

# 2016 China Minmetals Sustainability Report

Cherishing Limited Resources  
Pursuing Sustainable Development

2016 Sustainability Report



Cherishing Limited Resources  
Pursuing Sustainable Development



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You may also read the PDF version of the Report in Chinese and English as well  
as the dynamic information related to CSR activities of the Corporation under  
the tag of "Social Responsibility" on the homepage of the CMCO official website.

Official website: <http://csr.minmetals.com.cn/>

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China Minmetals



# About This Report

## ● Reporting Period:

This report covers the period from January 1 to December 31, 2016, and some parts may concern significant years in the development of the Corporation.

## ● Release Cycle:

The Corporation publishes the sustainability report annually and this is the 10<sup>th</sup> one since 2007.

## ● Reporting Scope:

This report covers the information related to the headquarters and subsidiaries of China Minmetals Corporation. In view of the different business of subsidiaries, there will be slight differences in the boundary and range of specific topics and explanations will be provided in corresponding paragraphs of this report.

## ● Designations:

For easy reference, "China Minmetals Corporation" is also referred to as "China Minmetals", "the Corporation" or "we" in this report.

## ● References:

In compliance with the requirements laid down in such documents as *Guiding Opinions on Fulfillment of Social Responsibilities by Central Enterprises* and *Outline of the 12<sup>th</sup> Five-Year Plan for Implementing the Strategy of Harmonious Development by Central Enterprises*, released by the State-owned Assets Supervision and Administration Commission of the State Council (SASAC), this report is compiled according to the core guidelines of the Global Reporting Initiative (GRI)'s *G4 Sustainability Reporting Guidelines* as well as international standard *Guidance Standard on Social Responsibility* (ISO26000:2010), national standard *GB/T36000-2015 Guidance on Social Responsibility*, and the Ten Principles of the United Nations Global Compact.

## ● Data Sources:

All data contained herein are from the Corporation's official documents, statistics reports and financial statements as well as its sustainability management information system that collects information on sustainability practices of the Corporation's functional divisions and subsidiaries.

## ● Report Availability:

This report is available in both Chinese and English. Please contact us for a hard copy.

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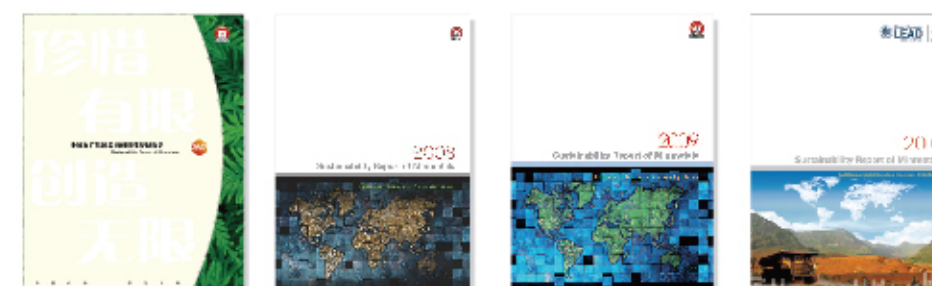
# Statement

Centering on the sustainability philosophy of "cherishing limited resources and pursuing sustainable development", the 2016 China Minmetals Sustainability Report is to convey the message to the public that the Corporation is committed to creating the greatest value for stakeholders, and to make known what has been done and achieved in the Corporation's endeavor to build a valuable, innovative, safe, green, happy and harmonious image. Considering stakeholders as the most important resources for the Corporation's sustainable development and adhering to the main theme of "cherishing stakeholders and making every effort to create unlimited value for them", China Minmetals strives to disclose to the stakeholders its information about CSR practices and performance as much as possible in an accurate, truthful and objective manner, achieve most effective communication with its stakeholders on an equal, comprehensive and in-depth basis, and enhance mutual trust and cooperation with them for common progress.

An assurance engagement on this report has been performed by TUV NORD. The statement of assurance is attached hereto as an appendix.

China Minmetals Corporation

June 2017



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# Message From the Chairman



**He Wenbo,**  
Chairman and  
Party Group Secretary  
of China Minmetals



As I often say to my colleagues, we are running business in a more international and transparent way and any move we make is bound to attract more and more attention from stakeholders. With great power comes great responsibility. With the larger scale and stronger strengths brought by the recombination, everyone at China Minmetals has the responsibility and ability to make a difference in the global metals and minerals industry.

As a responsible multinational metals and minerals conglomerate, we are launching the sustainability report for 2016 as expected. This report discloses key data about China Minmetals Corporation's performance in such fields as value creation, safety and health, energy conservation and emissions reduction, communities and employees, etc. and provides a true account of what we have experienced over the past year. Moreover, I am proud to say that this is the 10<sup>th</sup> consecutive sustainability report published by China Minmetals.

The ten sustainability reports have recorded China Minmetals' performance over the past decade in fulfilling its responsibilities. The past decade is marked by the Chinese economy's impressive growth and integration into the world economy. Chinese enterprises have embraced the world quickly and become increasingly used to introducing themselves with international language, taking part in competition, and engaging in cooperation which has been very productive. The past decade has witnessed ups and downs in the global metals and minerals sector. There was time when this capital-intensive and highly cyclical industry saw prices skyrocket while there was also time when bubbles burst and commodity prices went into free fall. The past decade has also seen the rapid growth of China Minmetals. When the global metals and minerals industry was booming, we grasped the opportunity and expanded the scope and scale of business through recombination, mergers and acquisitions and other means, exerting enormous market impact. When the global industry was suffering a downturn, we looked inwards and intensified efforts to control risks, improve the quality of assets, and increase efficiency. China Minmetals has grown in scale and strength in the process of increasing its global footprint and improving itself. Its operating income has doubled over the decade, reaching RMB 435.5 billion in 2016. Total assets have soared to RMB 759.8 billion, including USD 35 billion overseas assets. China Minmetals is just like a ship from China sailing through wind and waves towards sustainable future of the global metals and minerals sector.

Today we are once again at a new starting point. Thanks to the strategic recombination of two Fortune Global 500 companies – the former China Minmetals and the Metallurgical Corporation of China (MCC), China Minmetals now operates across the whole industry chain and is the only enterprise in the metals and minerals sector participating in China's pilot program on developing state-owned capital investment companies. With stronger strengths, broader vision and higher aims, China Minmetals is now striding confidently towards the goal of becoming a world-class metals and minerals conglomerate.

As I often say to my colleagues, we are running business in a more international and transparent way and any move we make is bound to attract more and more attention from stakeholders. With great power comes great responsibility. With the larger scale and stronger strengths brought by the recombination, everyone at China Minmetals has the responsibility and ability to make a difference in the global metals and minerals industry.

Bearing in mind the heavy responsibility, people at China Minmetals will stay down-to-earth as always and endeavor to improve the Corporation's governance and increase its capacity to create value and manage risks, thus making it better and stronger.

We are never alone on the path to betterment since stakeholders and all other sectors have been backing us up. We are always full of confidence on this path because the support we receive will always give us the power to press ahead.

# Message From the President



**Guo Wenqing,**  
President and Party Group  
Deputy Secretary of  
China Minmetals



The new China Minmetals will continue to embrace the philosophy of cherishing limited resources and pursuing sustainable development and keep the spirit of never falling behind schedule or getting slack in the endeavor to accomplish its mission of securing the supply of metal and mineral resources for China and leading China's metallurgical industry forward to reach top international standards.

The past year marked a milestone in the history of China Minmetals as well as the industry as a whole. With the strategic recombination of two Fortune Global 500 companies – the former China Minmetals and the Metallurgical Corporation of China (MCC), China Minmetals became the first to operate across the whole industry chain from the acquisition of mines to exploration, design, construction, ore mining, ore dressing, smelting, logistics, and trade. The new China Minmetals is the only enterprise in China's metals and minerals sector participating in the pilot program on developing state-owned capital investment companies as well as a vast conglomerate in the global metals and minerals sector. With a higher status in the industry, better business portfolio and greater development strengths comes greater responsibility. This is the first sustainability report published after the recombination that offers a true account of how the new China Minmetals took the initiative to take on its social responsibilities.

The new China Minmetals had to accomplish many important tasks. We held together and pressed ahead towards the goal of growing into China's No.1 world-class metals and minerals conglomerate. We deepened reform across the board for better quality, higher efficiency and more streamlined structure. We strived to create a RMB 100 billion internal market and advance supply-side structural reform internally, giving full play to the integrated advantages of the whole industry chain. We put risks under strict control and operated prudently to ensure sustainable development. Our operating income and total profit reached RMB 435.5 billion and RMB 4.04 billion respectively in 2016, with RMB 15.4 billion losses recovered. We won five second prizes of the National Scientific and Technological Progress Award, and the honor – "Five-Star Enterprise of China's Industrial Sector by CSR Performance 2016". The new China Minmetals delivered an impressive performance to shareholders, employees and the general public, showing enormous potential for development.

An enterprise needs a grand vision for development to achieve sustainability and lasting prosperity. The new China Minmetals has worked out a three-step strategy. The first step is to earn RMB 10 billion in profit at the end of 2017, twice the 2016 level. In this transition period we need to accomplish the task of recouping all losses and making transformation. The second step is to bring in RMB 20 billion in profit at the end of 2018, double the 2017 level. By then, China Minmetals will be operating at a profit and growing steadily, fully qualified as a state-owned capital investment company. The third step is to become the world's No.1 producer of tungsten and antimony, and have international influence in copper, nickel and lead-zinc ores by 2020 when China completes the building of a well-off society in an all-round way. By then, China Minmetals will have the capacity to allocate mineral resources globally and integrate production, supply and trading operations, standing out as a No.1 world-class metals and minerals conglomerate that serves the development of the country.

Hard work makes dreams come true. The new China Minmetals will continue to embrace the philosophy of cherishing limited resources and pursuing sustainable development and keep the spirit of never falling behind schedule or getting slack in the endeavor to accomplish its mission of securing the supply of metal and mineral resources for China and leading China's metallurgical industry forward to reach top international standards. We hope to have the support of all sectors as always and will work together with all stakeholders for mutual benefit and for the better future of the global metals and minerals industry.

國文清

# About Us

## Company Profile

China Minmetals Corporation has been established as a result of the strategic recombination of two Fortune Global 500 companies – the former China Minmetals and the Metallurgical Corporation of China (MCC). It is China's largest metals and minerals conglomerate with a very strong global presence as well as the world's largest and most competitive player in metallurgical engineering and project operation. Based in Beijing, the Corporation has RMB 759.8 billion total assets, as well as overseas institutions, resource projects and construction projects in more than 60 countries and regions in the world. In 2016, its operating

income stood at RMB 435.5 billion and total profit RMB 4.04 billion.

China Minmetals has gained a unique competitive edge by taking the lead in the global metals and minerals sector in operating across the whole industry chain from resource acquisition and exploration to project design, construction, operation, distribution and further processing. It is able to provide metals and minerals companies with systematic solutions and services throughout the project lifecycle of engineering, construction and operation.

### China Minmetals has a well-structured, diversified asset portfolio.

its operating income stood at RMB

**435.5** billion

total profit RMB

**4.04** billion



## Organizational Structure



Functional divisions
  Sharing Service and Special purpose entities
  Subsidiaries

## Corporate Culture

## Main Subsidiaries

**Strategic Mission:**  
To maintain China's mineral resource security and lead innovative transformation and upgrading of industries

**Strategic Vision:**  
To be a world-class metals and minerals conglomerate

**Strategic Orientation:**  
A participant in the endeavor to ensure resource security, upgrade industries in an innovative way, and build the Belt and Road

**Development Philosophy:**  
Cherish limited resources and pursue sustainable development

**Spirit:**  
Never fall behind schedule or get slack

**Values:**  
Performance, Innovation, Integrity and Collaboration

### China

#### North China (38):

China Minmetals Corporation Limited  
Metallurgical Corporation of China Limited  
Central Research Institute of Building and Construction Co., Ltd.  
Beijing Metallurgical Equipment Research Design Institute Co., Ltd.  
China ENR Engineering Corporation  
MCC Capital Engineering & Research Incorporation Limited  
WISDRI Engineering & Research Incorporation Limited  
China Second Metallurgy Group Co., Ltd.  
China MCCS Group Co., Ltd.  
MCC Tiangong Group Co., Ltd.  
China Metallurgical Construction Group Co., Ltd.  
China 22MCC Group Co., Ltd.  
China Huaye Group Co., Ltd.  
MCC Real Estate Group Co., Ltd.  
MCC Communication Construction Group Co., Ltd.  
MCC International Engineering Group Co., Ltd.  
MCC Overseas Ltd.  
MCC Comprehensive Pipe Galleries Project Co., Ltd.  
MCC Finance Co., Ltd.  
MCC Asset Management Co., Ltd.  
Minmetals Development Co., Ltd.  
Minmetals Exploration & Development Co., Ltd.  
China Minmetals Non-ferrous Metals Co., Ltd.  
Minmetals Mining Holdings Ltd.  
Minmetals Capital Co., Ltd.  
Minmetals Finance Co., Ltd.  
Minmetals Real Estate Co., Ltd.  
Minmetals (Beijing) Asset Management Limited  
Minmetals Aluminum Co., Ltd.  
North China Aluminum Co., Ltd.  
Minmetals Steel Co., Ltd.  
China Mining Co., Ltd.  
China National Metal Products Co., Ltd.  
Minmetals Logistics Group Co., Ltd.  
Minmetals International Tendering Co., Ltd.

Minmetals E-Commerce Co., Ltd.  
China National Foreign Trade Financial & Leasing Co., Ltd.  
Minmetals Hanxing Mining Co., Ltd.

#### Northeast China (6):

ACRE Coking & Refractory Engineering Consulting Corporation, MCC  
China Third Metallurgical Group Co., Ltd.  
MCC Huludao Non-ferrous Metals Group Co., Ltd.  
Northern Engineering & Technology Corporation, MCC  
Shen Kan Engineering & Technology Corporation, MCC  
Minmetals (Yingkou) Industrial Park Development Co., Ltd.

#### East China (8):

China MCC20 Group Co., Ltd.  
Shanghai Baoye Group Co., Ltd.  
MCC Baosteel Technology Services Co., Ltd.  
MCC Rail Transit Co., Ltd.  
Shanghai MCC Hospital  
Minmetals Luzhong Mining Co., Ltd.  
Nanchang Cemented Carbide Limited Liability Company  
Minmetals Logistics (Shanghai) Co., Ltd.

#### Southwest China (5):

CISDI Group Co., Ltd.  
MCC (Guizhou) Construction Investment and Development Co., Ltd.  
MCC South Asia Investment Development Co., Ltd.  
China MCC19 Group Co., Ltd.  
Zigong Cemented Carbide Co., Ltd.

#### South Central China (24):

MCC Huatian Engineering & Technology Corporation  
Zhongye Changtian International Engineering Co., Ltd.  
MCC Wuhan Surveying-Geotechnical Research Institute Co., Ltd.  
China First Metallurgical Group Co., Ltd.  
China MCC17 Group Co., Ltd.  
China Minmetals Non-ferrous Metals Holdings Co., Ltd.  
China Tungsten and High-tech Materials Co., Ltd.  
Changsha Research Institute of Mining and Metallurgy Co., Ltd.  
The 23rd Metallurgical Construction Group Co., Ltd. of Minmetals  
Zhuzhou Smelter Group Co., Ltd.  
Zhuzhou Cemented Carbide Group Co., Ltd.  
Hunan Shuikoushan Non-ferrous Metals Group Co., Ltd.  
Hsikwangshan Twinkling Star Co., Ltd.  
China Minmetals Rare Earth Group Co., Ltd.  
Minmetals Copper (Hunan) Company Limited

#### Other Regions

#### Asia (7):

MCC Tongsin Resources Ltd.  
MCC Inner Mongolia Construction Investment Co., Ltd.  
MCC Middle East Branch  
MCC Southeast Asia Branch  
MCC South Asia Branch  
Minmetals Japan Corporation  
Minmetals South-East Asia Corporation Pte. Ltd.

Changsha Mining Research Institute  
Hunan Non-ferrous Metals Investment Co., Ltd.  
Zhuzhou Cemented Carbide Cutting Tools Co., Ltd.  
Hunan Shizhuyuan Non-ferrous Metals Co., Ltd.  
Hunan Non-ferrous Huangshaping Mining Branch  
Jiangxi Xiushui Xianglushan Tungsten Co., Ltd.  
Hunan Yaogangxian Mining Co., Ltd.  
Hunan Non-ferrous Xintianling Tungsten Co., Ltd.  
Cherzhou Diamond Tungsten Products Co., Ltd.

#### South China (7):

MCC South China (Shenzhen) Investment and Development Co., Ltd.  
MCC Fujian Investment and Development Co., Ltd.  
Minmetals Securities Co., Ltd.  
Minmetals Futures Co., Ltd.  
Mianyang City Commercial Bank  
Anhui Development and Mining Co., Ltd.  
Shenzhen Jinzhou Precision Technology Co., Ltd.

#### Europe and Africa (4):

MCC Africa Branch  
Minmetals (U.K.) Ltd.  
Minmetals Germany GmbH  
Minmetals North-Europe AB

#### America (4):

MMG Las Bambas  
Minmetals Inc. (L.A.)  
China Minmetals Non-ferrous Metals Peru SAC  
Minmetals, Inc.

#### Northwest China (2):

Minmetals International Trust Co., Ltd.  
Minmetals Salt Lake Limited

#### Hong Kong and Macao (3):

China Minmetals H.K. (Holdings) Limited  
Minmetals Cheerglory Limited  
Album Trading Company Limited

#### Oceania (4):

Ramu Nico Management (MCC) Limited  
MMG Limited  
Minmetals Australia Pty. Ltd.  
China Mining International Limited

For the recombination with MCC, the number of enterprise was increased.

## Corporate Governance

Beginning with system building, we have made clear the rights and responsibilities of the Party Leadership Group, the Board of Directors and the management, as well as the relationship between the Party Leadership Group and other governance bodies, and give full play to the core role of the Party Leadership Group in decision making and business operation, ensuring that the Corporation's governance structure is balanced and up to standard. In 2016, the Party Leadership Group had 38 meetings while the Board of Directors had 17 meetings and heard or reviewed over 80 proposals.

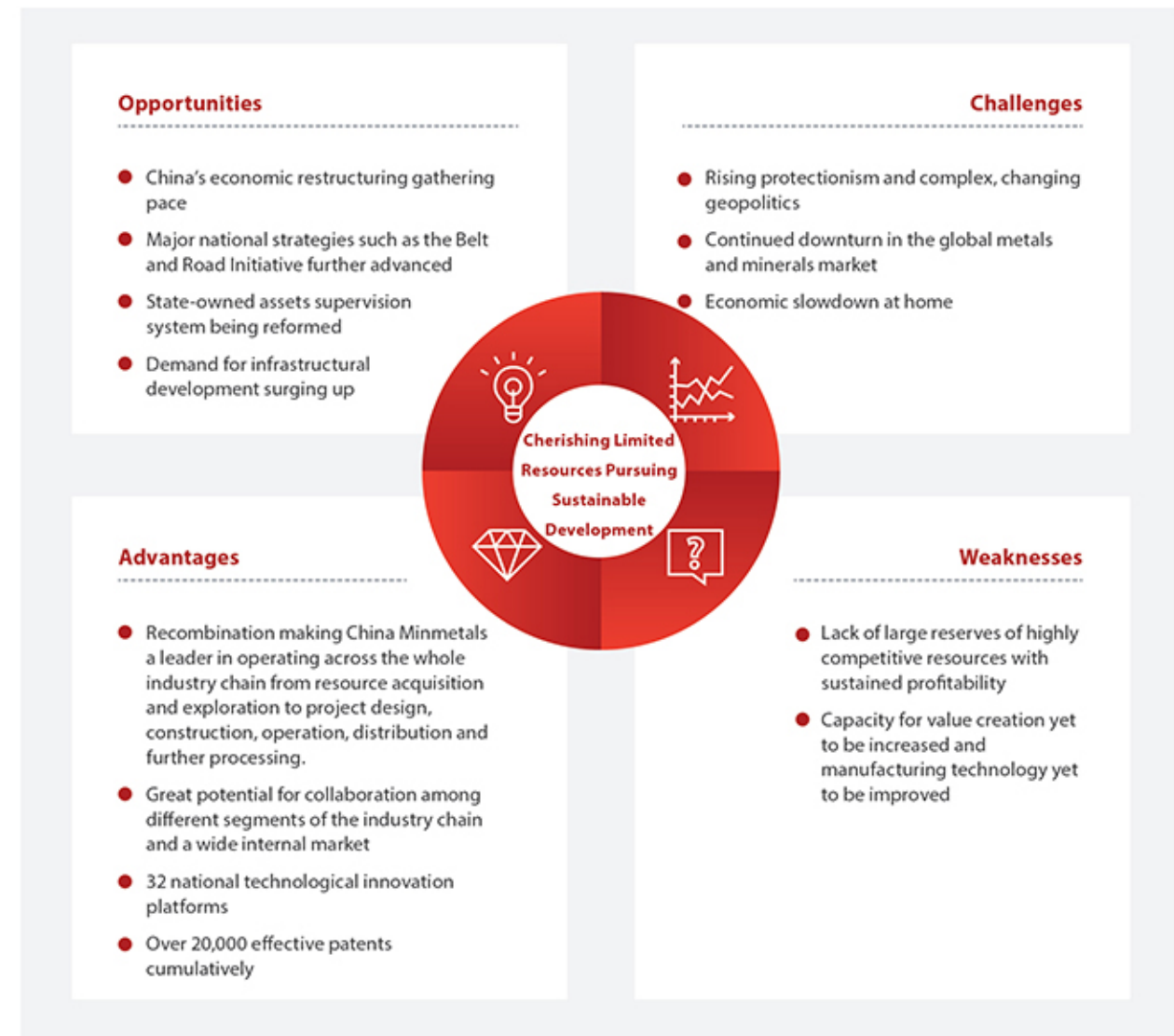
the Party Leadership Group had **38** meetings  
the Board of Directors had **17** meetings and heard or reviewed over **80** proposals

- We revised the *Articles of Association of China Minmetals Corporation*, making clear the role and approaches of the Party Leadership Group in decision making and enforcement, supervision and other operations of the Corporation as well as its relationship with other governance bodies.
- Formulated the *Measures of China Minmetals Corporation for Managing the Decision-making Power of the Party Leadership Group's Meeting, Board of Directors Meeting, and President-chaired Meeting (Trial)*, in which 145 important matters are listed, major decisions need to be made based on discussions at the Party Leadership Group's meeting, and discussion by the Party Leadership Group is required before the Board of Directors and the management make any decision on an important matter.
- Revised the *Rules of Procedure for Board of Directors of China Minmetals Corporation* and renewed the *Working Rules for President of China Minmetals Corporation* to ensure that the Corporation operates according to established procedures.



