) in total (in 1000 kWh) and intensity (e.g. per unit of production volume, per facility)	2019 Key Performance Indicators
	A2.2	Water consumption in total and intensity (e.g. per unit of production volume, per facility)	2019 Key Performance Indicators
	A2.3	Description of energy use efficiency initiatives and results achieved	Green Operation
	A2.4	Description of whether there is any issue in sourcing water that is fit for purpose, water efficiency initiatives and results achieved	Green Operation
	A2.5	Total packaging material used for finished products (in tonnes) and, if applicable, with reference to per unit produced	Since our main business does not use packaging materials, this KPI is not applicable
Aspect A3 : The Environmental and Natural Resources			
General Disclosure	Policies on minimizing the issuer's significant impact on the environment and natural resources		Seeking Green Development to Promote Ecological Progress
KPI	A3.1	Description of the significant impacts of activities on the environment and natural resources and the actions taken to manage them	Ecological Protection



B. Social

General Disclosure & KPI		Indicator Description	Chapter Reference
Aspect B1 : Employment			
General Disclosure	Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to compensation and dismissal, recruitment and promotion, working hours, rest periods, equal opportunity, diversity, anti-discrimination, and other benefits and welfare		Employee Development
KPI	B1.1	Total workforce by gender, employment type, age group and geographical region	2019 Key Performance Indicators
	B1.2	Employee turnover rate by gender, age group and geographical region	This KPI is less material according to materiality assessment
Aspect B2 : Health and Safety			
General Disclosure	Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to providing a safe working environment and protecting employees from occupational hazards		Work Safety
KPI	B2.1	Number and rate of work-related fatalities	2019 Key Performance Indicators
	B2.2	Lost days due to work injury	2019 Key Performance Indicators
	B2.3	Description of occupational health and safety measures adopted, how they are implemented and monitored	Work Safety
Aspect B3 : Development and Training			
General Disclosure	Policies on improving employees' knowledge and skills for discharging duties at work. Description of training activities		Employee Development
KPI	B3.1	The percentage of employees trained by gender and employee category (e.g. senior management, middle management)	Considering future disclosures
	B3.2	The average training hours completed per employee by gender and employee category	Considering future disclosures
Aspect B4 : Labor Standards			
General Disclosure	Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to preventing child and forced labor		Employee Development
KPI	B4.1	Description of measures to review employment practices to avoid child and forced labor	This KPI is less material according to materiality assessment
	B4.2	Description of steps taken to eliminate such practices when discovered	This KPI is less material according to materiality assessment
Aspect B5 : Supply Chain Management			
General	Policies on managing		Win-Win Cooperation
KPI	B5.1	Number of Suppliers by geographical region	This KPI is less material according to materiality
	B5.2	Description of practices relating to engaging suppliers, number of suppliers where the practices are being implemented, how they are implemented and monitored	Win-Win Cooperation
Aspect B6 : Product Responsibility			

General Disclosure	Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to health and safety, advertising, labelling and privacy matters relating to products and services provided and methods of redress.		Quality Engineering Issues related to advertising and labelling of engineering service are not applicable since the sector is mainly serving the equipment manufacturing sector of the Company
KPI	B6.1	Percentage of total products sold or shipped subject to recalls for safety and health reasons	This KPI is less material according to materiality
	B6.2	Number of products and service related complaints received and how they are dealt with	This KPI is less material according to materiality
	B6.3	Description of practices relating to observing and protecting intellectual property rights	Technological Innovation
	B6.4	Description of quality assurance process and recall procedures	Quality Engineering Product recall procedure is less material according to materiality assessment
	B6.5	Description of consumer data protection and privacy policies, how they are implemented and monitored	This KPI is less material according to materiality
Aspect B7 : Anti-corruption			
General Disclosure	Information on: (a) the policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to bribery, extortion, fraud and money laundering		Corporate Governance
KPI	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	Corporate Governance
	B7.2	Description of preventive measures and whistle-blowing procedures, how they are implemented and monitored	Corporate Governance
Aspect B8 : Community Investment			
General Disclosure	Policies on community engagement to understand the needs of the communities where the issuer operates and to ensure its activities take into consideration the communities' interests		Striving for Shared Growth to Increase People's Wellbeing
KPI	B8.1	Focus areas of contribution (e.g. education, environmental concerns, labor needs, health, culture, sport)	Social Harmony
	B8.1	Resources contributed (e.g. money or time) to the focus area	2019 Key Performance Indicators

SEE-Guidelines on Environmental Information Disclosure of Listed Companies in Shanghai Stock Exchange Index

Disclosure Requirements	Page Reference
1. Company environmental protection policy, annual environmental protection objectives and results	Seeking Green Development to Promote Ecological Progress
2. Total annual resource consumption of the company	2019 Key Performance Indicators
3. Environmental protection investment and development of environmental technology	Green Transformation
4. The type, amount, concentration and destination of the company's emissions	Green Operation 2019 Key Performance Indicators
5. Construction and operation of environmental protection facilities of the company	Green Transformation
6. Company's waste treatment and disposal in the production process, waste products recycle and comprehensive utilization	Green Operation
7. Voluntary agreements signed with the environmental protection authorities on the act of improving the environment	There was no record in 2019
8. The company rewarded by the environmental protection authorities	Green Transformation
9. Other environmental information voluntarily disclosed by the company	2019 Key Performance Indicators



# READER FEEDBACK FORM

Dear reader :

Thank you for reading the 2019 Social Responsibility Report of Metallurgical Corporation of China Ltd. We highly value and expect your valuable opinions on MCC’s CSR fulfilment and this report. Your opinions and suggestions are valuable for us to keep improving our CSR management and practice. Please complete,cut out the following form and mail it or fax it or mail it to us. We sincerely welcome and appreciate your valuable opinions.

1. Do you think this report reflects major impacts of MCC on economy, society and environment?

Yes ☐ To some extent ☐ No ☐

2. Do you think the identification of stakeholders and their relationship with MCC in this report is accurate and complete?

Yes ☐ To some extent ☐ No ☐

3. Do you think the information disclosure in this report is comprehensive?

Yes ☐ To some extent ☐ No ☐

4. Do you think the information disclosure in this report is readable?

Yes ☐ To some extent ☐ No ☐

Open questions

1. Do you find any information you are concerned about not disclosed in the report?

2. How do you think the report can be improved?

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