The sixteen session of the board of directors of China Minmetals on November 30

## Background to Sustainable Development



### Our Strategy

We take the initiative to adapt to the new normal of economic development and grasp the opportunity presented by China's pilot program on developing state-owned capital investment companies to grow into China's No.1 world-class metals and minerals conglomerate. Embracing the philosophy of cherishing limited resources and pursuing sustainable development and in the spirit of never falling behind schedule or getting slack, we strive to improve the industrial structure, and help maintain China's metal and mineral resource security and lead innovative transformation and upgrading of industries, as a participant in the endeavor to ensure resource security, to be the leader of industrial upgrading, and build the Belt and Road. In this way, we will keep state-owned assets' vitality, control, influence, international competitiveness and capacity to withstand risks and lead China's metals and minerals industry to a higher level.



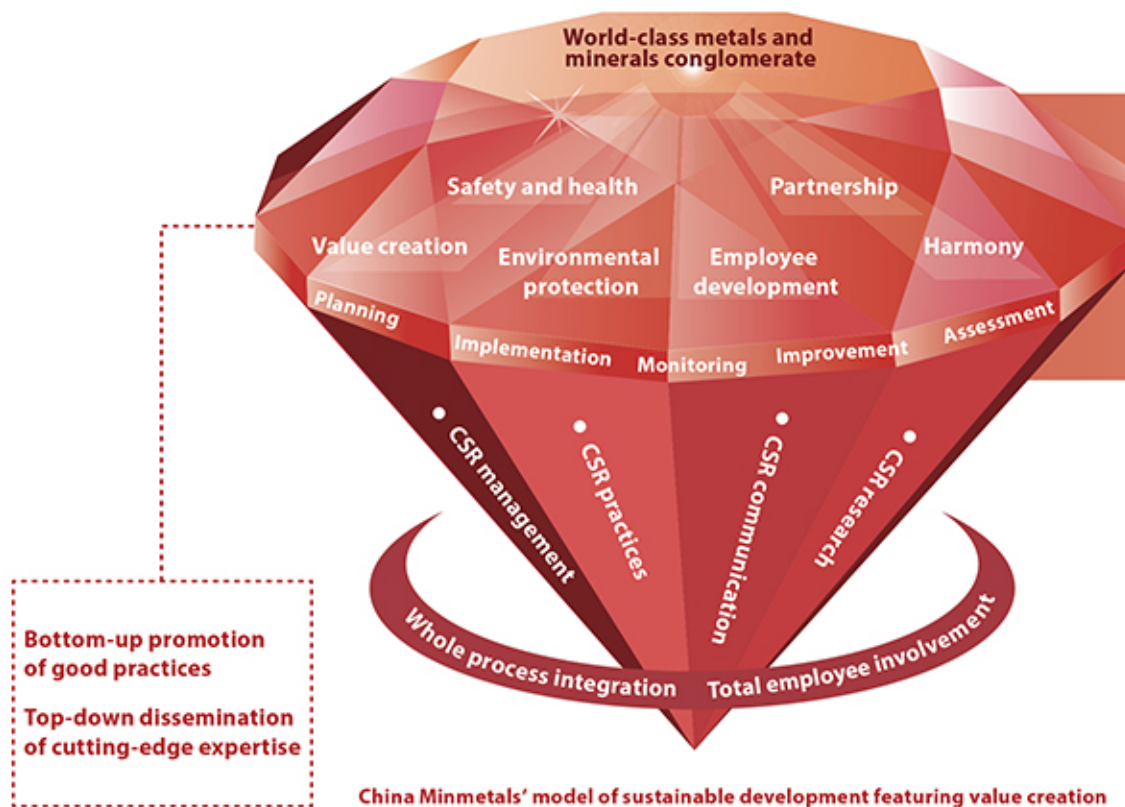
# Management of Sustainable Development

## Sustainable Development Philosophy

Cherishing limited resources and creating unlimited value together with stakeholders is China Minmetals' way of achieving sustainable development. We use natural, human and social resources sparingly and do our best to build a valuable, innovative, safe, green, happy and harmonious image for the Corporation, seeking to facilitate the full implementation of the 2030 Agenda for Sustainable Development (2030 Agenda) in the process of pursuing sustainable development.

## New Model of Sustainable Development

Guided by the philosophy of cherishing limited resources and pursuing sustainable development, we strive for the greatest possible integrated value for the economy, society and the environment, and seek to build a new model of sustainable development for the 13<sup>th</sup> Five-Year Plan period by gradually incorporating the 2030 Agenda into our CSR model featuring value creation, thus contributing to the effective implementation of the 2030 Agenda.



### About the Model

**Implication:** The diamond-shaped model epitomizes China Minmetals' relentless pursuit for sustainable development and firm commitment to creating the greatest possible integrated value of economy, society and environment.

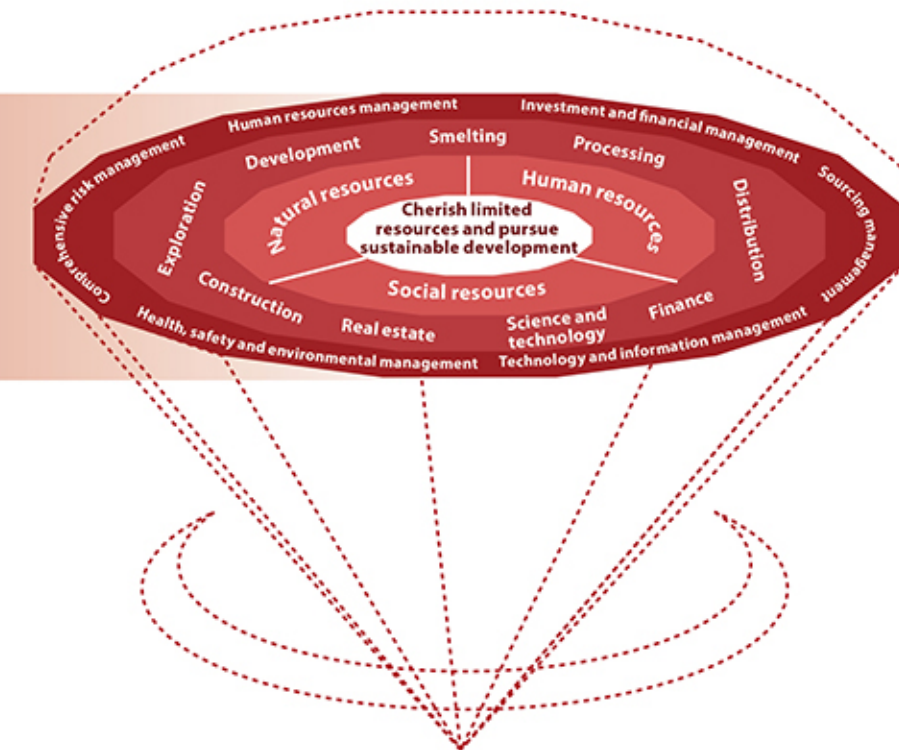
**Rationale:** "Maximum integrated value of economy, society and environment = Maximum positive impact on stakeholders - Minimum negative impact on stakeholders"

### Elements of the Model

- Core idea:** Cherish limited resources and pursue sustainable development
- Main sources of value:** Natural, human and social resources
- Means:** Whole process integration and total employee involvement
- Approaches:** CSR management, practices, communication and research
- Process:** Application to all areas of business and management

### The Value Creation Formula of CMC

$$\text{Max Comprehensive Value} = \sum_{\text{Max}} \text{Positive Effect} - \sum_{\text{Min}} \text{Negative Effect}$$



# Ten-year Pursuit for Sustainable Development



## Implementation of the 2030 Agenda

The Agenda 2030 outlines the background to companies' global operations, helps reduce operational risks for them, and brings them considerable business opportunities. Guided by the development philosophy of cherishing limited resources and pursuing sustainable development, we seek to incorporate requirements of the Agenda 2030 into the Corporation's strategy formulation, day-to-day operations, and employees' activities.

### Cherish limited Resources and Pursue Sustainable Development

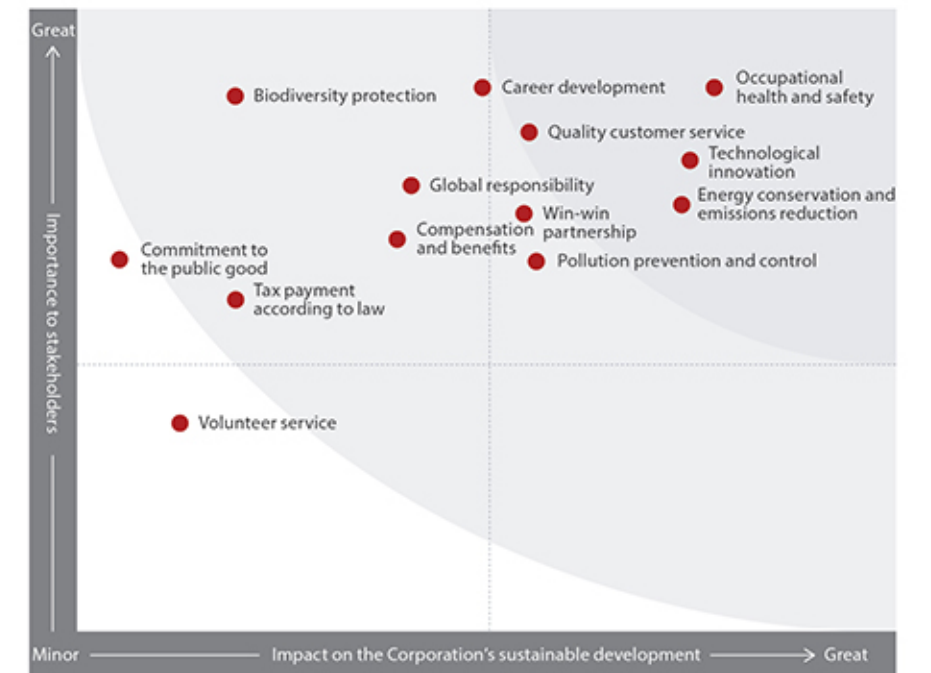
Created a technology innovation chain covering activities from R&D to engineering design, engineering transformation, and the application and promotion of innovative technologies	<b>9 INDUSTRY INNOVATION AND INFRASTRUCTURE</b>	Boast 32 national technological innovation platforms and key laboratories as well as over 20,000 effective patents, and be at the forefront of technological management and innovation among central enterprises
<b>13 CLIMATE ACTION</b>	<b>12 RESPONSIBLE CONSUMPTION AND PRODUCTION</b>	Promote precision, systematic and market-based energy conservation
Enhance technological innovation, reduce waste discharge, and increase efficiency in the use of minerals, land, water and other resources	<b>15 LIFE ON LAND</b>	Engage in land restoration and biodiversity protection, use land and natural resources in a sustainable way, and boost green mining
<b>5 GENDER EQUALITY</b>	Men and women are given equal pay for equal work. Female employees' career development is valued and 10.7% of the middle management at the headquarters are females.	
Promote the introduction and development of talents with managerial, specialized and industry skills Advance market-based reform of compensation mechanism, respect value contribution, and improve employees' health and benefits	<b>8 DECENT WORK AND ECONOMIC GROWTH</b>	
Develop metal and mineral resources across the globe, strengthen international cooperation and build global partnerships	<b>17 PARTNERSHIPS FOR THE GOALS</b>	Improve product quality, increase comprehensive service capacity, and provide systematic solutions for metals and minerals companies
<b>1 NO POVERTY</b>	<b>3 GOOD HEALTH AND WELL-BEING</b>	<b>10 REDUCED INEQUALITIES</b>
Work for the public good, promote targeted poverty reduction through project consolidation, drive local economic development and narrow development gaps between regions	Help advance local infrastructural development, improve local healthcare facilities, and promote local people's well-being	

In light of stakeholders' concerns, the Corporation's strategy and capacity for sustainable development, and related CSR standards, we rank material issues according to their importance to the Corporation's sustainable development and importance to stakeholders, and select the issues that should be disclosed in the report.

## Sustainability-related Issues

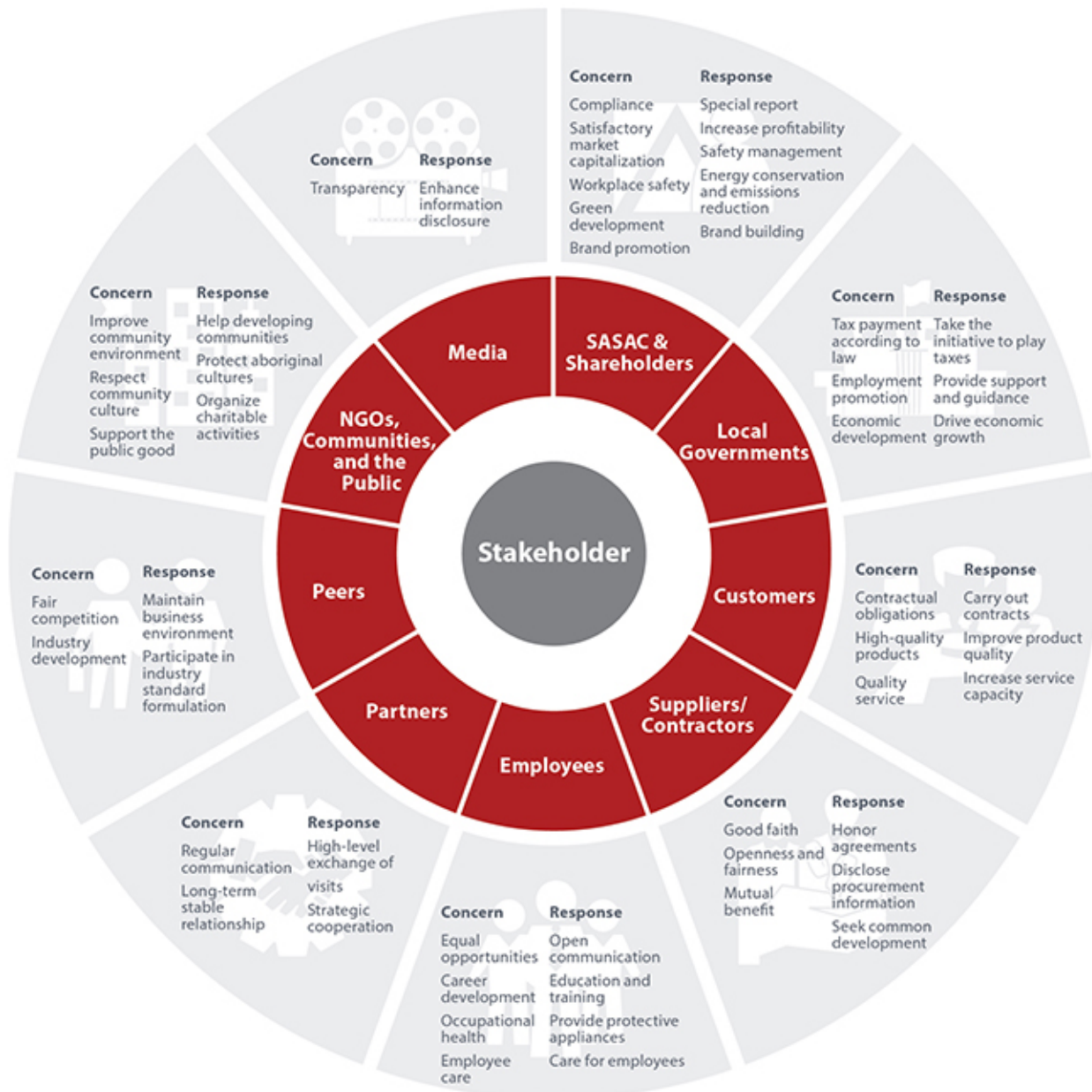
The sustainability report is an important tool that a company can use to improve communication with the public and increase transparency of operation. The process of report formulation and publishing is also a process of stakeholder engagement. We have put together a report formulation team led by the CSR Management Committee and composed of staff members mainly from the Corporate Culture Division along with those from other functional divisions. The team seeks advice from all stakeholders and help from other colleagues in preparing the report.

We learn about the CSR concerns of the leadership and management through management meetings, seek advice from stakeholders and CSR experts on CSR issues through CSR seminars, and communicate with stakeholders on CSR issues through the Corporation's official website, newspapers, journals, business reports, Apps and other media.



## Stakeholder Engagement

Leveraging the Corporation's competitive edge in operating across the whole industry chain and focusing on value creation, we seek to communicate and interact with stakeholders in creative ways, respond actively to stakeholders' concerns, and keep improving our CSR performance to share value with all stakeholders.



## China Minmetals' Membership of Organizations

Organization	Position
China Council for International Investment Promotion (CCIIP)	Deputy Chair
CCIIP China-Chile Business Council	Co-Chair
CCIIP China-Brazil Business Council	Co-Chair
China Federation of Industrial Economics	Presidium member
China Association of Work Safety	Deputy Chair
China Iron and Steel Association	Deputy Chair
China Nonferrous Metals Industry Association	Deputy Chair
Nonferrous Metals Society of China	Deputy Chair
China Chamber of Commerce of Metals, Minerals & Chemicals Importers & Exporters	Deputy Chair
Association of China Rare Earth Industry	Deputy Chair
China Chamber of International Commerce	Deputy Chair
China International Council for the Promotion of Multinational Corporations	Deputy Chair
World Economic Forum	Deputy Chair
Accounting Society for Foreign Economic Relations and Trade of China	Deputy Chair
China Association for International Economic Cooperation	Deputy Chair
China Institute of Internal Audit	Deputy Chair
Research Institute for Party Building, Ideological and Political Work of State-Owned Enterprises	Council member
China Charity Alliance	Member
Statistical Society for Foreign Economic Relations and Trade of China	Council member
National Association of Financial Market Institutional Investors	Member
China Occupational Safety and Health	Council member
China Environment News	Council member
China Chamber of Commerce for Import and Export of Machinery and Electronic Products	
China Council for the Promotion of International Trade	
UN Global Compact	



## CSR Focus

On June 2, 2016, the former China Minmetals Corporation and the Metallurgical Corporation of China (MCC) held a recombination meeting in Beijing. This was a major step toward the goal of asset recombination since SASAC made the announcement at the end of 2015. It also means that the two companies entered a new phase of development.



China Minmetals is an international conglomerate engaging in a full range of operations, including metal and mineral resources exploration, mining, smelting, processing and distribution as core business, as well as provision of mining technology and financial services. With a whopping market share of 60 percent worldwide, MCC is China's largest metallurgical engineering contractor and most active overseas contractor.

This strategic recombination is a part of China's effort to deepen reform of state-owned enterprises (SOEs) and optimize the allocation of state-owned assets. It is also a necessary move to make China Minmetals a world-leading company with international competitiveness.

"Strategic recombination can help the two companies achieve optimal allocation of resources at a higher level, combine complementary advantages, create stronger core competencies so they will have a more powerful voice in the industry, strengthen the core business in the metals and minerals industry, and focus more on the mission of meeting China's demand for metal and mineral resources."

—Xiao Yaqing, Minister and Deputy Party Secretary of SASAC

## Creating a Powerhouse in the Metals and Minerals Industry Through a Mega-merger



After the recombination, the new China Minmetals is China's largest metals and minerals conglomerate with a very strong global presence as well as the world's largest and most competitive player in metallurgical engineering and project operation.

During the 13<sup>th</sup> Five-Year Plan period, China Minmetals will strive to become a world-class metals and minerals conglomerate, as well as a participant in the endeavor to ensure the secure supply of strategic metal resources, to be the leader of industrial upgrading, and build the Belt and Road.

### Background

China's demand for many mineral products accounts for nearly half of the global total demand, but there is no Chinese company in the world's top ten mining companies. Important mineral resources, especially high-quality resources, are mostly controlled by foreign giant mining companies.

### Building Core Competencies Across the Whole Industry Chain

**Data related to the recombination:** Since the recombination, China Minmetals has seen a significant increase in its capital and control of resources.



Total assets: RMB

**759.8** billion

Operating income in 2016: RMB

**435.5** billion



Operations: in more than

**60** countries and regions



Number of technical personnel:

**60,000**



Number of effective patents:

**20,000**

Number of national technological innovation platforms and key laboratories:

**32**



## CSR Focus

# Creating a Powerhouse in the Metals and Minerals Industry Through a Mega-merger

### Recombination Process

- On December 8, 2015 SASAC posted an announcement on its website: "As approved by the State Council, the Metallurgical Corporation of China (MCC) will be merged into China Minmetals Corporation (China Minmetals) as its wholly owned subsidiary."
- On May 9, 2016 MCC Chairman, secretary of the Party committee Guo Wenqing was appointed China Minmetals' Director, President, and Party Group Deputy Secretary.
- On June 2, 2016 the recombination meeting was held.

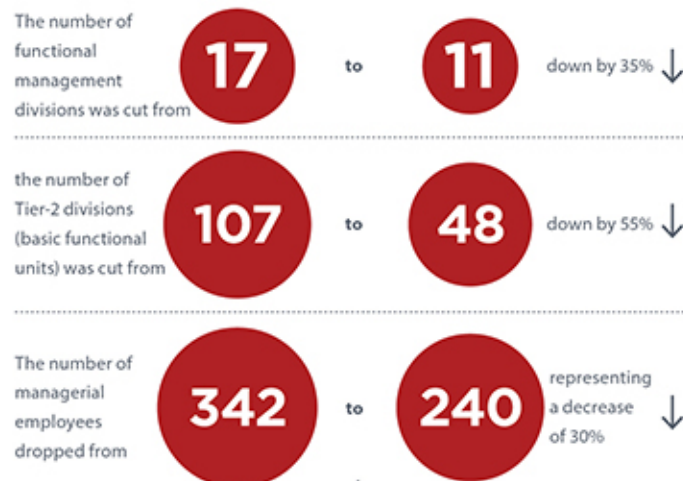
After the recombination, China Minmetals has taken the lead, in the global metals and minerals sector, in operating across the whole industry chain from resource acquisition and exploration to project design, construction, operation and resource distribution, with the capacity to provide metals and minerals companies with systematic solutions and services throughout the project lifecycle of design, construction and operation.

### Fully Enjoying the Benefits of the Recombination by Advancing in an Orderly Manner

The integration following the recombination has been carried out in accordance with a top strategy and design, as well as the principle of "collaboration and sharing before business integration" as well as "management integration before comprehensive integration". The integration was advanced using the "1 + N" model, where "1" refers to top level design, "N" includes headquarters reform, organizational structure streamlining, business integration and other steps.

### Improving Functions of the Headquarters in Time

In September 2016, in response to the requirements of China's pilot program on developing state-owned capital investment companies, and to meet the management needs of the two companies after the recombination, China Minmetals began to adjust the functions of the headquarters on a large scale.



After the adjustment, the headquarters composed of well-functioning core units effectively leveraged project-based organizational structure in driving the sharing of common business assets and guaranteeing highly efficient operation.

### Making All-out Efforts to Create RMB 100 Billion Internal Market

China Minmetals and MCC are mainly active in upstream and downstream activities with little overlapping business so this recombination is a complementary merger. To create a vast internal market will directly generate economic benefits and release recombination bonus. It is estimated that, from 2017 to 2020, the size of China Minmetals' internal market may exceed RMB 300 billion, representing an increase of more than RMB 10 billion.

To that end, China Minmetals has made active efforts to boost collaboration between different segments of the industry chain for creating greater value and building more competitive advantages. An internal collaboration program and a collaboration manual have been developed. We have been striving to create an internal market through transaction-based collaboration, enter new external markets through integrated collaboration, and push for the sharing of platform resources, and urge relevant subsidiaries to collaborate in resource development, project contracting, trade logistics, equipment manufacturing, integration of production and financing, real estate construction, regional complementarity and other fields.



internal market may exceed RMB **300** billion

representing an increase of more than RMB **10** billion

China Minmetals also promotes internal collaboration in the purchase and sale of steel, steel mill negotiations, logistics park development, agent bidding, financing, capital operation and other areas.

As of the end of December, 2016, Minmetals Development and MCC had carried out many cooperation projects, including production of 950,000 tons of steel and 1.63 million tons of cement, adequately reflecting the great potential of the internal market.	<b>950,000</b>	<b>1.63</b>
	tons of steel	million tons of cement
From September 19 to the end of December, 2016, the value of the nine cooperation projects between Minmetals Capital and MCC reached RMB 1.43 billion, including two trusts, one leasing project, one securities project and five banking projects.	<b>9</b>	<b>1.43</b>
	Cooperation Projects	the value reached RMB billion
There is an adequate number of reserve projects. The investment in PPP projects totaled about RMB 9.132 billion. Financing and capital operation projects are expected to raise RMB 7.1 billion.	<b>9.132</b>	<b>7.1</b>
	billion	billion

# Be Valuable

In 2016, faced with the downturn in the global metals and minerals market and challenges brought by China's economic restructuring, China Minmetals kept the ultimate goal of operation in mind and strived to strictly control business risks, reduce costs, improve efficiency and expand market share. Smooth progress was made Las Bambas and other major projects. The scale and quality of business saw steady growth and improvement throughout the year.

operating income reached RMB

**435.5** billion

total profit stood at RMB

**4.04** billion



## Business Performance

2016



operating income reached RMB **435.5** billion

total profit stood at RMB **4.04** billion

showing a year-on-year increase of RMB **14** billion



Our asset-liability ratio fell by **0.05** percent

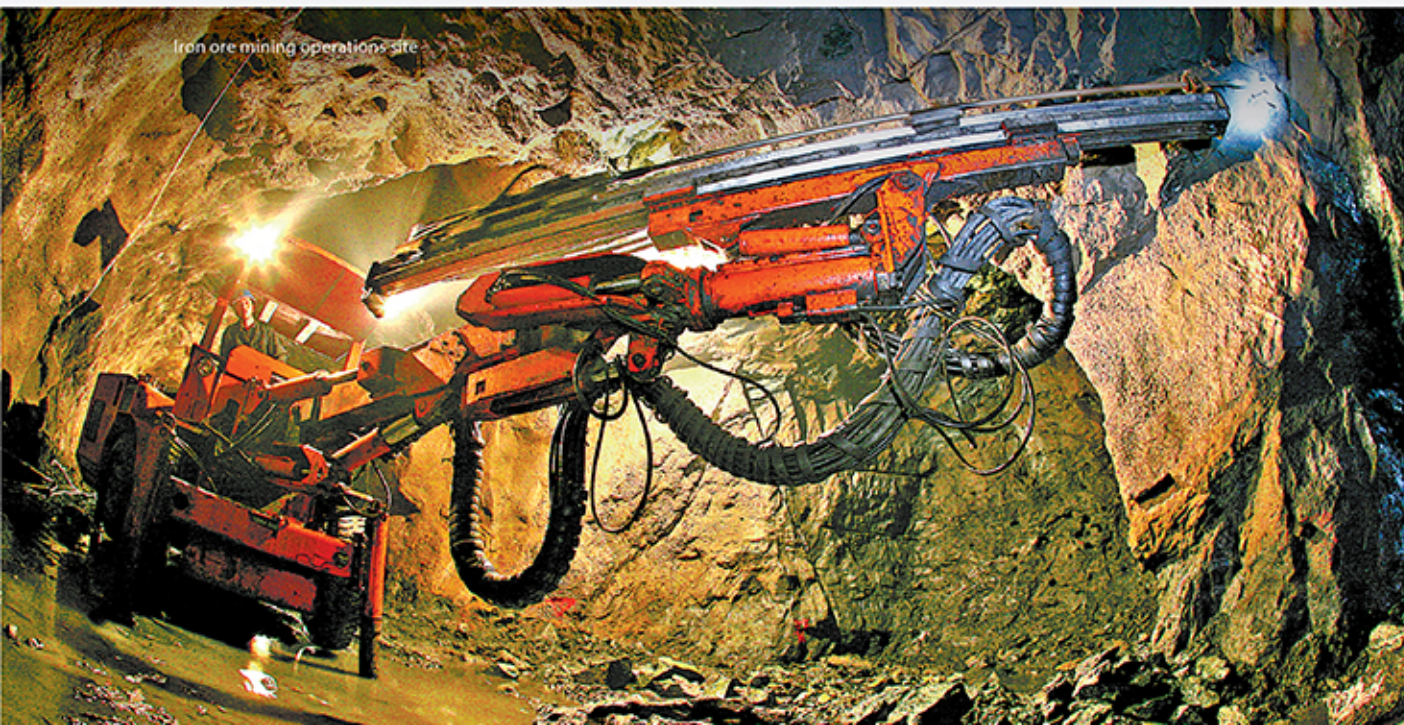
cost-to-income ratio dropped by **0.95** percent



The full cost of main products such as iron concentrate, by **14** %.

The full cost of main products such as tungsten concentrate, by **4** %.

The full cost of main products such as copper, by **9.6** %.



## Market Expansion

To achieve marketing success, we always fish where the fish are and have seized opportunities offered by national strategies such as the Belt and Road Initiative, Yangtze River Economic Belt and Beijing-Tianjin-Hebei Integration to expand our market share in the international resource market, increase investment in high-end housing construction, urban transportation facilities, comprehensive pipe galleries and other fields, and promote our business in the trade and circulation sector.



**Case: MCC's strength in comprehensive pipe galleries construction fully proved by a deluge of successful bids**

MCC has developed an innovative development model in comprehensive pipe galleries market and successfully built a well-known brand in this industry by signing a number of strategic cooperation agreements involving comprehensive pipe galleries projects with local governments. During the reporting period, MCC won 39 PPP and general contractor projects for the construction of comprehensive pipe galleries (508.4 kilometers in total) in Xi'an, Lanzhou and other cities, involving an investment of RMB 50.132 billion; it also signed contracts for the provision of consulting and design services to comprehensive pipe galleries projects (314.88 km in total), and the contracted under-planning projects involve a total land area of 995.23 square kilometers, reflecting its leading position in the domestic comprehensive pipe galleries market.



Engineers inspecting a comprehensive pipe gallery in Hengqin.



**Case: Business expansion in steel trade**

In 2016, China Minmetals Development joined hands with Alibaba to set up an e-commerce joint venture, Minmetals-Ali Steel Platform. In the reporting period, 16.34 million tons of steel was sold on the platform for RMB 39.944 billion; 32,596 users were registered on the platform and 1,736 steel suppliers became the partners of the platform. Minmetals-Ali Logistics was the first division of the platform to break even. In the reporting period, it received transport orders of 25,700 tons of steel, and joined hands with 103 carrier partners, providing quality logistics services for 50 members.



**16.34** million tons of steel was sold on Minmetals-Ali Steel Platform for RMB **39.944** billion



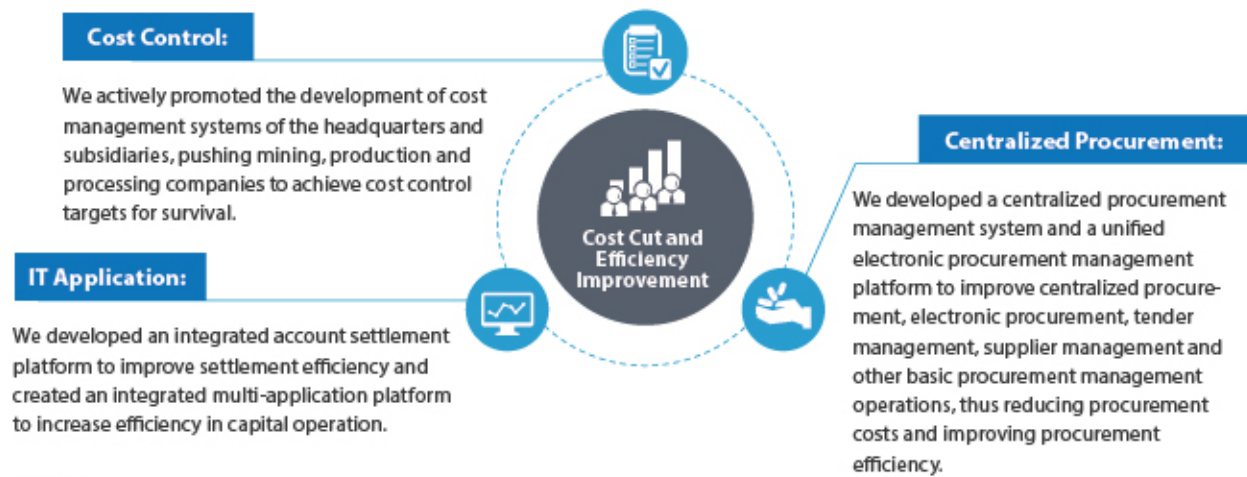
**Case: Global trade**

Global trade is a key growth point of Minmetals International during the 13<sup>th</sup> Five-year Plan Period. It has developed a global business network, integrated its domestic and international operations and created a global trade model with foreign suppliers and foreign customers. In 2016, it procured electrolytic copper from Poland, Laos and Myanmar and entered the copper concentrate and electrolytic copper markets of countries such as Uzbekistan and Iran. It also increased the market share for aluminum oxide in Indonesia, Malaysia, the Middle East and other emerging markets, and its trade in aluminum oxide with third countries reached 236,000 tons.



## Cost Cut and Efficiency Improvement

In 2016, the main business of the Corporation was significantly affected by the downturn in the metals and minerals industry. To tap the potential of the internal market, we strived to reduce internal management and procurement costs, improve efficiency in the use of resources, equipment, funds and labor, cut production costs significantly, and enhance production efficiency.



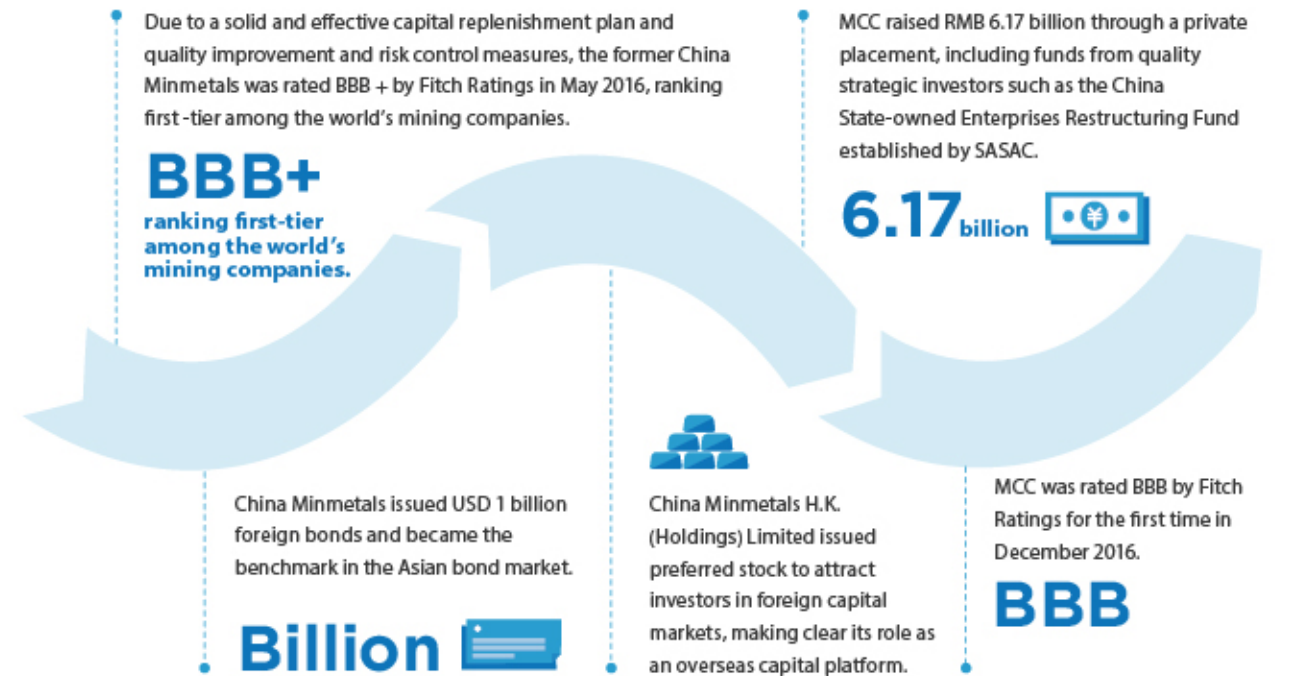
**Case: Anhui Development and Mining Co., Ltd. reduced cost and increased efficiency**

Anhui Development and Mining Co., Ltd. strictly controls cost at every step of the production and operation process. It cuts costs by means of streamlining its organizational structure, making redundancies, improving management processes and raising efficiency. It combines theoretical research with cost control and efficiency improvement practice, steps up technological innovation and upgrading, reduces depletion allowance and increase mineral output, strictly controls energy and material consumption, actively promotes the use of domestic parts and low-price replacements of high-priced parts and recycling of materials, directly transacts with electricity producers to reduce the unit price of electricity, avoids the extra costs that make up peak demand charges, and improves lighting systems in underground mines to reduce electricity use. In 2016, the company's cost of iron ore production per ton was RMB 38.64 lower than expected and was down by RMB 103.03 year on year. Its net cash flow generated from business operations reached RMB 208 million.



## Capital Operation

As a participant of China's pilot program on developing state-owned capital investment companies in the metals and minerals industry, we make continued efforts to expand equity financing channels, complete key equity financing projects, improve the operational efficiency of state-owned assets, and build up sustainable competitiveness, accumulating experience for advancing the program, and creating more value for our shareholders.



**Case: Minmetals Finance went public after achieving asset recombination**

The listing of Minmetals Finance based on asset restructuring in the A-share market is the first ever case of financial holding company owned by the central government of China going public and attracts wide attention from investors. The project team worked hard to overcome technical difficulties in accordance with the requirements of the central government to ensure the project passed the compliance audit conducted by the CSRC and was well recognized for its efficiency. The listing of Minmetals Finance based on asset restructuring has reduced the debt ratio of China Minmetals, significantly improved the capital structure, and removed the funding bottleneck that has been restraining the development of our business in the financial sector.

A corner view of Anhui Development and Mining Co., Ltd.



## Resource Capacity

With a focus on metals and minerals, we have been improving our resource control and development capacity and the quality of our resources, and consolidating and increasing effective high-end supply to meet the needs of the country for strategic metal and mineral resources and ensure resource security.

## Resource Development Projects Across the World

We have strong strengths in exploration and operation of international resources. Our mineral development projects spread across the world, especially in Asia, Oceania, South America, North America and Africa. We explore and develop copper, aluminum, lead, zinc, tungsten, antimony, rare earth and other minerals. As of the end of 2016, China Minmetals had 33,706,700 tons of copper, 3,103,000 tons of lead, 15,262,900 tons of zinc, 4,339.007 million tons of iron ores and 11,974,400 tons of manganese.



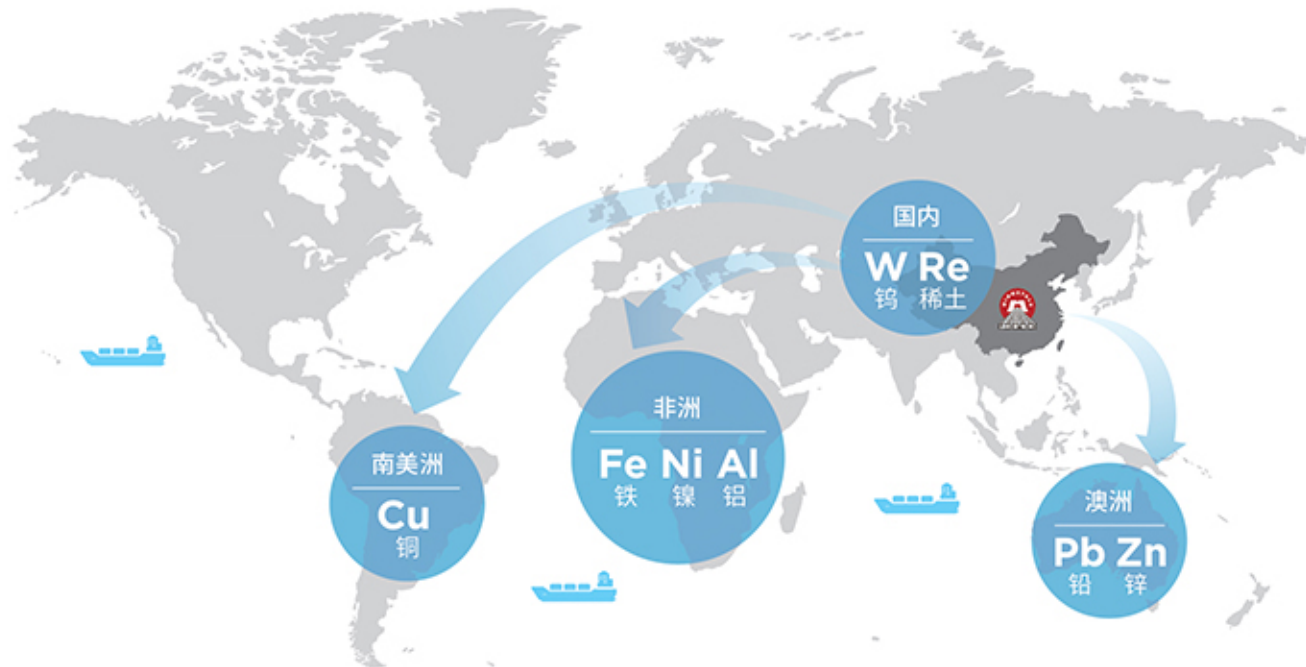
**33,706,700** tons of copper

**3,103,000** tons of lead

**15,262,900** tons of zinc

**4,339.007** million tons of iron ores

**11,974,400** tons of manganese.



### Case: Las Bambas copper mine officially came into commercial operation

Las Bambas copper mine, located in the south-central part of Peru, has ore reserves of copper 12.79 million tons, (including 7.71 million proved), molybdenum and other metals and minerals and is expected to operate for more than 20 years.

Since it entered into trial operation in January 2016, China Minmetals has made all-out efforts to increase production and improve operation of the mine. We achieved the pre-established production goal within six months after the mine came into operation. In 2016, Las Bambas copper mine produced 330,227 tons of copper concentrates. The annual output of the mine during the first five years is expected to peak at 450,000 tons of copper, helping China Minmetals become China's largest copper mining company and one of the world's top ten copper mining companies. Las Bambas Copper Mine Project makes the Corporation a world leader on three fronts: single mine capacity, mine development standards and management level, and productivity improvement during trial operation.



## Quality of Resources Improving Continuously

We keep improving the quality of resources by building a full-lifecycle mining management system based on big data, optimizing our mining database and mining right management system, ensuring compliance in mining rights, and increasing the value of mining assets.



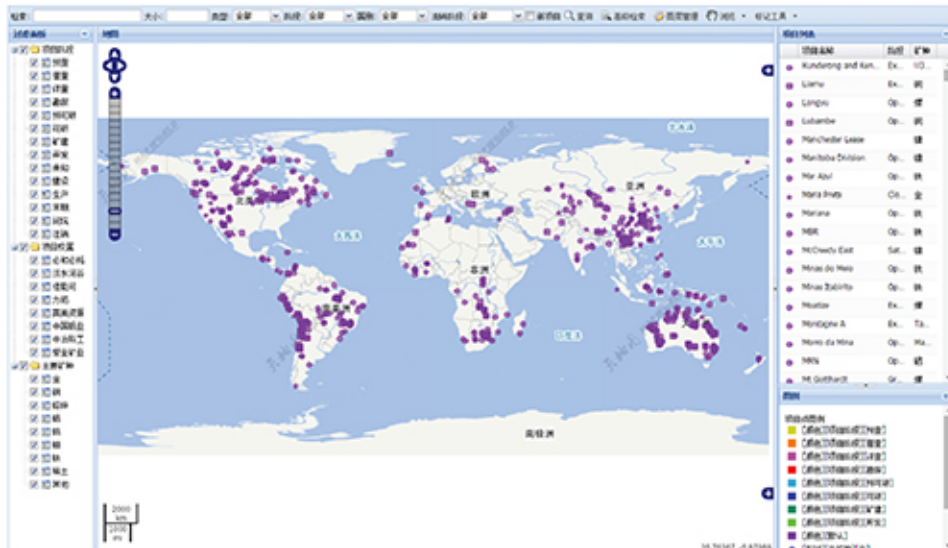
We have improved our mining right management system and achieved dynamic process management of existing mining rights towards sustained compliance.



We have completed the preliminary plan for the development of the mining right management system and six specific management policies.



We have developed interfaces for connecting mining database with software and hardware environment and various data sources, and improved data content and database architecture, paving the way for the establishment of a full-lifecycle mining management system.



## Integrity

We operate with integrity, abide by international conventions and the laws and regulations of the countries we operate in, and communicate openly and transparently to stakeholders our ideas, approaches and achievements in governance, operation and other aspects to win their trust and respect.

## Compliance

As a central SOE, we attach great importance to legal and regulatory compliance in our decision-making, governance and operation management processes. In 2016, we audited all of our contracts, systems and investment projects to ensure full legal and regulatory compliance.



## Risk Control

In 2016, we continued to improve our risk control system (including pre-crisis, crisis response and post-crisis management) to better control market risks, credit risks, warehousing and logistics risks, financial risks, and derivative business risks, established horizontal and vertical risk prevention coordination mechanism, and actively followed up risk issues to protect the interests of stakeholders and ensure the sustainable and healthy development of the Corporation.

- We improved our risk assessment system, rooted out risks and provided latest information to support informed decision-making based on comprehensive and in-depth understanding of changes in risk issues.
- We set and monitored risk limits, aligned risk management with business objectives and strengthened risk control.
- We set a major business risk response mechanism in motion, developed a clear response program, stepped up risk response and made significant progress in risk mitigation.

## Audit and Supervision

In 2016, we gave full play to the role of internal audit in advancing the initiatives of the Corporation in relation to the rule of law, legal and regulatory compliance, quality control, efficiency improvement, corporate transformation and other aspects, focused on development strategies and management priorities, adopted a problem-risk oriented approach. In the reporting period, we audited 853 companies, carried out 1,999 audit projects, put forward 5,109 pieces of advice, and achieved an increase of RMB 145.6 million in revenue (including a decrease in costs), laying a solid foundation for the sustainable and healthy development of the Corporation.

In 2016, we focused on boosting the overall synergy arising from internal audit, continued to advance the establishment of the audit system, issued and implemented the *Guidelines on Further Strengthening and Improving Internal Audit*, with a view to putting in place a well-arranged work of internal audit.

In the reporting period,  
we audited

**853** companies,

carried out

**1,999** audit projects,

put forward

**5,109** pieces of advice,

and achieved an increase of RMB

**145.6** million in revenue



## Anti-corruption Initiative

Building a clean Party committee and fighting corruption are essential to Corporation's development. We have been improving our supervision and accountability system and established a permanent anti-corruption mechanism in accordance with the requirements of the Central Commission for Discipline Inspection and SASAC for running the Party and enterprises with strict discipline.

At the beginning of the year, the Party Group Secretary of the Corporation signed a letter of commitment to cleaning up Party committees with the head of each Party leadership group of subsidiaries, and the Party Leadership Group of the Corporation released a list of responsibilities related to the cleaning up of Party committees as well as a list of anti-corruption goals for 2016, broke down the goals into 83 specific tasks and assigned them to relevant divisions of the headquarters.

We expanded the scope of our supervision mechanism, combined the supervision of leaders with production and management compliance supervision, and identified and weeded out problems in a timely manner.



We kept integrity files of leaders, and talked with leaders holding key positions, standardized the evaluation of leaders' integrity, rid the Party of formalism, bureaucracy, hedonism and extravagance, and inspected 43 key subsidiaries, and informed relevant subsidiaries of rectification requirements.

We adopted a strict anti-corruption policy, focused on key areas and key issues, investigated and verified complaints received from the public in a timely manner, and punished related personnel for violations of disciplinary rules.

# 02

Innovation drives development and technology leads to the future. China Minmetals unwaveringly promotes technological innovation, gives full play to the role of technological innovation in driving innovation in other areas, creates a corporate culture that values and encourages innovation, and promotes technological innovation and the commercial application of technologies across the whole industry chain. In particular, after the strategic recombination, the Corporation created a technology innovation chain covering activities from research and development to engineering design, engineering transformation, and the application and promotion of innovative technologies, thus increasing our technological strength significantly. We are ranked among the top central SOEs by platform development, research achievements, number of patents, research teams and other indicators. As a central SOE, we are at the forefront of technological innovation.



We have  
**32** national  
technological  
innovation platforms

# Be Innovative





Ramu's 3.21 million t/a Ni-Co smelting plant in Papua New Guinea

## Innovation System

A sound and efficient technological innovation management system plays a key role in promoting innovation. We focus on improving the overarching design of technological innovation, improve our innovation system, institutions and mechanism, and strive to build a technological innovation system and mechanism that reflect the characteristics of the Corporation, and create an atmosphere that encourages innovation.

In 2016, MCC was honored as an **Outstanding Enterprise** in Technological Innovation by SASAC and was ranked among top central SOEs in metallurgy and construction by technological innovation, showing an increase of **15** places in ranking.



### Planning

We developed the *Plan of China Minmetals for Technological Development in the 13<sup>th</sup> Five-Year Plan Period*, which outlined ten key areas of technological development, including exploration and utilization of marine mineral resources, following the principle of focusing on industry chain, developing innovation and integrating resources.



### Improving the Innovation Mechanism

We adopted and implemented the *Technological Innovation Management Standards*, improving our system of standards and aligning our advanced technologies with international standards; strengthened the leadership and established an advisory body to increase our capacity for technological management; and developed a mechanism to promote cooperation between business centers and research institutes on technological innovation.



### Monitoring Processes

We performed internal audits of technological development programs through the technology management information platform, and invited renowned technical and financial experts in the industry to perform mid-term inspection or final inspection of projects.



### Using Incentives to Encourage Innovation

We identified key technological projects for 2016 based on the development goals of the Corporation and provided financial support for these projects; refined the payment procedure of grants intended for technological projects; arranged the evaluation of nominees for technological awards and set up a new award – Technological Invention Award; rewarded relevant project teams for marine mineral resource development, the winning of the second prize of the National Technological Invention Award and other achievements.



Guo Wenqing, China Minmetals' President and Party Group Deputy Secretary, delivering a speech at the conference



## Innovation Platform

Research and development is a core competency of China Minmetals. Our technological innovation platforms are the key elements of our research and development system, offering functions such as technological development, talent development and commercial application of research results. They are also stepping stones of the Corporation to enter international markets.

We have **32** national technological innovation platforms which play a key role in building core competitiveness, raising the Corporation's status in the industry, and advancing technological progress in China.



## Innovation Capacity

Employees are the Corporation's most valuable assets and main players in technological innovation. We attach great importance to employee development and have built strong technological innovation teams to steadily increase our technological innovation capacity.

As of the end of 2016, the Corporation had more than **60,000** technology professionals



### Case: Jiang Aisheng, an employee of ZCCCT, won the Invention Award in the Inventor category

Jiang Aisheng, an employee of the research and development center of Zhuzhou Cemented Carbide Cutting Tools Co., Ltd. (ZCCCT), a subsidiary of China Tungsten and High-tech Materials Co., Ltd., won the 2016 Invention Award in the Inventor category. He was the first employee of Zhuzhou Cemented Carbide Group Co., Ltd. to win this award. By December 2016, in just over seven years, Jiang Aisheng applied for 97 patents, including four international patent applications under the PCT. He was granted 50 patents, including one granted by the European Patent Office. Because of the patents granted to Jiang Aisheng, foreign companies no longer hold a monopoly position in high-speed milling, finishing tools, one-piece cutting tools with replaceable bits and other fields. These patents have played a key role in the development of precision cutting tools in China.

Jiang Aisheng applied for

**97** patents  
He was granted  
**50** patents



Jiang Aisheng (first on the right) receiving the award



Jiang Aisheng studying



### Case: Zhou Yu of NETC was recognized as expert entitled to the special allowance of the State Council

Zhou Yu, Deputy Chief Engineer of Northern Engineering & Technology Corporation (NETC) of MCC and President of the Mine Design Center, was recognized by the Ministry of Human Resources and Social Security as expert entitled to the special allowance of the State Council. He was the 41<sup>st</sup> person at NETC to receive this such honor.

Zhou Yu was recognized by the Ministry of Human Resources and Social Security as **expert entitled to the special allowance of the State Council**

Zhou Yu has independently completed or chaired the feasibility study, primary design and construction schematic design of nearly 30 large-scale mining projects, many of which have broken national records and established international reputation. He has also participated in many research and development projects of the Corporation, including the development of technologies for pillar-less large-opening mines and made remarkable contributions to raising our technological level and increasing our technological resources.



## Technological Innovation

Our innovation efforts are market-oriented and we have strived to translate our research results into productivity in a timely manner, aiming to drive industry-wide technological innovation and the industry's development. We provide metals and minerals companies with systematic solutions, and services throughout the project lifecycle of design, construction and operation, seeking to raise the technological level of China's metals and minerals industry as a whole.



### Acquisition of Resources

- China's Ocean No. 6 research vessel successfully performed cobalt-rich crust mining test in the South China Sea, using the mining drill for deep-sea cobalt-rich crusts developed by Changsha Institute for Mining Research.
- The lifting pump piping system for deep-sea mining, an outcome of the "key technology and equipment for the mining and delivery of deep-sea polymetallic nodules and cobalt-rich crusts" project undertaken by Changsha Research Institute of Mining and Metallurgy under the National High-tech R&D Program (863 Program), completed its sea trial in the South China Sea and passed the inspection conducted by the expert panel of the 863 Program. This is China's first sea trial of monomer engineering technology for deep-sea mining, showing that China is leading the world in deep-sea mineral conveyor technology.

### Efficient Use of Resources

- China Minmetals made a major breakthrough in the "Extraction of sphalerite from Tailings at Century Mine" project. The "flotation of tailings - grinding of coarse concentrate - flotation" process suggested by Changsha Research Institute of Mining and Metallurgy successfully solved the world-class technological problem in the extraction of fine, low-grade, carbon-rich sphalerite particles. Thanks to this process, the Century Mine's concentrate rate reached 48% and flotation recovery rate reached 50% and it is expected that one million tons of zinc worth more than RMB 10 billion will be recovered, greatly increasing the economic value of the already closed Century Mine.

### Construction

- Shanghai Baoye Group used BIM techniques in the Shanghai Disneyland Project, greatly improving the quality and construction efficiency of the project, reducing the construction costs and meeting the high requirements of the project owner in relation to quality. "Application of BIM Techniques in the Construction of A Steel Factory in Hà Tĩnh, Vietnam", "Application of BIM Techniques in the Steel Structure Project of Guangzhou Baiyun Airport" and "Application of BIM Techniques in the US-based JUMBO Project" won the first prize, second prize and third prize of the first "Star of Installation" National BIM Application Competition, respectively.



Rendering of the Shanghai World Expo Theme Pavilion



Rendering of Universal Studios Singapore



In 2016, China Minmetals won **5** second prizes of the National Scientific and Technological Progress Award, which stands as eloquent testimony to China Minmetals' R&D strength. It will also inspire China Minmetals to go further in helping advance the development of the industry and the country.



### 1. China ENFI's "bottom blowing - smelting reduction - oxygen enrichment and volatilization" continuous lead smelting process and its industrial application" project

China ENFI Engineering Corporation (China ENFI) invented the "bottom blowing - smelting reduction - oxygen enrichment and volatilization" continuous lead smelting process which seamlessly integrates and achieves automatic control of bottom blowing, smelting reduction, oxygen enrichment and volatilization. It invented new lead-containing material smelting reduction technology, which has increased eco-friendliness and efficiency, reduced costs of lead reduction and replaced the smelting process using blast furnace; the continuous evaporation process of zinc rich slag from lead smelting in oxygen-rich atmosphere and supporting equipment, which reduces energy consumption by at least 20%, raises lead and zinc recovery rates and reduces lead smelting costs; and the world's most advanced crude lead smelting equipment with an annual production capacity of 200,000 tons, reducing consumption of refractory materials by 40%, increasing productivity, industrial concentration, and environmental, social and economic benefits.



### 2. China ENFI's "development and application of key technology of high-grade nickel and iron production at laterite nickel mines and required equipment" project

China ENFI developed China's first key technology for high-grade nickel and iron production at laterite nickel mines; the process of enhanced roasting of laterite nickel ore in a rotary kiln and required equipment, with a capacity of more than 100 tons per hour and reducing cost by more than 40% as compared to imported equipment; the nickel-iron alloy refining process using both injection and chemical heating techniques and required equipment which can produce refined nickel and iron that meet international standards; an integrated mechatronic high-temperature roasting and conveying system with low heat loss, reducing power consumption by more than 20%; a new tubular belt conveyor system for high viscosity lateritic nickel ore, increasing transportation efficiency and reducing transportation costs.





**3. CISDI Group's "key technology for constructing high-efficiency large blast furnaces and its application" project**

The outcome of the project has been directly applied to 21 large blast furnaces across the world, which have achieved the world's leading energy consumption indicators. CISDI's high-efficiency and low-consumption design is based on the bosh gas index theory. It published works on the project and developed national standards to promote energy conservation and emission reduction in the industry. Foreign companies no longer maintain a monopoly status in the market due to the bell-less top charging technology developed by CISDI. Its blast furnace intelligent production management system that promotes the integration of design and production is a world-leading blast furnace system.

**4. Minmetals Exploration & Development's "technological breakthrough in crust prospecting in the east section of the Dabie Mountains"**

Minmetals Exploration & Development has made a technological breakthrough in crust prospecting and revealed the multi-level ore-controlling structure on the crust; proposed the regional mineralization theory to enrich the inland mineralization theory; developed an effective prospecting model using deep exploration technology; achieved a breakthrough in deep prospecting, paving the way for deeper exploration.



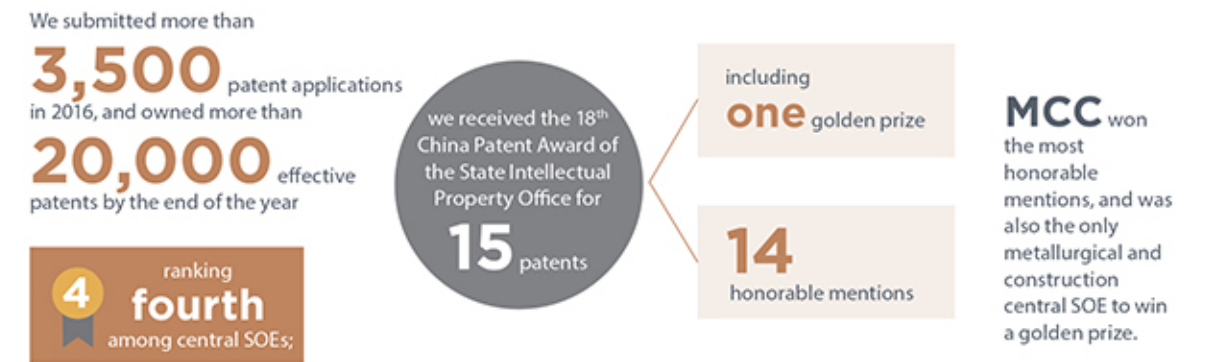
**5. Changsha Research Institute of Mining and Metallurgy's "key technology for comprehensive use of nonferrous metals-pyrite ores and its application" project**

Changsha Research Institute of Mining and Metallurgy is the first to propose a new concept and technique of extracting sulfur from pyrite. It developed a new technique to control surface properties of polycrystalline pyrite and to recover sulfur synchronously; a new technique to control surface hydrophobicity and advanced ore dressing process to extract high-grade sulfur concentrate; an advanced new desulfurization technique through high-temperature roasting of high-grade sulfide concentrate in excess of oxygen to significantly reduce the sulfur content of cinder, so that all the cinder become qualified iron concentrate.



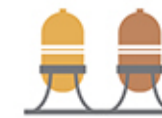
**Protection of Intellectual Property Rights**

Intellectual property is a core competency in modern society. We have advanced our intellectual property strategy, stepped up the protection and use of intellectual property rights, strived to become a national intellectual property demonstration enterprise and national leader in the ownership of intellectual property, and helped drive technological advance and economic development.



We conducted surveys before developing an intellectual property program, and built a platform to promote communication and cooperation in technological management.

We urged our subsidiaries to apply for the honorary titles of "national intellectual property demonstration enterprise" and "national leader in the ownership of intellectual property." MCC Capital Engineering & Research Incorporation Limited and China First Metallurgical Group Co., Ltd. were named "national intellectual property demonstration enterprises".



**A golden prize of the 18<sup>th</sup> China Patent Award** was granted for an air supply device for coke dry quenching (CDQ) furnaces.

The patented technology has been successfully applied to **94** CDQ furnaces in **77** Chinese and foreign projects



**Case: ACRE won golden prize of the 18<sup>th</sup> National Patent Award**

On December 26, 2016, at the 18<sup>th</sup> China Patent Award Presentation Ceremony jointly sponsored by the State Intellectual Property Office of China and the World Intellectual Property Organization, ACRE Coking & Refractory Engineering Consulting Corporation was granted a golden prize for an air supply device for coke dry quenching (CDQ) furnaces. By the end of 2015, thanks to the application of this award-winning patent, the decrease in ACRE's energy consumption was equivalent to the annual electricity consumption of a city with a population of 5 million and the decrease in water consumption was equivalent to five times the amount of water of the West Lake. The patented technology has been successfully applied to 94 CDQ furnaces in 77 Chinese and foreign projects. These CDQ systems recycle steam to produce electricity and do not emit carbon dioxide, sulfur dioxide, nitrogen oxides and other pollutants. Compared with coal-fired power generation, this technology reduces 12.55 million tons of CO<sub>2</sub> emissions, 129,551 tons of SO<sub>2</sub> emissions, 24,560 tons of NO<sub>x</sub> emissions, and 5,781.5 tons of dust emissions, saves 61.28 million tons of water and 2.1 million tons of coke and increases 2.66 million tons of pig iron output each year when producing the same amount of electricity.

# Be Safe

## 03

Safe production is the lifeline of a company and the basis for successful internationalization. China Minmetals strive to become a global leader in the metals and minerals industry. Safe production is one of the keys to achieving this goal. Therefore, safety is set far above all other priorities. According to the safe production requirements of the central government, we adopt a problem-oriented approach, strengthen risk control and accountability, conduct thorough investigation and remove safety hazards from workplace to keep all of our employees around the world safe.

we invested RMB  
**1,890.93** million and no  
major or severe workplace accidents were reported

The safety of  
**13** projects were rated AAA



## Safety Management

We attach great importance to the development of our safety accountability system, emphasize the non-delegable and independent duties of participants, and strive to build a modern management platform to support the safe operation of the Corporation. In 2016, we invested RMB 1,890.93 million and no major or severe workplace accidents were reported. The safety of 13 projects were rated AAA.



we invested RMB  
**1,890.93**  
million and no  
major or severe workplace  
accidents were reported

### Improving Our Safe Production Management System

We place safety above all other priorities, adopt a preventive and comprehensive management approach measures to eliminate safety hazards, constantly improve our safety management system, raise the level of safety management, improve performance in respect of safe production, and strive to become an intrinsically safe company.

We place safety above all other priorities, adopt a preventive and comprehensive management approach



#### Decomposition of Responsibility

We signed a safety production commitment letter with each Level-2 unit at the beginning of the year to break down safe production goals and responsibilities and assessed the performance of each Level-2 unit at the end of the year.



#### Development of Work Plans

In the reporting period, we held an annual and a mid-term safe production conference and our Safe Production Committee met regularly to develop plans to ensure workplace safety.



#### Improving the Safe Production Management System

In the reporting period, we improved our safe production rules and regulations, implemented a stricter safety accident reporting policy, released the safety accident reporting, investigation and handling policy, the list of safe production responsibilities of management positions at all levels and the list of safe production responsibilities of technical positions at all levels.



#### Strengthening Accountability

In the reporting period, we strengthened accountability for dereliction of duty, reported each accident, urged each unit to learn the lessons from accidents and relevant officials were held accountable for deaths on the job and accidents of greater severity.



#### Case: Urging all subsidiaries to learn safe production practices from MMG

In the reporting period, China Minmetals developed a plan to urge all subsidiaries to learn safety management practices from MMG, including but not limited to its safety culture, safe production rules and regulations and advanced and applicable safety management tools, to share safety management experience and to promote safe work habits. We also invited safety management experts of MMG to perform a safety diagnosis of Huangshaping Mine and to offer safe production training.



### Promoting Systematic Safe Production Management

We promote standardized and refined safety management, strengthen the hierarchy of hazard controls, and raise the level of systematic safety management.

#### Standardized Safety Management



All our mines have complied with Level 3 or above safety standards. All our smelting and refining subsidiaries with an annual operating income of RMB 20 million or more have completed the safety management standardization process; our construction subsidiaries have been working to standardize their construction safety management.

#### Hierarchy of Hazard Controls



We have developed a hierarchy of hazard controls, in priority order, and the guidelines on the implementation of control measures, and urged our subsidiaries to rate and control job-specific risks by priority. Mining subsidiaries are required to focus on job-specific hazard control and rate hazards by priority on the basis of job-specific hazard identification and assessment to achieve dynamic and differentiated management by priority.

## Safety Awareness and Skills

manufacturing subsidiaries at all levels offered

**8,036**

safety education and training sessions and

**218,269**

employees participated in such training activities.

The key to reducing workplace accidents is to raise employees' safety awareness and change unsafe practice. We have stepped up our effort to form a safety-oriented culture, offered safety training, and helped our employees develop safe habits, urged employees to follow safety rules and regulations, helped them improve safe production and self-protection skills as well as skills of protecting other workers. In 2016, manufacturing subsidiaries at all levels offered 8,036 safety education and training sessions and 218,269 employees participated in such training activities.

### Safety Culture

We attach great importance to the guiding role of a safety culture and strive to create a culture that supports safety, reminds employees of safety in their routine work and raises their safety awareness by organizing safety skills competitions, safety assessment and safety promotional campaigns. A continuous effort has been made to establish a safe working environment that requires every employer to make safety a top priority



First safety skills competition



中国五矿集团公司首届安全生产技能大赛



#### Case: Xishimen Iron Mine was named the "national demonstration enterprise for development of safety culture"

In addition to continuous safety training, Xishimen Iron Mine also attaches great importance to safety promotion. It has created programs such as Safety Talks, Hazard Exposure and Safety Interview for its internal TV channel and Innovative Safety Practice Ranking, Violation Exposure and other safety-related columns for its internal website; published safety promotion brochures, the book of *Lessons from Safety Accidents* and produced safety-themed poker cards and paper cups; strengthened communication with safety management personnel of lower-level subsidiaries, identify safety hazards, and raised employees' safety awareness. In 2016, Xishimen Iron Mine was named the "national demonstration enterprise for development of safety culture." It is the only member of China Minmetals to win this honorary title.



Xishimen Iron Mine was named the "national demonstration enterprise for development of safety culture."

## Safety Training

We have organized safety training, meetings and other events to raise safety awareness and improve safety skills of employees, urged subsidiaries to strengthen safety education and training and stepped up efforts to develop relevant training materials and train facilitators, developed creative training methods, attached great importance to training results and conducted safety education and training supervision and assessment.



An engineer of Zhuzhou Youruike Nonferrous Metal Equipment Co., Ltd. training employees of Minmetals Copper (Hunan) Company Limited about safe operation of disc casting machine



#### Case: China MCC20 Group trained field workers and security guards of Sri Lanka's OCH Project about construction safety

China MCC20 Group's Sri Lanka OCH Project Department attaches great importance to safety education of field workers and security guards at the overseas construction site. In the reporting period, emergency rescue experts of the local Red Cross chapter were invited to facilitate a two-day interactive emergency rescue and fire safety training program offered to field workers and security guards. Participants of the program conducted a fire drill under the guidance of experts. The training was designed to help participants put theoretical knowledge into practice, improve their emergency rescue and other safety skills and raise safety awareness.



## Emergency Preparedness

We have stepped up our effort to build emergency rescue teams, organize emergency drills, and improve our emergency rescue system and emergency responding skills.





**Emergency Response Teams**

By the end of 2016, we had 671 full-time or part-time emergency rescue teams composed of 14,416 team members

we had **671** full-time or part-time emergency rescue teams composed of **14,416** team members



**Emergency Response System**

We amended *Concise Manual of Emergency Response Plan*, developed 511 emergencies plans, 2,082 special plans and 4,613 on-site response plans

developed **511** emergencies plans, **2,082** special plans, and **4,613** on-site response plans



**Emergency Training**

We organized 1,453 emergency training sessions, covering 54,740 employees, and invested more than RMB 28.09 million in emergency drills

We organized **1,453** emergency training sessions, covering **54,740** employees, and invested more than RMB **28.09** million in emergency drills



### Case: The department of China ENFI's Namibia-based Husab 1500 MTPD sulfuric acid production project performed an emergency drill

On June 21, 2016, the department of China ENFI's Namibia-based Husab 1500 MTPD sulfuric acid production project performed an emergency drill to train relevant personnel in responding to leakage of sulfuric acid, sulfur dioxide and sulfur dioxide that may occur in the debugging or operation process. 130 participants participated in the drill, including field workers of the project department staff, representatives, the rescue team, and the fire brigade of the project owner, and employees of the construction subcontractors. The drill helped ensure the safety of the Health and Safety Executive (HSE), effectively prevent debugging and operation accidents at the sulfuric acid plant, and ensure quick and effective emergency response.



The sulfuric acid plant of Namibia-based Husab 1500 MTPD Project



The field workers of the project department and the rescue team of the project owner participating in the drill

## Safety Action

We attach great importance to the health and wellness of employees and have increased investment in safety assurance technology and hazard elimination, strengthened the standardized science-based management of contractors and our safety assurance capacity.

## Occupational Health Management

We have made a continual effort to improve the occupational health system of our manufacturing subsidiaries, which include occupational hazards notification, daily monitoring, regular inspection and evaluation, occupational health monitoring and other functions, and to strengthen accountability for occupational health management. We perform pre-evaluation of occupational hazards in construction projects, strengthen the treatment of high-risk dust and high toxicity, and constantly improve our occupational health supervision.

## Hazard Elimination

We adopt a problem-oriented approach to hazard elimination and a five-step hazard control model (planning, record keeping, supervision, rectification assessment and accountability), and actively solve challenging problems. In 2016, we conducted 11,909 safety inspections, identified 62,089 hazards, and removed 61,792 hazards (99.5% of identified hazards).



### Case: MCC Mawu carried out an effective hazard elimination campaign

MCC (Guangxi) Mawu Expressway Construction & Development Co., Ltd. (MCC Mawu) has always attached great importance to hazard elimination as part of its safety assurance effort. It focuses on hazard source control and process control, ensuring effective hazard elimination measures are set in motion and accountability, funding, time and planning requirements are met. It has improved its priority-based major hazard and hazard source monitoring mechanism, strictly followed the hazard investigation, confirmation, elimination and inspection process. For every identified hazard, a specific time limit is set to eliminate the hazard and the responsibility of relevant staff members is specified, and production is stopped until the hazard is eliminated. It has investigated major hazard sources of each unit on a regular basis, focusing on monitoring key hazard sources, decomposing responsibility, supervision and releasing supervision announcements to ensure safe production. In 2016, it performed 25 safety checks as well as identified and eliminated 171 hazards in accordance with relevant regulations.

it performed  
**25** safety checks  
as well as identified and  
eliminated  
**171** hazards

### Safety Assurance by Technology Means

Technological means is the key to safety assurance. To ensure safety in mining, construction, smelting and other key areas and improve the inherent safety of the Corporation, we have speed up R&D to meet production needs, translation of research results into practice and promotion of relevant technologies.

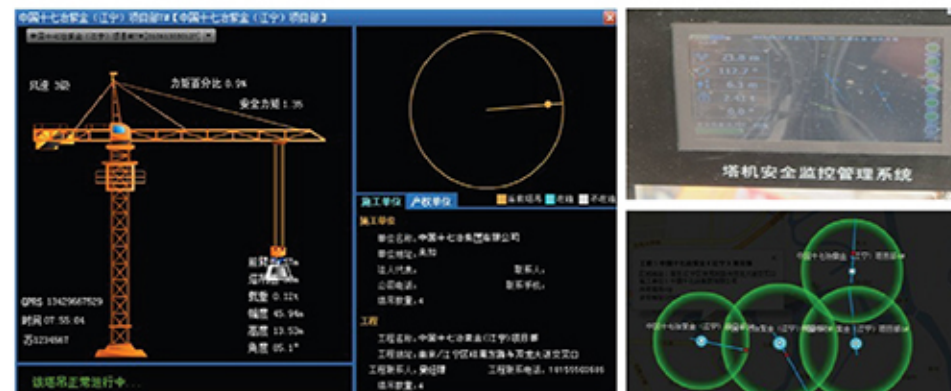
 **Case: The automation project of Anhui Development Mining Co., Ltd. passed final inspection**

The project has reduced the number of related jobs by **60%** through automatic underground loading trolley

On November 22, 2016, the pilot automation project of Anhui Development Mining Co., Ltd. "automatic metallic and nonmetallic mining system and underground large-scale fixed facility guarding system" passed the inspection of the expert group. The project has reduced the number of related jobs by 60% through automatic underground loading trolley, mobile hydraulic crusher, filling system, main shaft, the central substation, ventilators and other remote centralized control systems, improved labor productivity and safe production conditions and reduced safety hazards. The demonstration project is safe and stable and can be applied to metallic and non-metallic mines.

 **Case: China MCC17 Group strengthened its safety assurance effort by technological means**

China MCC17 Group has promoted the application of the face recognition system intended for elevator operating platforms, the tower crane anti-collision system, welding anti-shock device and other new equipment and technologies, to ensure standard operation, avoid tower crane collision and welders, and effectively improve safety prevention and control of construction sites. In 2016, China MCC17 Group had one construction site up to the national AAA safety standards, four sites up to provincial safety standards, eight demonstration site up to municipal safety standards and three Safe Projects.



Application of the new tower crane anti-collision system

**In 2016, China MCC17 Group**

- 1** had construction site up to the national AAA safety standards
- 4** sites up to provincial safety standards
- 8** demonstration site up to municipal safety standards
- 3** Safe Projects

### Safety Management of Contractors

Management of contractors in mines is one of the top priorities of China Minmetals in respect of safety supervision. We force contractors to continuously improve their technical equipment and safety management by dismissing accident-prone contractors and strengthening management of remaining mining contractors. In 2016, our mining enterprises dismissed 10 mining contractors (teams) and 741 independent contractor operators. From 2014 to 2016, our mining enterprises dismissed 46 mining contractors (teams) and 5,283 independent contractor operators.



our mining enterprises dismissed **46** mining contractors (teams) and **5,283** independent contractor operators

 **Case: Driver fatigue management**

Fatigue management is a major issue at all mining operations. At Las Bambas, a large number of people drive vehicles as part of their work. These include drivers of the trucks which transport our concentrate to a rail transfer station and to the Port of Matarani. Fatigue is a particular risk at Las Bambas where high altitude makes it difficult to obtain good quality, uninterrupted sleep. At MMG we manage fatigue through site-specific Fatigue Management Plans that include controls for fatigue detection and prevention to remotely monitor maximum driving speed to ensure their safety. We provide drivers with safety training and conduct fatigue prevention tests in an attempt to minimize road risks.



# 04

# Be Green

Environmental protection has grabbed the attention of all walks of life and also one of the key investment areas of China Minmetals. In 2016, we assessed environmental impact of our projects and products throughout their entire project life-cycle, actively responded to climate change, increased the efficiency of resource and energy use, promoted cleaner production, protected biodiversity, and strived to become an industrial leader in environmental protection.

In 2016,  
we provided  
**267** environmental training  
sessions and  
**13,670** employees participated  
in these sessions



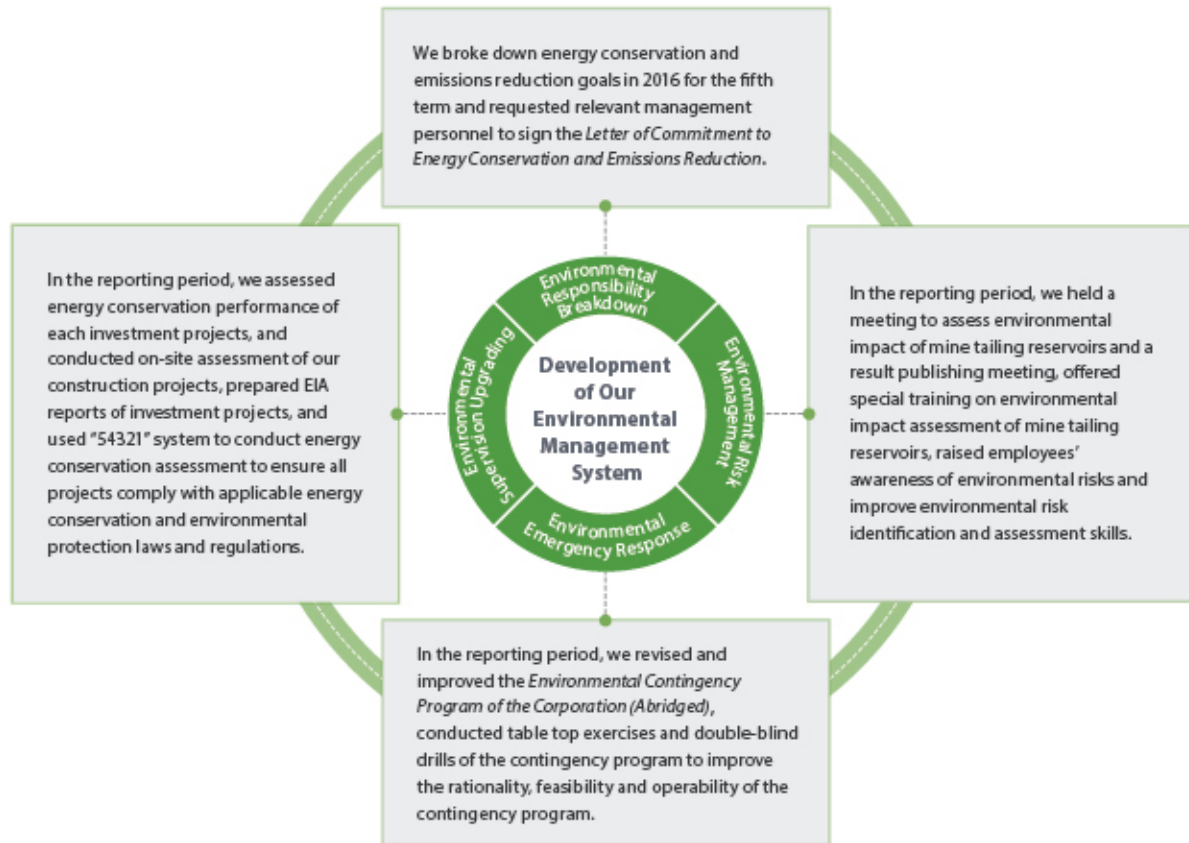


## Environmental Management

Respecting the environment is a core element of our business strategy. We maintained a focus on managing the environmental impact caused by our business activities, pushed forward the development of our environmental management system, built an environmental emergency response mechanism and intensified efforts in environmental supervision and inspection. In 2016, no major environmental pollution incident related to us was reported.

### Improving the Environmental Management System

We have pushed forward the development of our environmental management system, strengthened environmental risk management, constantly improved the system, decomposed environmental management responsibility.



#### All about "54321"

"5" refers to the five-step hazard control model that includes planning, record keeping, supervision, rectification assessment and accountability.

"4" refers to the four key elements of safety assurance, i.e., compliance, day-to-day safety management, management of contractors, and safety education and training.

"3" refers to three supporting measures, including management of hazards by hierarchy of priority, expert supervision and supervision via WeChat.

"2" refers to the combination of day-to-day safety management and key safety management tasks.

"1" refers to comprehensive and in-depth hazard control in key subsidiaries.

### Raising Awareness of Environmental Protection

We attach great importance to environmental education, and advocate employees to maintain harmony between human and nature, reduce their carbon footprint and be responsible for the environment. In 2016, we provided 267 environmental training sessions and 13,670 employees participated in these sessions.

In 2016, we provided **267** environmental training sessions and **13,670** employees participated in these sessions

### Implementing Green Office Practices

We promote green office practices, including paperless office, video conference, reducing business travel, regulating the use of corporate vehicles and other measures to minimize our carbon footprint.



**Case: China Minmetals marked World Environment Day by organizing an awareness-raising campaign**

China Minmetals marked World Environment Day (June 5) by organizing an awareness-raising campaign to advocate green development and environmental protection. We produced display stands to promote our belief that little things make a huge difference – like refusing to use disposable chopsticks, using paper and electricity smartly, and taking other practical actions to support environmental protection. We also made a World Environment Day promo to advocate environmental protection.

### Participating in Important Environmental Campaigns

We promote low-carbon lifestyle and environmental protection knowledge through diverse channels, encourage employees to participate in environmental campaigns and call upon the public to live a green life and promote green workplace practices.



**Case: Minmetals Plaza went dark for an hour in a show of support for the Earth Hour campaign**

Earth Hour is a worldwide environmental movement organized by the World Wide Fund for Nature (WWF) in 2007, aiming to raise awareness of the threat of climate change to the planet and mankind. Minmetals Plaza has actively promoted and participated in the Earth Hour campaigns. It turned off the exterior light of its buildings from 20:30 to 21:30 on March 25, 2016, as part of our effort to build green workplace and promote low-carbon workplace practice and lifestyle.



**Case: Planting trees in the spring**

We encouraged our headquarters and subsidiaries to organize tree planting activities. In the reporting period, more than 50 employees of our headquarters planted pine trees in a barren area (5 mu) in Fangshan District, Beijing.



## Energy Conservation and Emissions Reduction

We make a continual effort to promote energy conservation and emissions reduction, strengthen technological innovation, reduce greenhouse gas emissions, waste and other emissions, improve efficient use of resources such as minerals, land and water, step up energy management, and work together with our stakeholders to tackle the challenge of climate change.

### Cleaner Production

We make a continual effort to improve our designs, use cleaner energy and raw materials, adopt advanced processes, technology and equipment, control pollution sources, reduce or avoid emission of pollutants in production, service provision and the use of products, and reduce or mitigate the impact of our activities on human health and environment.

(There are two cleaner production review programs classified by the amount of investment: high-investment programs and low-investment programs. Generally speaking, based on the scale, profit and other factors of an enterprise, a program that requires an investment of over RMB 50,000 is a medium-investment or high-investment program.)



We encourage our subsidiaries to implement high-investment cleaner production program (see the note) and technological upgrading projects to improve our environmental protection capabilities.



We implement a plan to reduce pollutants with a high risk of lead hazards, integrate pollutant reduction in source control, process control and resource utilization, promote cleaner production in lead and zinc industries.

### Case: Hunan Shuikoushan received a grant from the Ministry of Industry and Information Technology for cleaner production

The direct reduction of liquid lead-rich slag project of Hunan Shuikoushan Nonferrous Metals Group Co., Ltd. (Hunan Shuikoushan) received a grant of RMB 7.5 million from the Ministry of Industry and Information Technology under the Reduction Plan of High-risk Pollutants. Hunan Shuikoushan invested more than RMB 180 million in the project and reduced annual energy consumption by 16,840 tons of coal equivalent (TCE), and reduced integrated energy consumption of crude lead to 220 kg coal equivalent per ton of crude lead. Its energy consumption indicators were at the forefront of China's lead smelting industry. It reduced 591.53 million cubic meters of exhaust gas, 1.9 tons of lead emissions, 485.73 tons of sulfur dioxide emissions, and 20.88 tons of dust, and delivered significant environmental benefits.

### Case: Ganbei Tungsten Co., Ltd. upgraded its technologies to reduce environmental impact

Ganbei Tungsten Co., Ltd. has worked out a self-reliant environmental management model on the basis of its extensive experience in the tungsten smelting industry. It designed processes and prepared drawings for equipment manufacturing, entrusted manufacturers to manufacture equipment according to the drawings, stepped up environmental protection, ensured that its wastewater and gas emissions complied with standards, significantly reduced the cost of chemical materials, delivered both economic and environmental benefits, and set an exemplary role for the industry.



### Case: Treatment of wastewater containing a high level of chlorine


The water treatment plant of Zhuzhou Smelter (Group) Co., Ltd. has upgraded the inlets of its acidic wastewater treatment pipes. Acidic wastewater is pumped into a settling tank and then into an equalization basin after the initial settlement, reducing the difficulty of the treatment of wastewater with a high level of fluoride and chloride content in the second step, reducing processing costs and ensuring the wastewater comply with discharge standards. The amount of recycled and purified water has increased by 47%, and the cost of wastewater treatment for use in emergency has decreased by 4.4% year on year.



Chair of Major SOE Supervisory Board Li Ping checking the quality of water purified through membrane treatment process at the water treatment facility in Zhuzhou Smelter Group Co., Ltd..

## Improving Resource Efficiency

Waste is a misplaced resource. We vigorously strengthen integrated recycling of wastewater, solid waste, etc., turning waste into renewable energy treasure.




**Case: MMG improved water use and recycling efficiency**

MMG recognizes the importance of the role as responsible stewards of the water we share with local communities and the environment, and MMG looks for opportunities to reduce the impacts on water resources from sourcing and discharge activities. Where possible, MMG seeks to improve the efficiency of water use and maximize water recycling. This reduces the need to source additional water from local catchments. In 2016 MMG managed a total of 85.5 gigalitres (GL) of water. A third (33%) of the total water managed is used for processing and related activities (28.4 GL). The remainder is diverted around the operating areas and, where required, treated prior to release.



Environmental impact assessment at Las Bambas copper mine.



**Case: Xintianling Wolfram Mine Co., Ltd. achieved a breakthrough in the research of wastewater recycling in white tungsten ore dressing process at the room temperature**

From November 2016 to January 2017, Xintianling Wolfram Mine Co., Ltd. conducted a test on the recycling of wastewater produced in white tungsten ore dressing process at the room temperature, which lasted 47 days. The test changed conditions (five times) but keeping the wastewater reuse rate at 80%. The actual recovery rate was 82.59% and the recovery rate during the stability period was 83.82%. The recovery rate was similar to that of clean water beneficiation. This test was another step made by Xintianling Wolfram Mine Co., Ltd. towards smart, green and harmonious mine. Its technology to recycle wastewater produced in white tungsten ore dressing process at the room temperature is at the forefront of the industry.



With more than **50** steel slag treatment and utilization patents, Baosteel is a world leader in steel slag treatment and utilization and its recycling rate of steel slug has reached **100%**



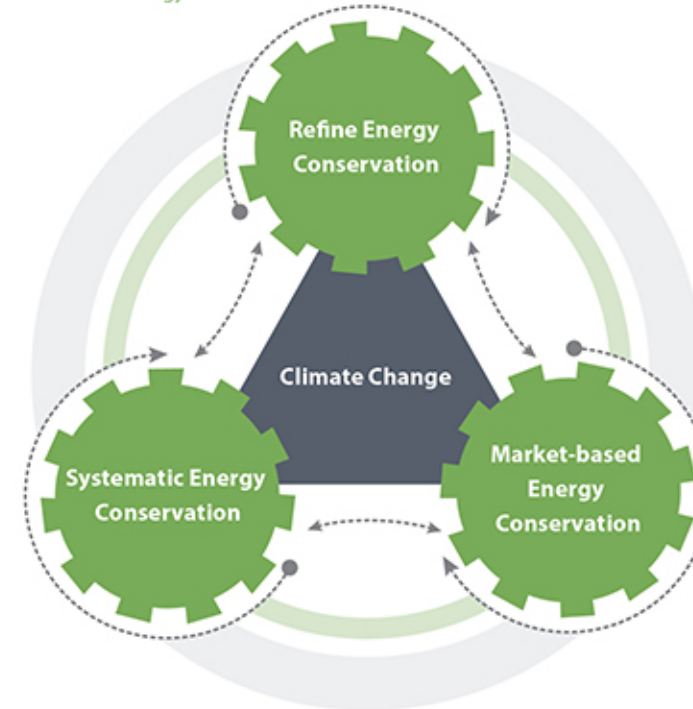
**Case: Treatment and utilization of steel slag**

MCC Baosteel Technology Services Co., Ltd. (Baosteel) is committed to seeking new ways to use steel slag and developing new materials such as pervious concrete containing steel slag. With more than 50 steel slag treatment and utilization patents, Baosteel is a world leader in steel slag treatment and utilization and its recycling rate of steel slug has reached 100%.

## Climate Change

We are committed to raising awareness about energy crisis, promoting energy conservation and efficiency throughout the life cycle of our products and projects, and strive to make the best of energy resources and reduce greenhouse gas emissions. In 2016, we shut down six projects with obsolete production capacity, reducing energy consumption by about 1,062 tons of coal equivalent.

We have established an energy utilization reporting mechanism to monitor energy purchase, processing, conversion and consumption and to effective control energy costs.



We have stepped up the development and certification of our energy management system, urged our key subsidiaries to work and communicate with each other in the field of energy management, conducted a comprehensive evaluation of our energy conservation system.

We have urged our key subsidiaries to participate in carbon emissions trading, stepped up our effort to build up our ability to manage carbon emissions and prepared ourselves for the assess to the national carbon emissions trading market.



**Case: ZCC upgraded production equipment to save energy**

ZCC has integrated energy saving practices into its daily operation and management. In the reporting period, it invested RMB 12 million in converting coal-fired boilers to natural gas boilers and upgraded the entire steam production, transportation and use system to reduce energy consumption. This action increased the thermal efficiency of boilers to 96.6%, reduced loss of steam during pipe transportation by 5%, reduced total steam consumption by 50%, reduced sulfur dioxide emissions by 222 tons per year, reduced CO<sub>2</sub> emissions by 29,000 tons per year, reduced soot emissions by 119 tons per year, reduced energy consumption by 11,000 tons of coal equivalent and reduced steam costs by RMB 5.7 million per year.



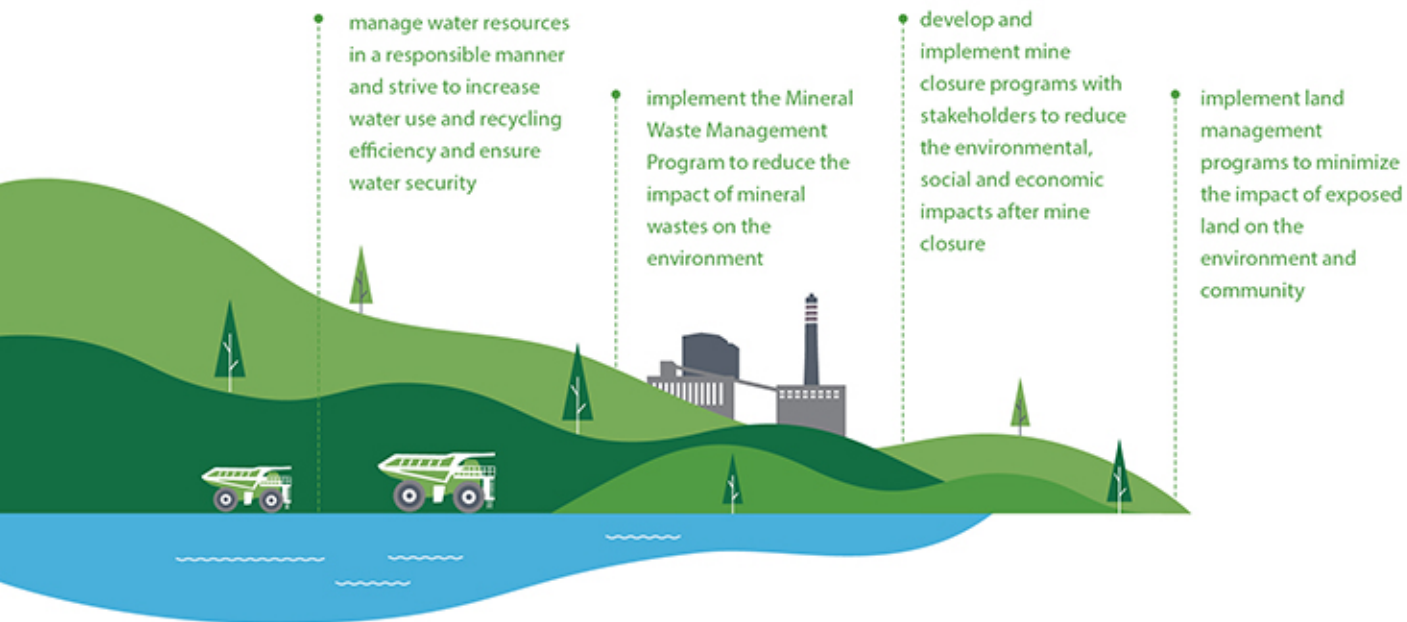
reduced energy consumption by **11,000** tons of coal equivalent and reduced steam costs by RMB **5.7** million per year

## Ecological Conservation

We are committed to mitigating the environmental impact of mining, strengthening tailings treatment, water resources management, land restoration and biodiversity protection, reducing the impact on vegetation and soil, promoting sustainable use of land and natural resources, and comprehensively promoting the development of green mines.

### Green Mines

We integrate environmental protection into the entire life cycle of our mines;



#### Case: Dynamic monitoring and early warning of groundwater

Minmetals Exploration & Development has developed a dynamic groundwater monitoring system and a landslide monitoring system based on eight-foot rare earth mine exploration and green mine demonstration project and other projects. The dynamic groundwater monitoring system uses advanced technologies such as groundwater monitoring wells at upstream and downstream sections, high precision probes for chemical analysis, GPRS communication platforms and third-party Internet services to achieve the dynamic monitoring of the groundwater quality throughout the whole lifecycle of a mine, ensure problems are discovered and early warnings are issued in a timely manner, and reduce environmental impact of mining process.



#### Case: Sepon improved the management of WTSF

Sepon has made incremental improvements to water use and treatment in order to reduce the water levels in the Western Tailings Storage Facility (WTSF) to within an ideal operating range and ensure that water quality criteria for the discharge can be reliably met. In 2016, Sepon invested over USD 1 million in a fully automated lime dosing system for the polishing plant. The new dosing regime improves lime dissolution, enhancing pH control and the efficient removal of contaminants, as well as reducing the build-up of scale which can cause blockages and increase maintenance downtime. After the dosing system was implemented the flow rates of water treated at the polishing plant were increased by 50%.

Upgraded wastewater treatment facility where Sepon's water resources are managed efficiently and workplace safety is improved.

### Biodiversity

We have implemented the Land, Biodiversity and Cultural Heritage Conservation Program in mining areas of MMG to reduce land disturbances caused by prospecting and mining. In the management of land disturbance, we take into account social and ecological needs, and strive to protect biodiversity, ecosystems and cultural heritage.

#### Case: Discovery of a new species of lizard at Las Bambas

At Las Bambas, assessment identified the presence of a lizard species of the genus Liolaemus. The results of biodiversity monitoring and genetic sequencing analysis support the conclusion that the Las Bambas population represents an undescribed species of Liolaemus. A relocation protocol has been developed and Las Bambas is currently working on securing the best location for a successful relocation of the lizard population. Relocation is a challenging activity but essential to give this unique amphibian every opportunity to continue to thrive in the area.



## Green Business

We attach great importance to the development and innovation of our environmental protection business, and strive to deliver economic and environmental benefits by actively developing solid waste management, sewage treatment, waste gas treatment and environmental restoration business.

### Case: Baosteel's BOO project

Central Research Institute of Building and Construction of MCC and Baosteel Zhanjiang Iron & Steel Co., Ltd. entered into a BOO agreement on steel slag treatment and non-process dust removal facilities. In July 2016, the project entered the trial operation phase. The project uses "molten steel slagging heat treating and metal recovery technology and equipment" and other technologies to achieve the optimal allocation of resources. It is expected to play a key role in promote energy saving and emissions reduction in the steel industry as well as the sustainable development of the steel industry.

#### All about BOO

BOO (Building-Owing-Operation) is a public-private partnership project model in which a private organization designs, builds and operates a project and trains personnel and owns the software and hardware of the project. The government is responsible for coordination, creating favorable conditions and setting out requirements in this model and can use the hardware and software of the project after paying a fee to the private organization.

Project site of Baosteel zhanjiang



### Case: China ENFI's waste to energy plant in Haikou City

 can process **1,200** tons of household waste per day

The waste to energy plant designed by China ENFI for Haikou City has passed the final inspection and entered into the official operation phase and can process 1,200 tons of household waste per day.



### Case: Integrated management of soil and groundwater pollution

The integrated soil and groundwater pollution treatment project of Baihua Plot of WISDRI Engineering & Research Incorporation Limited in Guangzhou is the first groundwater pollution treatment project in Guangzhou, aiming to clean up contaminated soil and groundwater, covering a total area of 3,949 square meters and restoring 11,847 cubic meters soil. After cleaning up, the quality of groundwater in this area met acceptance criteria. The project has effectively protected local groundwater and achieved re-development and reuse of industrial land.

 restoring **11,847** cubic meters soil



On-site data monitoring

# 05

# Be Happy

安全出口

Employee development is a top priority of China Minmetals. We are committed to protecting rights and interests of employees, improving our job and pay system, taking care of our employees, creating an open, energetic, and harmonious environment for employee development, so that the value of each employee is fully respected and realized. We also strive to attract talented people in global markets, pay attention to the development of a talent team with international visions to form the backbone of our company.

In 2016, we had  
**192,023** employees

In 2016, we trained  
**263,087** employees



## Protecting Employees' Rights and Interests

We respect employees' rights and interests and are committed to creating a good culture and work environment for them, and fostering staff loyalty and a sense of belonging.

### Equal Employment

We strictly abide by labor laws and regulations, including those promoting equal employment and forbidding discrimination in employment, forced labor, employment of child labor, set out a specific shortest notice period in relation to changes in matters related to interests of employees. We have created an efficient, professional and people-oriented recruitment culture, built an open, fair, merit-based recruitment platform, increased recruitment channels and methods; developed the *Interviewer Management Policy* and established a science-based recruitment system; implemented the *Open Recruitment Management Policy of the Corporation* to institutionalize and standardize the open recruitment process of the Corporation and attract talent; published the *White Paper on Talent Development* to realize the continuous optimization of our HR assets. In 2016, we had 192,023 employees, of whom 171,390 employees were on the job; female employees accounted for 10.7% of the leaders of the functional divisions of the headquarters; all employees have signed a labor contract with the Corporation; 100 percent of female employees returned to the Corporation after maternity/paternity leave.



we had  
**192,023**  
employees

all employees have signed a labor contract with the Corporation;

**100** percent of female employees returned to the Corporation after maternity/paternity leave.



As part of MMG's effort to protect female employees' rights, female employees at Kinross can apply for any position (including an executive position).



We were named the best HR demonstration company and the best HR management team in 2016 by 51job.com.

We were ranked among zhaopin.com's Top 100 Best Employers in 2016.

We were ranked among Universum's Top 100 Most Attractive Employers in 2016.

We were named the Best Partner of Guanghua School of Management, Peking University in 2015-2016

### Education Composition of Our Workforce



Employees by Educational Attainment	Proportion	Number of Employees
Master's degrees or above	7.06%	12102
Bachelor's degree	31.66%	54264
Vocational college degree	19.77%	33888
Secondary vocational school degree or below	41.51%	71136

### Gender Composition of Our Workforce



Employees by gender	Proportion
Men at the headquarters	69%
Women at the headquarters	31%

## Compensation and Benefits

In order to increase employee engagement and encourage our employees to be more creative, we have stepped up our effort to reform our compensation system to make it more market-based and value-oriented, and promote employee well-being.

### Compensation

We have established a regularized market-based compensation system that adjusts base salary of employees according to the market level, improved the mechanism that links the total compensation of employees to the performance of the Corporation, increased the return on investment in HR, increased base salary, improved the compensation structure, established differentiated incentive measures for management, technical, consulting and other jobs and strengthened the exploration of innovative medium and long-term incentive measures.

### Benefits

We pay social security contributions (of five social insurances) for each eligible employee in accordance with relevant national policies to protect the legitimate right of our employees to social security benefits. We have established and improved our enterprise annuity, supplementary medical insurance and other supplementary welfare systems, do our best to preserve the capital of the enterprise annuity and communicate with our employees about their benefits, and strive to take care of our employees and create a positive workplace environment.

## Democracy in Corporate Management

We are committed to improving our democratic corporate management system in the form of workers' congress with a focus on priorities in enterprise reform and corporate management as well as matters related to the vital interests of employees, protecting employees' legitimate rights and interests, and encouraging them to be more creative. In 2016, every subsidiary of the Corporation had established a labor union and all our employees had participated in a labor union.



every subsidiary of the Corporation had established a labor union

all our employees had participated in a labor union

We have established a democratic management system at the core of employee engagement, employee representative meetings, employee directors and employee supervisors system; and fully protected employees' rights to information, participation, expression and supervision in corporate management.

We have established a multi-level workers' congress system, consisting of the Corporation-level workers' congress, the business segments-level workers' congresses and the workers congresses of factories and mines, to ensure our enterprise reform and the interests of our employees are aligned.

We have improved our employee communication platforms and employee advice mechanism, amended the *Proposal Management Policy of China Minmetals*, issued *Rational Advice Management Policy of China Minmetals*, upgraded the website of the labor union, to provide employees with platforms to submit proposals, offer reasonable advice and communicate with each other. In 2016, we received 15 proposals from representatives of employees and gave feedback to them in a timely manner.



## Stimulating Employees' Vitality

Our employee development program aims to cultivate virtue and talents of employees and improve their performance. We implement a talent management strategy which will give us an edge over our competitors, continue to promote the recruitment and training of executive, professional and technical talents, and strive to create a reasonably-structured, industry-leading workforce that drives continuing growth. We are also building a multi-sequence, multi-level job system backed by expert tanks and talent reserve pools. The system offers means to get promoted or exit and limitless development opportunities.



### Employee Training

We attach great importance to employee training and offered diverse training programs specifically designed for different types and levels of job, aiming to create a learning culture. In 2016, we trained 263,087 employees.

In 2016, we trained **263,087** employees

### Leadership Training

We have developed the 2025 Youth Leadership Program, created a systematic leadership training program that aims to improve leadership skills and expand our presence in the industry value chain with action-based learning and on-the-job practices at the core. We have established an employee cultivation mechanism, including the following steps: talent discovery and selection, clarifying development priority, designing training model, quality control, and application of training results; built an employee training and management mechanism that cultivates cross-industry skills, forging a group of young, energetic, loyal elite and industry leaders with global vision and excellent problem solving skills; offered three training programs (Iron Flow Program, Spark Program and Real Estate Program) for 496 young employees and selected 96 high-performing participants to participate in the Corporation's talent cultivation program. Participants of the Iron Flow Program completed 26 days of training in the first year and more than 200 hours of offline follow-up and consultation; participants of Spark Program completed the training plan of the first quarter and seven days of training (three models).



Talent Discovery and Selection

Clarifying Development Priority

Designing Training Model

Quality Control

Application of Training Results

### Skills Training

In the reporting period, we held a series of skills contests. The first contest tested the skills of using information technology and more than 10,000 employees participated in the contest which improved the skills of employees to use information technology to solve problems. We also held a safe production competition to raise employees' safety awareness and improve their learning skills and promote sustainable development of the company.





The first leadership workshop in 2016 was held. He Wenbo, Chairman and Party Group Secretary of China Minmetals, gave a lecture entitled "Developing Core Competencies of a World-leading Metals and Minerals Company" and more than 300 participants went to the lecture.



The Eagle Plan – Spark Program launched



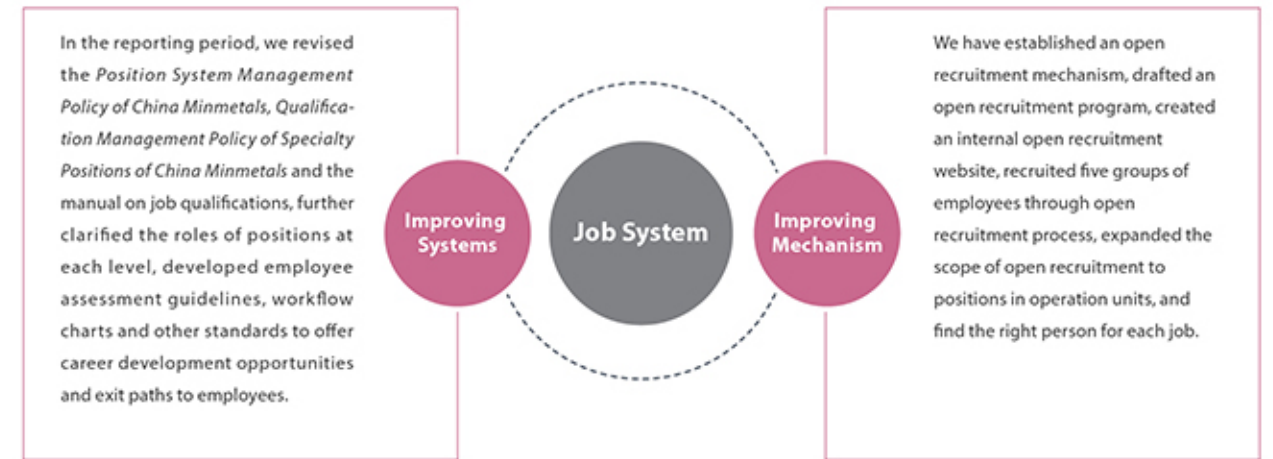
Mianyang City Commercial Bank organized 70 workshops and skill contests, involving 3,500 employees.



China Minmetals Development held Party-building studies

## Career Development

We have improved our job system with job responsibilities and qualifications as its core elements, created a fair and science-based selection and promotion mechanism, broadened the path of career development, created an open and transparent career development environment to improve employee engagement.



### Job System Overview

Job level	Management Sequence	Professional Sequences	Operational Sequence	Consultant Opportunities	
26	Core Management	Expert Tanks	Skill-specific Worker	Consultant Opportunities	
.....					
.....					
.....					
20	Senior Management	Professional Management Sequence	Post-specific Worker	Consultant Opportunities	
.....					
.....					
15	Middle Management	Party Work and Supervision Sequence	Auxiliary Worker		Consultant Opportunities
.....					
10	Junior Management	Support Service Sequence	Skill-specific Worker	Consultant Opportunities	
.....					
5		R&D Sequence	Post-specific Worker		Consultant Opportunities
.....					
1		Talent Reserve Pools			

Multi-sequence, multi-level job system with expert tanks and talent reserve pools as well as promotion opportunities and exit mechanism

**Case: Pilot job system reform of our subsidiaries**

In the reporting period, China Minmetals and its first-tier subsidiaries set up a project team to complete the job system reform in Minmetals International Co., Ltd., Minmetals Non-ferrous Metals Holdings Co., Ltd., Minmetals Capital Holdings Limited and ZCC. Minmetals International Co., Ltd. opened up senior specialty positions. China Minmetals supported and participated in the job system reform of Minmetals Development, Minmetals Real Estate and Minmetals E&D, and through staff support, policy guidance and transfer of technology and helped them expand the scope of the new system.

**Job Titles and Career Paths**

- Chief Expert
- Senior Expert
- Expert
- Senior Supervisor
- Supervisor**
- Specialist
- Assistant

**“** I'm a supervisor in the professional management sequence. My performance assessment results have been excellent in recent years and I plan to work harder and become an expert in this sequence in the next few years. **”**

- Chief Account Manager
- Director-level Account Manager
- Superior Account Manager
- Senior Account Manager
- Mid-level Account Manager**
- Junior Account Manager
- Assistant Account Manager

**“** I have been promoted to be mid-level account manager quite fast because of my outstanding performance. My plan for the future is to keep improving my professional competence, becoming an excellent professional in my field, and to develop my managerial skills so as to shift to the management sequence for new challenges. **”**

- Chief Engineer
- Director-level Engineer Superior
- Engineer
- Senior Engineer
- Mid-level Engineer
- Junior Engineer
- Assistant Engineer**

**“** I'm an assistant engineer in the geological exploration sequence and have received targeted training for professional development as a member of the talent reserve pool. I plan to work harder to become a chief engineer in my field and a member of the expert tank. **”**

- Managing Director
- Executive Director
- Director
- Senior Account manager
- Senior Investment Manager
- Investment Manager**
- Assistant Investment Manager

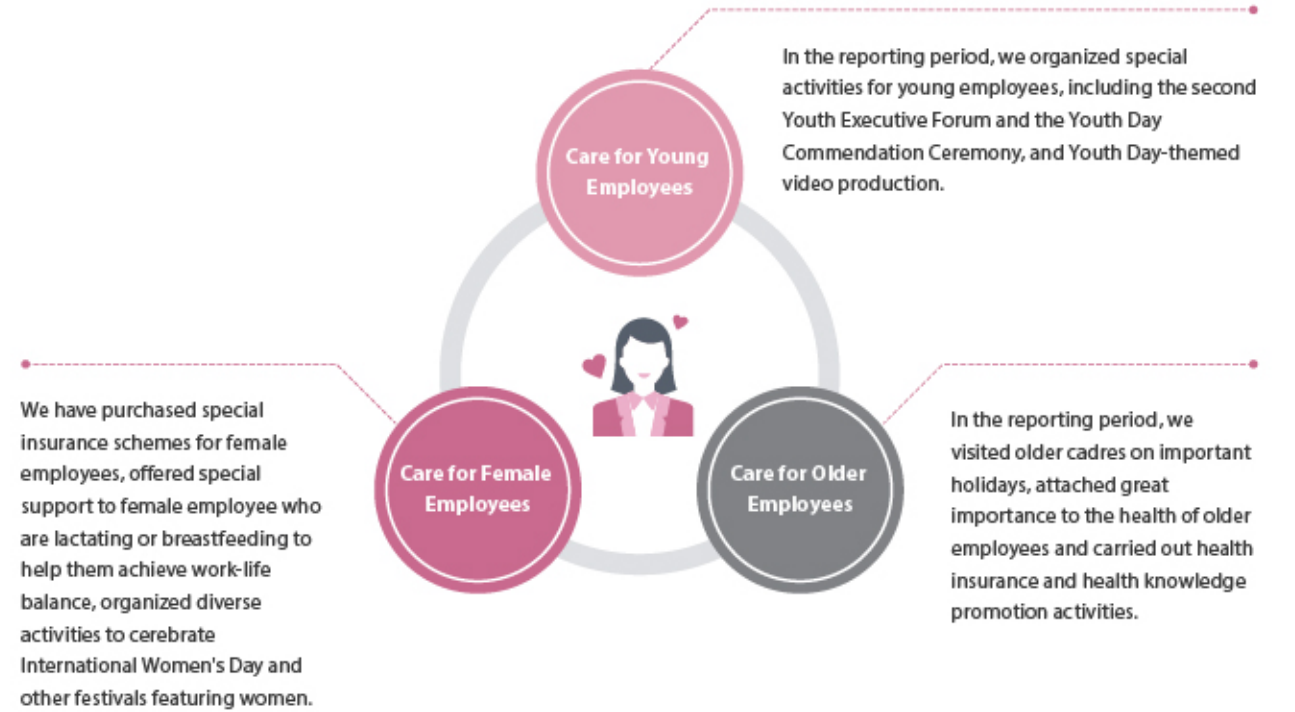
**“** I'm an investment manager in the investment banking sequence. I plan to continue following this career path and keep improving my professional competence so as to become an expert in financial services. **”**

- Senior Technician
- Technician**
- Senior Worker
- Mid-level Worker
- Junior Worker

**“** I'm an excellent technician in drilling and blasting. I plan to get certified as a senior technician in this field next year and hope to become a member of the expert tank as soon as possible. **”**

**Employee Care**

We promote employee well-being by creating a harmonious workplace, setting up sports clubs, organizing social, cultural and sports activities to make employees happier.



## Diverse Culture

Culture is the soul of a company. We understand the culture and customs of countries where our projects are located, and work to promote on a global scale the philosophy of "cherishing limited resources and pursuing sustainable development" and the spirit of never falling behind schedule or getting slack. We are committed to creating a harmonious working environment and celebrating cultural diversity in the workplace.



### Case: Creating an inclusive, fair and collaborative culture in the workplace

MMG strives for an inclusive, equitable and collaborative culture where our people are treated fairly and all ideas and contributions are considered. Global MMG Diversity and Inclusion Council shapes our organizational culture and is supported by regional Diversity and Inclusion committees which deploy local and culturally relevant initiatives in each of the regions where we operate. The MMG Progress Awards are designed. In 2016, five winners were selected from over 70 very worthy nominations. All the winners demonstrated exceptional commitment and dedication.



We held the 2016 Spring Festival Gala & Celebration of the 65<sup>th</sup> Anniversary to promote teamwork and hardworking spirit among employees and demonstrate the talent of our employees.

We held the 2014-2015 Model Employees Commendation Meeting in recognition of the remarkable contributions made by 10 model employees to the reform and development of the Corporation over the past two years.



We held the third Choral Contest of China Minmetals to express our love for the motherland and encourage our employees to pursue excellence.



After the Minmetals Cycling Association was founded, under the auspices of Minmetals Real Estate, Beijing Jinyang Real Estate Co., Ltd. organized the Association's first cycling activity in October 2016 in Changyang Town, Fangshan District, Beijing.

## Quotes of Model Employees About the Corporate Culture of China Minmetals



**Chi Weibin**

Director and Party Secretary of Side Blowing Workshop, the Eighth Smelter of Hunan Shuikoushan Nonferrous Metals

“ Glory is accompanied by responsibility. I will redouble my efforts to contribute to the innovation and environmental protection initiatives of China Minmetals. ”



**Zhao Kehan**

Deputy Chief Engineer and Director and Party Secretary of Mining Workshop, Beiminghe Iron Mine, Minmetals Han Xing Mining Co., Ltd.

“ I love my company and my job. I'm proud to be an employee of China Minmetals. I will honor the path that I've chosen. ”



**Zhao Jing**

International Public Relations Manager, MMG's Las Bambas Copper Mine (Deputy General Manager of Copper Division of Minmetals Nonferrous Metals Co., Ltd. since April 2016)

“ We are not afraid of hardship. I will do my best to ensure the Las Bambas project will be put into operation in time and contribute to advancing the "Go Global" strategy of Chinese companies. ”



**Huang Wei**

Economic Responsibility Audit Manager, Auditing Division, China Minmetals

“ God help those who help themselves. Only hard-working people can make extraordinary achievements in an ordinary position. ”



**Cui Suhang**

Manager, District 1, Xiaoguanzhuang Iron Mine, Luzhong Mining Co., Ltd.

“ My career dream is to contribute to the construction of a modernized, automated mine. My past efforts have been acknowledged. I will continue to work hard to achieve my dream. I'm proud to be an employee of China Minmetals. ”



**Zhu Chaoying**

Professor and Team Leader of the Third Team of Mineral Resources Development and Utilization Technology Institute of Changsha Research Institute of Mining and Metallurgy Co., Ltd.

“ Scientific research is not just lab activities. Research results must be successfully applied to industrial production. The journey of a thousand miles begins from the first step. ”



**Zhang Cen**

Deputy General Manager of East China Regional Center of Minmetals Development Co., Ltd. and General Manager of Minmetals Steel Shanghai Co., Ltd.

“ I am grateful to the company for its support. I will not be blown away by past success. I will continue to learn and work hard to achieve more success. ”



**Zhao Bin**

Mining Engineer, the Department of the eight-feet Rare Earth Mine Project, Minmetals E & D

“ I am glad and very grateful to become an employee of China Minmetals. If I were given the opportunity to choose again, I would still choose China Minmetals, the mining industry and Minmetals E & D. After working for China Minmetals for 7 years, I'm remain proud to be a member of the Corporation and will continue to pull out all the stops to advance the initiatives of China Minmetals. ”



**Yao Manping**

Deputy Director of Technology, Senior Technician, Level 1 Technician, Large Cemented Carbide Products Division, Zhuzhou Cemented Carbide (Group) Co., Ltd.

“ Dedication to one's job is the basic quality required of every employee. What is more in demand is innovation capability. Every product should be a piece of art. It is the only way to gain an edge over our competitors. ”



**Jiang Hongjun**

Project Manager, Phase 7 of Xi'an Shouchuang International City, Second Engineering Co., Ltd., 23rd Metallurgical Construction (Group) Co., Ltd., China Minmetals

“ The key to our success is to make every detail perfect in our daily work. No pains, no gains. Use data to demonstrate your point. No project will be started without a careful plan. ”

# Be Harmonious

In the new era, sustainable development is promoted on a worldwide scale and China is working to build a well-off society in an all-round way. In this context, as a global company, China Minmetals is committed to global responsibility initiatives that make our world better. We have joined hands with our partners to build a responsible supply chain, increase customer value and fulfill our global responsibilities. We have been working together to help the Chinese people pursue happiness and promote global sustainable development.

Total donations RMB

**23,746.03** million



# Partnership

We attach great importance to cooperation with partners, and actively expand the scope of cooperation and improve our ability to create value; actively search for new ways of cooperation, promote multi-faceted cooperation, and align our competencies to the goals of relevant stakeholders as well as local economic and social development needs; attach importance and respond to the expectations and demands of various stakeholders, while promoting multi-party win-win cooperation.

## Communication and Cooperation

Our relationships with our partners are built on business integrity and mutual benefits. We are committed to strengthening cooperation with local governments, industry counterparts, financial institutions and other stakeholders, driving regional economic development while achieving our own development, combining our competitive advantages and achieving mutual benefits with our stakeholders.

	Partners	Significance of Partnership
<b>International Cooperation</b>	Australia, Chile, Ukraine, Peru, Japan, South Africa, Denmark, South Korea, Canada, Laos, Belgium, Poland, France, etc.	Implementing the Belt and Road Initiative, building up the ability of companies "going global", and promoting sustainable development on a global scale
<b>Cooperation with Government</b>	Hunan, Zhejiang, Gansu, Qinghai, Shandong, Jiangsu, Guangdong, Guangxi, Liaoning, Hebei, Chongqing, Beijing, Tibet, Yunnan, Hubei, Guizhou, Sichuan, Hainan, Fujian, Jilin, Ningxia, Shanxi, Anhui, etc.	Supporting industrial planning of China Minmetals, and promoting the development of local communities
<b>Cooperation with Other Companies</b>	Benxi Iron&Steel Group Co., Ltd., Red Star Macalline Group, Anyang Iron&Steel Group Co., Ltd., Alibaba.com, HBIS Group, Taiyuan Iron & Steel (Group) Co., Ltd., Ansteel Group, China Energy Conservation and Environmental Protection Group, Jiangsu Huaxi Group, Modern Land (China) Co., Ltd., Jiangsu Province Jiaqing Water Services Co., Ltd., China Resources (Holdings) Co., Ltd., China Communications Construction Co., Ltd., Sinotrans Changhang Group Co., Ltd., China Railway Construction Co., Ltd., etc.	Creating synergies, avoiding vicious competition, and promoting the development of the industry
<b>Cooperation with Financial Institutions</b>	China Development Bank, Bank of China, Industrial and Commercial Bank of China, China Construction Bank, China Merchants Bank, Bank of Communications, Huarong Xiangjiang Bank, Société Générale S.A., Commerzbank, Merrill Lynch, ING Bank, Hang Seng Bank, JP Morgan Chase, ANZ Bank, Banco Bilbao Vizcaya Argentaria, Bank of Tokyo-Mitsubishi UFJ, Commonwealth Bank of Australia, Mizuho Bank, Ping An Group, HSBC, China Life, etc.	Providing comprehensive financial services and increasing return on investment
<b>Cooperation with Colleges</b>	Tsinghua University, Peking University, Central South University, Hunan University, Qinghai Salt Lakes Institute of Chinese Academy of Sciences, China Academy of Geological Sciences, Beijing General Research Institute of Mining and Metallurgy, Northeastern University (China), China University of Geosciences (Beijing), Beijing University of Science and Technology, etc.	Establishing a long-term mechanism to promote cooperation between producers, universities and research institutions, supporting talent development for the industry, and supporting enterprise R&D activities



He Wenbo, Chairman and Party Group Secretary of China Minmetals, delivering a keynote speech

### Case: Jointly promoting healthy development of global mining industry

China Minmetals was invited to attend China Mining 2016 jointly sponsored by the Ministry of Land and Resources, Tianjin Municipal Government and China Mining Association. He Wenbo, Chairman and Party Group Secretary of China Minmetals, delivered a keynote speech entitled "Innovative Cooperation Concept, Expanding the Scope of Cooperation and Promoting Healthy Development of Global Mining Industry," providing an insight into the mining industry and advanced innovative cooperation models, and actively calling for industry counterparts to join hands to build an open mining economy in a comprehensive manner.



### Case: Guo Wenqing met with Peruvian President Pedro Pablo Kuczynski

On November 17, 2016, Guo Wenqing, President and Party Group Deputy Secretary of China Minmetals, met with Peruvian President Pedro Pablo Kuczynski during his visit to Peru. President Kuczynski highly appreciated Las Bambas for its achievements and its implications for economic growth in Peru. Noting the important role Minmetals has played in economic exchanges and cooperation between Peru and China and the important contributions Las Bambas has made to Peru's economic development, he expressed the determination of the Peruvian government to support the project. Guo Wenqing said that China Minmetals regarded the project the most important overseas mining assets and China Minmetals had every confidence in the management situation and prospects of the project; Las Bambas would actively fulfill its corporate social responsibility and make huge investment to help improve community conditions and boost local economic development; China Minmetals positioned Peru as the strategic support for the business of Minmetals in Latin America, so as to continue expanding its business operation in Latin America.



Guo Wenqing, President and Party Group Deputy Secretary of China Minmetals meeting with Peruvian President Pedro Pablo Kuczynski

## Responsible Supply Chain

We have established good business relationship with our suppliers based on mutual support and benefits. We only select suppliers with appropriate qualifications, strengthen the supervision and management of suppliers in product quality, safety, environmental protection and other fields and urge them to actively fulfill their social responsibility.

### Case: Helping local suppliers develop

MMG is committed to supporting local suppliers to develop sustainable businesses to supply our operations, as well as other customers locally and globally. Where possible we aim to source products and services from local suppliers who are able to meet our key selection criteria in safety, environment, quality, technical, social responsibility and commercial viability. Where gaps are identified we assist local suppliers to meet our standards and support them in building their capability. This process enables them to take up future opportunities to grow their businesses and expand their offering to customers beyond MMG. The USD 1.9 billion in-country spend represents 86% of the total 2016 spend. Of this, USD 376 million was spent with suppliers in the same province or state of our operations and USD 50 million with suppliers in the immediate near-mine area.



The USD **1.9** billion in-country spend represents **86%** of the total 2016 spend

### Case: Minmetals Real Estate held the 2016 Suppliers Conference

Minmetals Real Estate manages suppliers based on the principle of common growth and mutual benefits, aiming to create a favorable environment for development of suppliers which provide quality products at reasonable prices consistently, and has established long-term stable strategic partnerships with its suppliers. In 2016, Minmetals held a supplier conference with the theme of "New Opportunities, New Driving Forces". It announced a list of strategic suppliers and commended 45 suppliers and signed cooperation agreements with 101 strategic suppliers at the conference for trust building and benefit sharing purpose.



2016 Suppliers Conference of Minmetals Real Estate



### Case: China Huaye Group strengthened supply chain management

According to the principle of "green procurement, people-oriented management, operation with integrity", China Huaye Group ensured procurement quality through promoting supplier management regulations and practices such as setting up procurement centers, and standardizing supplier review, green procurement, contract compliance. In contract performance, it tightens supplier sourcing requirements, strengthens supplier review and gives priority to high-tech enterprises; promotes green procurement, gives priority to eco-friendly products, requires suppliers to implement green practices in the product delivery process and recycle waste; in respect of operating with integrity, it has established a two-way feedback mechanism, strengthened communication with suppliers, held supplier meetings, seminars and forums on a regular basis to timely respond to and solve the concerns of suppliers.

## Customer Value

We attach great importance to product quality and customer services, and have been continuously improving product quality and comprehensive service capabilities through the integration of resources and professionals, to provide customers with high-quality products and comprehensive solutions.



● MCC ranked eighth in ENR Global Contractor Top 250 ranking in 2016. It was MCC's eighth year in a row to rank among Top 10 in the ranking.

● MCC became a qualified EPC contractor and Class-A designer of municipal public works, and Chongqing's first construction contractor to obtain three special qualification and five Class-A qualifications.

● Hunan Nonferrous Chenzhou Fluoride Chemical Co. Ltd. was named Outstanding Hunan-based Enterprise in Quality Management; its floatation team was named "Outstanding Quality Management Team of Hunan Province"; the testing team of its hydrofluoric acid plant was named "Reliable Team of Hunan Province", etc. (9 honors).

● Zigong Cemented Carbide Co., Ltd. was named "Outstanding Quality Management Enterprise in Sichuan Province".

● Wanjing Caizhi Center developed by 23rd Metallurgical Construction (Group) Co., Ltd won 2016-2017 Luban Award issued by China Construction Industry Association and 2015-2016 Hunan Furong Award issued by Hunan Construction Industry Association.

● ICBC-AXA was named Outstanding Management Life Insurance Company of the Year.

● North China Aluminum Co., Ltd. was named Top 10 Suppliers of Aluminum Foil in 2016.



**Case: Torch zinc alloy produced by Zhuzhou Smelter Group Company was ranked among the Top 10 Best Products of the Industry**

To meet supply-side reform requirements, Zhuzhou Smelter Group Company has attached great importance to its technological advantage, adjusted its marketing strategy and improved the quality of service; strengthened technical exchanges between upstream and downstream, held meetings to collect feedback on zinc alloy quality and strengthened market segmentation; consolidate the influence of Torch zinc alloy, the reputable brand of the company. In 2016, Torch zinc alloy of Zhuzhou Smelter Group Company was ranked among Top 10 Best Products of China Zinc Alloy Industry of the year.



**Case: Minmetals Real Estate makes all-out efforts to increase customer value**

Minmetals Real Estate is committed to improving product quality, creating a satisfying lifestyle for customers. Being a responsible constructor, it promotes product innovation and attaches great importance to green building and smart home research. It has developed nine green building application systems, 18 technical standards and a smart home program; improved the national customer service management system and established a management model consisting of a customer service hotline and a cloud-based customer service system; developed an innovative property service model and expanded its business scope to housekeeping, maintenance, self-service laundry, community restaurants, house leasing, wedding photography and other fields to better meet the needs of home owners and improved its value-added services system.



## Global Responsibility

We implement the 2030 Agenda on a global scale, respect the customs and culture of the countries and regions where we operate, promote equality between men and women, promote staff localization, improve health care and help to eradicate poverty and hunger.

### Respecting Traditional Culture

Communication makes civilization interesting and colorful. We recognize and respect local culture and the freedom of religion or belief and provide reasonable accommodation of an employee's religious beliefs and practices; organize and participate in cultural exchanges, and build mutual understanding and trust; focus on the protection of local cultural heritage, and provide timely and necessary help for excavation of cultural heritage in areas where our projects are located.



**Case: MCC Tiangong Group respects Buddhist culture in Myanmar**

Myanmar is a predominantly Buddhist country. The Myanmar Branch of MCC Tiangong Group called on employees to participate in a Buddhist ceremony held by a project owner to improve the staff's understanding of the local Buddhist culture and build a closer relationship with the project owner. It also donated bread, cereals, instant noodles and other daily necessities to the 160 monks soliciting donations at Dhamayone Street, Hlaing Town, Yangon.





## Promoting Gender Equality

Gender equality is one of the important goals of the 2030 Agenda, and economic equality is an important way to achieve gender equality. We create jobs for women, promote women's entrepreneurship, help women increase income, improve their social status and achieve gender equality.



### Case: Ramu Nico Management (MCC) Limited supported a local pig raising project intended to help women increase income

On March 5, 2016, Ramu Nico Management (MCC) Limited and the Mineral Resources Authority (MRA) of Papua New Guinea (PNG) jointly invested PGK 87,000 in a pig raising project in BSK mining to help women increase income. The project helps women in the mining area buy piglets and feed, excavate drains, etc., support the development of the local pig industry, help local women increase income and raise social status.



A ceremony held to launch the pig raising project in the BSK mining area

## Improving People's Well-being

We take the initiative to understand the development needs of local communities where our projects are located, help develop local infrastructure, improve medical conditions, and improve local people's well-being.



### Case: MMG LXML Sepon carried out demining operation

LXML Sepon and the State Planning Commission of Laos jointly offered demining training programs to train demining operators and to remove the legacy of landmines and explosive remnants of war. In 2016, 35 employees of LXML completed Level 1 and Level 2 demining training programs. Since the project was launched, LXML Sepon have inspected 2,900 hectares of land and removed 45,000 unexploded landmines. The demining team of LXML is made up by more than 180 full-time employees, 300 temporary operators and 50 full-time trainers.

have inspected  
**2,900**  
hectares of land

removed  
**45,000**  
unexploded landmines

"I'm very glad MMG LXML supported Laos' UXO projects by training demining operators."

—Director of the State Planning Commission of Laos

"The goal of MMG is to promote development. We develop specialty training and development programs and provide interesting career development opportunities and have achieved remarkable progress in this regard."

—Paul Harris, Project Manager of LXML Sepon



Chinese experts providing on-site guidance for Vietnamese employees

## Promoting Staff Localization

We promote staff localization, create jobs for local residents, train local workers and help to drive local industrial and economic development.



### Case: Formosa Ha Tinh Steel Project of CISDI Group brought jobs to local residents

The Formosa Ha Tinh Steel Corporation's blast furnace, heating furnace and gas cabinet EPC project undertaken by CISDI Group recruited more than 2,000 local employees and trained local employees in blast furnace operating, on-site reinforcement processing, template support, structural welding, lifting crane operating, equipment installation and other skills by providing skills training programs and on-site technical guidance.

recruited more than  
**2000** local employees



### Case: China MCC17 Group built a friendship road in Côte d'Ivoire

Highway 130 (about 135 km in length) built by China MCC17 Group started in Boundiali in the north of Côte d'Ivoire and ended at the border between Côte d'Ivoire and Mali. It is an important road connecting Côte d'Ivoire and Mali. Highway 130 has brought convenience to local people and driven the economic development in the northern region of Côte d'Ivoire and export growth in Mali. It is known as the road of friendship China and Côte d'Ivoire. Côte d'Ivoire President Alassane Ouattara praised the work done by China MCC17 Group in ensuring quality, safety, progress and discipline of the project, and expressed gratitude to hard working Chinese enterprises and employees.



Côte d'Ivoire President Alassane Ouattara at the completion ceremony of Phase II of the project



**Case: MMG supported Laos' Maternal and Child Health Program**

In 2016, MMG committed a further USD 1.39 million to extend '1000 Day Project' supporting maternal and child health in Laos. The 1000 Day Project recognizes that the first 1000 days of life – from pregnancy until two years of age – is absolutely critical for intellectual and physical development. The project is reducing stunting and iron-deficiency anemia in children under two through community outreach, education, and provision of micronutrient supplements. MMG's support enables doctors, health professionals (midwives), and community volunteers to meet in small clinics in remote areas to provide health services for ethnic minorities in rural Laos. In Phase I of the project, MMG provided over 120,000 children with health and nutrition services, including 94,560 children with 2.5 million sachets of 'Superkid' micronutrient supplements.

In 2016, MMG committed a further USD **1.39** million to extend '1000 Day Project' supporting maternal

MMG provided over **120,000** children with health and nutrition services



A doctor screens a baby for malnutrition as part of UNICEF and MMG '1000 Day Project' health outreach services.

**Eradicating Poverty and Hunger**

The eradication of poverty and hunger is a common mission of mankind and one of the most important goals of the 2030 Agenda. As we expanded our presence in global mining and construction markets, we actively explore new ways and new technologies to manage agriculture, help improve agricultural productivity in areas where our projects are located and fight poverty in local communities.



**Case: MMG helps improve local agricultural productivity to eradicate poverty and hunger**

The vast majority of the world's extreme poor share a common profession – farming. Of the approximately 1.2 billion people living on less than 1.25 dollars per day, 75 percent of them work in agriculture on small holdings of land. Increasing agricultural productivity is very important for the eradication of poverty and hunger. In line with the commitment to 'Mine for Progress', MMG has promoted sustainable agricultural management systems and expanded its agricultural operations.

**In Congo**

it is working closely with the University of Lubumbashi to develop high-yield maize with improved nutritional value on a 1,700 hectares farm purchased by MMG near Kinshasa and established a Farmers Assistance Program and a Farmers Market Gardens Program to help increase local agricultural productivity.

**In Peru**

it has built Yavi Farm, which belongs to all local communities, to create jobs and provide convenience for local residents.

**In Laos**

the Mandarin Project is a partnership between MMG-LXML Sepon and Ironbark Citrus of Australia. Ironbark Citrus is developing management structures that will provide training, tools, seeds and distribution channels for local citrus farmers, helping local subsistence farmers transition to commercial agriculture so they can increase their incomes.

Home Far Away – Belt and Road Initiative is a key program designed to introduce major projects of Chinese companies in foreign countries in response to the Belt and Road Initiative and is aired on CCTV4. The program selected MCC Singapore's "Happy Sentosa" and "Struggling in the Lion City", and MCC Malaysia's "Malacca Impression" and "Story below the Twin Towers", which had been viewed by more than 200 million people as of early December.

MCC Singapore



欢乐宝石圣淘沙

MCC Singapore



奋斗在狮城

MCC Malaysia



马六甲印象

MCC Malaysia



双子塔边的印象



## Public Good

We are committed to giving back to the society and actively participating in poverty reduction, volunteer activities and disaster relief efforts.

### Participating in Targeted Poverty Alleviation

Eradication of poverty is an essential social responsibility and the premise for the achievement of the goal of building moderately prosperous society in all respects. Despite the downturn in the global metals and minerals industry, we have taken the initiative to carry out targeted poverty alleviation projects. We focus on livelihood projects and promote poverty eradication by sending cadres, providing financial support, supporting specialty industries, improving infrastructure and medical conditions as part of our effort to contribute to building moderately prosperous society in all respects by 2020. In 2016, China Minmetals provided RMB 4,672,200 in aid and received 2016 Outstanding Contribution Award by China Foundation for Poverty Alleviation.

#### Case: Participating in the "one company versus one county" poverty alleviation program

In response to the "one company versus one county" poverty alleviation program initiated by the Securities Association of China, Minmetals Securities conducted research in Liuzhi Special District, Weng'an County and other poverty-stricken counties (as defined by the central government) in Guizhou Province and determined the country it planned to help. Minmetals Securities has used its strength in the financial field to help poverty-stricken countries improve ability to use capital markets to promote economic development, and promote in-depth co-operation in education, training, law and other fields, and provided support in sale of agricultural products, poverty alleviation personnel communication and other aspects.



In 2016, China Minmetals provided RMB **4,672,200** in aid

and received **2016 Outstanding Contribution Award** by CFPA

**Providing human resources.** We continue to send cadres to lead poverty alleviation efforts. In 2016, Zhou Peicheng, a young female cadre sent by the Corporation to Chonghua Village, Jiancha Town, Dejiang County, Guizhou Province to serve as the first secretary of the village-based CPC committee, was named 2016 Outstanding First Secretary of Village-based CPC Committee in Guizhou Province

**Providing financial support.** We worked with China Foundation for Poverty Alleviation and use the donated cash (RMB 6.45 million, including RMB 500,000 donated by the Corporation, RMB 72,200 raised among employees via the Corporation's official WeChat account and donations from the public) to provide 70,175 "Packages of Love" to three counties in Zhaotong, Yunnan Province.

"Liuzhi Special District and Minmetals Securities have established a well-functioning partnership. Minmetals Securities aims to respond to the call of the central government for fulfillment of social responsibility, while Liuzhi Special District aims to achieve rapid economic growth and eradicate poverty. There is a lot of room for cooperation between the two sides in poverty alleviation, personnel training, industrial financing, etc. I hope the two sides will deepen cooperation in personnel training, financial support, targeted poverty alleviation and other fields in accordance with the framework agreement and work together to create a better future."

—Yang Gang  
Member of the Standing Committee of the CPC Liuzhi Special District Committee and Deputy Chief of Liuzhi Special District



#### Case: China ENFI completed the ropeway infrastructure project in Gulu Village, Hanyuan, Sichuan Province

In November 2016, the ropeway infrastructure project in Gulu Village, Hanyuan, Sichuan Province, undertaken by China ENFI was completed, including the ropeway station, main structure construction and equipment installation. The ropeway across the U-shaped valley (more than 600 meters) in Gulu Village is about 746 meters in length. It uses double loads and a single tractor and has three lines. The capacity of the passenger carrier is more than 40 people. This project marks the successful application of China ENFI's ropeway technology to solving transport problems of residents in mountainous areas and help rural population get out of poverty. It is a solid step made by China ENFI in response the call of the CPC to promote targeted poverty alleviation.



#### Case: China First Metallurgical Group Co., Ltd. has undertaken the first PV poverty alleviation project in Hunan Province

The 20-megawatt integrated PV and agricultural project undertaken by China First Metallurgical Group Co., Ltd. in Hubei Province is the first PV poverty alleviation PPP pilot project. The project covers an area of 603 mu and is expected to generate about 22 million kWh per year and reduce energy consumption by 7,900 tons of coal equivalent, consumption of clean water by 79,000 tons, dust emissions by more than 5300 tons, CO<sub>2</sub> emissions by nearly 20,000 tons, SO<sub>2</sub> emissions by nearly 600 tons, and emissions of NO<sub>x</sub> by nearly 300 tons per year after the completion. It is also expected to effectively promote the change in the composition of energy production and consumption in Anlu City, significantly reduce the use of fossil fuels and carbon emissions, improve PV and land use efficiency to promote the sustainable development of local economy. In the next two decades, the project will increase income of the village by at least RMB 50,000 each year and create jobs for local residents.



## Organizing Volunteer Activities

China Minmetals actively organizes volunteer activities, participates in Caring for Students, poverty alleviation and other volunteer activities, makes denotations to local communities, and contributes to the creation of a harmonious society.



More than 10 young employees of the second branch and the maintenance and renovation branch of 23rd Metallurgical Construction (Group) Co., Ltd. offered maintainance and renovation advice and distributed relevant materials to local residents at the central plaza in Zhuzhou City. They answered questions of more than 20 residents.



Employees of the installation branch of 23rd Metallurgical Construction (Group) Co., Ltd. visited the First Foster Home of Changsha and donated oil, rice, milk powder and other life necessities to children with disabilities at the foster home. The volunteers walked with these children and told them interesting stories to bring smile to these children.



23rd Metallurgical Construction (Group) Co., Ltd. worked with Changsha Blood Donation Center to organize a blood donation activity. Nearly 90 people donated blood and the total amount of donated blood reached 33,600 ml.



A team of volunteers set up by the Youth League Committee of Hunan Shuikoushan Nonferrous Metals Group provided health advice and repaired home appliance for more than 300 local residents; they also visited and donated rice, medicine and other life necessities and cash to empty nesters.



Employees of Hsikwangshan Twinkling Star Co., Ltd. volunteered to clean up the mining area and the factory, including the squares and surrounding areas.



In response to the call of the Municipal Communist Youth League Committee of Lengshuijiang City, Hsikwangshan Twinkling Star Co., Ltd. provided health consultation and clinic and appliance repair services, demonstrating the spirit of volunteer services - "dedication, friendship, mutual aid and progress".



A team of volunteers of Zhongye Changtian International Engineering Co., Ltd. visited Zuojiatang Elderly Care Center, Changsha City. They made in-kind donations to the center, talked with senior citizens and sang Defend the Yellow River (chorus) together.



Upon the call of the Communist Youth League Committee of Zhangjiawang Iron Mine, young employees of the mine planted trees in urban and rural areas of Laiwu City.



Shenzhen Branch of Central Research Institute of Building and Construction of MCC worked with the Shenzhen Nanshan Library, Nanshan Volunteer Center and Xingguang Child Rehabilitation Center to organize a volunteer activity that encouraged employees to read books with children with autism.



It was the 7<sup>th</sup> consecutive year for the volunteer team of China MCC20 Group to provide elderly care volunteer services to the elderly care home in Yangxing Town, Baoshan District, the Third Elderly Care Home and other facilities. They talked with and read newspaper for senior citizens, helped them cut nails and clean bedding, took photos of them, invited teachers to the nursing homes to teach them calligraphy and painting for life enrichment.

## Participating in Disaster Relief

As a responsible company, we are deeply involved in relief efforts of natural disasters and do our best to protect residents and property in areas hit by disasters.



### Case: Our involvement in relief efforts after Wuhan was hit by heavy rain in July 2016

Affected by El Niño, Wuhan City, Hubei Province was hit by a series of heavy showers which placed the city under unprecedented flood pressure. As a responsible SOE, MCC placed the interests of the public above all priorities and promptly participated in flood prevention efforts and worked with local military and civilian to prevent flood.

On July 4

the disaster relief team set up by China MCC20 Group, MCC Consortium and other enterprises in the development zone braved the storm to deliver 4,800 bottles of drinking water and 1,200 bowls of instant noodles and donations of other companies to people in the most affected areas in Fenghuang Town, Xinzhou District, Wuhan.



As of the Morning of July 5

some employees of WISDRI Engineering & Research Incorporation Limited had worked continuously for 48 hours to fight against the flood, rescued more than 100 vehicles stuck in floodwaters, evacuated more than 8,000 people and prevented about RMB 2 million economic loss.



Early in the Morning on July 6

Premier Li Keqiang rushed to Daokou Lake, Qingshan District, Wuhan, to lead disaster relief efforts as heavy rain wreaked havoc in the city and caused pipe rupture. Premier Li Keqiang shook hands with employees of MCC participating in the relief efforts and affirmed MCC's involvement and urged MCC to ensure the safety of employees participating in the relief efforts.



Premier Li Keqiang rushed to Daokou Lake to lead disaster relief efforts

# Sustainability Performance

Economic Performance	2012	2013	2014	2015	2016
Operating income (RMB 100 million)	3,268.64	4,146.50	3,227.57	2,003.67	4,355
Total taxes (RMB 100 million)	88.01	80.04	81.24	77.85	184.36
R&D investment (RMB 100 million)	5.70	8.58	10.61	9.84	60.52
Number of new patents	233	212	286	198	3,148

Environmental Performance	2012	2013	2014	2015	2016
Year-on-year decline in energy consumption (%)	-8.7	-1.19	-14.19	-24.01	2.00
Year-on-year decline in COD emissions (%)	-45.41	-9.18	-22.83	-18.83	8.30
Year-on-year decline in SO <sub>2</sub> emissions (%)	-12.68	-19.38	-12.28	-11.15	5.70
Number of environmental training sessions	10	15	16	4	267
Number of environmental training participants	1,224	1,266	1,405	1,770	13,670

Social Performance	2012	2013	2014	2015	2016
Number of employees	177,469	171,829	170,292	143,517	192,023
Number of female employees	29,428	31,061	35,236	22,324	-
Proportion of women in middle management (%) (in the headquarters)	16	14	16.67	10.53	10.7%
Safety investment (RMB 10,000)	93,500	42,471	46,400	39,308	189,093
Number of seriously injured employees (excluding employees of MCC)	8	2	4	2	3
Number of deaths (excluding employees of MCC)	2	5	4	3	3
Investment in employee training (RMB 10,000)	5,252.61	4,999.23	5,445	4,361	-
Number of employee training participants(person-time)	191,874	156,665	200,711	149,153	263,087
Proportion of contracts executed (%)	100	100	100	100	100
Total donations (RMB 10,000)	15,138.60	15,776.57	11,649.60	41,845.12	23,746.03

## 2016

Operating income (RMB 100 million)

**4,355**

Total taxes (RMB 100 million)

**184.36**

R&amp;D investment (RMB 100 million)

**60.52**

Number of new patents

**3,148**

Year-on-year decline in energy consumption (%)

**2.00**

Year-on-year decline in COD emissions (%)

**8.30**Year-on-year decline in SO<sub>2</sub> emissions (%)**5.70**

Number of environmental training sessions

**267**

Number of environmental training participants

**13,670**

Number of employees

**192,023**

Number of employee training participants(person-time)

**263,087**

Proportion of women in middle management (%) (in the headquarters)

**10.7%**

Proportion of contracts executed (%)

**100**

Safety investment (RMB 10,000)

**189,093**

Total donations (RMB 10,000)

**23,746.03**

# Outlook

	Review of 2016	Plan for 2017
 <p><b>Value Creation</b></p>	<ul style="list-style-type: none"> <li>• Recombination of China Minmetals and MCC</li> <li>• Strengthening capital efficiency and transitioning into a state-owned capital investment company</li> <li>• Improving resource control and development capacity and resource quality</li> <li>• Improving compliance management and operating with integrity, which are two cornerstones of continual growth and corporate reform</li> </ul>	<ul style="list-style-type: none"> <li>• To promote business integration and pull out all the stops to developing the internal market (worth at least RMB 100 billion)</li> <li>• build overseas asset capital platforms</li> <li>• To become China's most important metal and mineral resource supplier and enter into the 1st echelon of the global mining sector.</li> <li>• To implement whole process control and comprehensive risk control and develop innovative cost control methods and mechanisms</li> </ul>
 <p><b>Innovation</b></p>	<ul style="list-style-type: none"> <li>• Building 32 national technological innovation platforms</li> <li>• Cultivating new growth points by means of technological innovation to realize the translation of research results into productive forces</li> <li>• Establishing a dynamic technological talent team</li> <li>• Actively participating in the development of industrial plans and standards and promoting the healthy development of the industry</li> </ul>	<ul style="list-style-type: none"> <li>• To create a group of technological cooperation alliances to work on major projects</li> <li>• To promote the translation of research results into productive forces, turn stereotype technology into products, strengthen the market development of patented products, and increase the market share of independently developed products</li> <li>• To continuously improve the innovation capability of R&amp;D personnel</li> <li>• To increase investment in the development of "sponge cities", water pollution control, soil restoration, air pollution control, solid waste treatment, health care industries and fill the industrial blanks</li> </ul>
 <p><b>Safety and Health</b></p>	<ul style="list-style-type: none"> <li>• Improving the safety management system, strengthening hazard management by priority</li> <li>• Stepping up the effort to promote a safety culture and strengthening safety training</li> <li>• Strengthening occupational safety management</li> <li>• Increasing investment in safety assurance technologies and strengthening hazard elimination Dismissing unqualified mining contractors</li> </ul>	<ul style="list-style-type: none"> <li>• To continuously advance the development of hazard control and risk prevention systems</li> <li>• To increase the forms of safety training, improve training efficiency, and ensure that training programs are aligned to the needs of the needs of the Corporation, employees and jobs</li> <li>• To raise employees' awareness of occupational health and safety and strictly control newly-discovered occupational diseases and occupational hazards</li> <li>• To strengthen the safety inspection of mining and construction companies and actively remove hazards</li> <li>• To strengthen safety management of contractors</li> </ul>

	Review of 2016	Plan for 2017
 <p><b>Environmental Protection</b></p>	<ul style="list-style-type: none"> <li>• Promoting environmental impact assessment, analysis and control on tailings and implementing green mining throughout the entire life cycle of mines</li> <li>• Promoting refined energy conservation, market-oriented energy conservation, and improving our energy management system</li> <li>• Protecting biodiversity and ecological systems</li> </ul>	<ul style="list-style-type: none"> <li>• To promote the emission certification system of enterprises with fixed source of emissions of all pollutants</li> <li>• To improve the dynamic, multi-level environmental management system, and strengthen dynamic, multi-level incentive measures</li> <li>• To promote cleaner production, reduce emission by means of source control and elimination of outdated capacities</li> <li>• To explore group-level carbon emission management models, and improve carbon emission data collection and analysis</li> </ul>
 <p><b>Employee Development</b></p>	<ul style="list-style-type: none"> <li>• Promoting the market-based compensation system and improving the employee well-being promotion system</li> <li>• Launching the 2025 Youth Leadership Program</li> <li>• Setting up workplace sports and cultural clubs, and organizing social, cultural and sports activities</li> <li>• Improving the corporate culture and promoting it among employees</li> </ul>	<ul style="list-style-type: none"> <li>• To improve the market-based incentive mechanism and adjust the compensation composition</li> <li>• To step up our effort to recruit and development young employees and build a reserve pool of talent for the Corporation</li> <li>• To offer training to the Top 100 team leaders and ensure the successful organization of the first Corporation-wide Employees' Games</li> <li>• To give full play to the role of the corporate culture in binding employees together and embrace cultural diversity</li> </ul>
 <p><b>Social Harmony</b></p>	<ul style="list-style-type: none"> <li>• Strengthening cooperation with the government, financial institutions, schools and other partners</li> <li>• Creating a responsible supply chain built on mutual support and mutual benefit</li> <li>• Continuing to strengthen quality control, and improving product and service quality</li> <li>• Continue to be committed to performing our global responsibilities and implementing the 2030 Agenda</li> <li>• Communicating with local communities, listening and responding to the demand of local communities</li> <li>• Implementing our targeted poverty alleviation strategy, supporting the development of specialty industries, and participating in disaster relief</li> </ul>	<ul style="list-style-type: none"> <li>• To deepen our cooperation with the government, financial institutions, schools and other partners based on the principle of sharing</li> <li>• To control procurement process and urging our suppliers to improve their CSR management</li> <li>• To improve product and service quality and make customers satisfied</li> <li>• To conduct research on the 2030 Agenda and implement relevant policies</li> <li>• To develop new ways to communicate with local communities and build a closer relationship with local communities</li> <li>• To continue to promote targeted poverty alleviation and support specialty industries</li> </ul>



## Assurance Statement of Corporate Social Responsibility Report

TUV Asia Pacific Ltd.('TUV NORD') has been commissioned by the management of China Minmetals Corporation ('China Minmetals' for short) to carry out an independent assurance of the 2016 sustainability Report ('report' for short) .

China Minmetals is responsible for the collection, analysis, aggregation and presentation of information within the Report. TUV NORD's responsibility in performing this work(assurance of the report) is in accordance with terms of reference agreed in the scope of engagement with China Minmetals. China Minmetals is the intended users of this statement.

This statement is based on the assumption that the data and information provided in the report is complete and true.This report is the tenth report of China Minmetals, and it's the first time for CHINA Minmetals to invite TUV NORD give an independent assurance.

### Assurance Scope

- The report revealed the accuracy and reliability for key performance, information and management system which happened in 2016.
- Assurance address is in Tower A, Minmetals Plaza,No.3 Chaoyangmen avenue, Dongcheng district,Beijing China,Where the headquarter located. And we didn't visit other branch, Subordinate units or the site of Projects.
- We evaluate the collection, analysis, aggregation of the information and data.

Assurance of the Report was done on 15-16.05.2017.

### Assurance Methodology

Assurance process including following activities:

- Review the document information which provide by China Minmetals ;
- Interview the person who collected the report information;
- View the related websites and media reports, verify the data and information through sampling method;
- Refer to GRI Sustainability Reporting Guideline(G4) on balance, comparability, accuracy, timeliness, clarity, reliability, and give the evaluation;
- Refer to AA1000AS (2008)Assurance methodology;
- Assurance activity is based on TUV NORD CSR report assurance management procedure.

### Assurance Conclusion

China Minmetals sustainability Report provide an appropriate and objective view of the sustainability& social programs and performances in 2016. The data in report is reliable and objective, TUV NORD didn't find the system error or substantial error,Which meets the disclosure requirement of G4 core option.



- The structure of report is complete, the revealed information is clear, easy-understand and available;
- The report feedbacks the stakeholders expectation and requirementthrough6 fields, which is Be Valuable, Be Innovative, Be Safe,Be Green, Be Happy, Be Harmonious,in addition, a retrospective review of the 2016 Minmetals restructuring was conducted in a thematic format, which disclose and respond to the company's 2016 hot spot better.
- Responsible performance reveals five years key performance at the end of the report, which reflect the report comparison.

### Suggestion for improvement

Through assurance and evaluation, we had following improvement suggestion on CSR practice and management:

- suggest identify and uniform collect paths, calculation methods when collecting some social responsibility performance indicators;
- Suggest increase quantitative data and reduce qualitative descriptions when disclosure of supply chain CSR performance information;
- Recommend strengthen analysis of key performance data of big changes.

### Special statement

This statement excluding:

- The activity outside information reveal;
- The position, idea, faith, object, future developing direction, and promise which stated by China Minmetals.

### Statement of Independence and Competence

TUV NORD Group is the world's leader in inspection, testing and verification, operating in more than 70 countries throughout the world and providing services which includes management systems and product certification; quality, environmental, social and ethical auditing and training; environmental;social responsibility and sustainability report assurance.

TUV Asia Pacific Ltd.affirms its' independence from China Minmetals and confirms that there is no conflicts of interest with the organization or any of its subsidiaries and stakeholders when performing the assurance of the Report.TUV Asia Pacific Ltd. was not involved in any manner with China Minmetals, when the latter was preparing the Report.

### 汉德技术监督服务(亚太)有限公司

The Authorized person: Song haining

The team leader: Huang li

Date: 22.05.2017

Date: 22.05.2017

Note: When there is a conflict between the declared Chinese and English versions, please prevail in Chinese.



# Index

## The Implementation of the UN Global Compact' s Ten Principles

Ten Principles	Corresponding Actions in 2016		
<b>Human Rights</b>	To support and respect the protection of internationally proclaimed human rights ----- To make sure that they are not complicit in human rights abuses	Formulating standards and codes for supporting and respecting the protection of internationally proclaimed human rights within our sphere of influence, and fully integrating human rights and labor practices into strategies and operation to facilitate the staff's all-round development ----- Establishing a democratic management system at the core of which is employee engagement, employee representative meetings, employee directors, employee supervisors and other systems; and fully protecting employees' rights to information, participation, expression and supervision in corporate management	
	<b>Labor</b>	To uphold the freedom of association and the effective recognition of the right to collective bargaining ----- To eliminate all forms of forced and compulsory labor ----- To abolish child labor ----- To eliminate discrimination in respect of employment and occupation	Strictly observing the relevant laws, regulations and policies of the States and the places where the operations are based, as well as the international conventions on human rights and labor ----- Sticking to fair and standardized employment, ensuring that all tasks are fulfilled by lawfully recruited personnel, and prohibiting all forms of discrimination in respect of employment ----- Resolutely prohibiting child labor and compulsory labor
<b>Environment</b>		To support a precautionary approach to environmental challenges ----- To undertake initiatives to promote greater environmental responsibility ----- To encourage the development and diffusion of environmentally friendly technologies.	Strengthening environmental risk and response management and take the initiative to respond to climate change ----- Promoting cleaner production, increasing resource efficiency, developing green mines and protecting biodiversity ----- Strengthening independent innovation, and developing solid waste, sewage and waste gas treatment, environmental remediation and other related business
		<b>Anti-Corruption</b>	To work against corruption in all its forms, including extortion and bribery.

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# Feedback Sheet

Dear readers,

Thank you for reading the report. We sincerely look forward to your comments to improve our CSR-related tasks.

You may contact us at:

Tel.: 0086-10-60169739

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Mail: Party Propaganda Department (Corporate Culture Department) News and Social Responsibility Department of China Minmetals Corporation

Tower A, Minmetals Plaza, No.3 Chaoyangmen North Avenue, Dongcheng District, Beijing, China (100010)

E-mail: zhmengm@minmetals.com

### Multiple Choice: (please tick in the box of your choice)

- Your overall impression of the report:  Very good  Good  Fair  Not good  Bad
- The quality of CSR-related information contained in the report:  Very good  Good  Fair  Not good  Bad
- The structure of the report:  Very good  Good  Fair  Not good  Bad
- The layout of the report:  Very good  Good  Fair  Not good  Bad
- Overall evaluation:  Very good  Good  Fair  Not good  Bad

### Open-ended Question:

What is your comment or suggestion on the 2016 report?

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