

Notes to This Report

This is the first country-level CSR (corporate social responsibility) report by China Nonferrous Metal Mining (Group) Co., Ltd. (CNMC). It reviews CNMC’s CSR practice and performance in fulfilling its political, economic, environmental, and social responsibilities, especially in achieving common development and long-term operation, respecting employees, caring for the environment, and making contributions to local communities during its investment and operation in Zambia.

Report Basis

This report complies with the Guidelines for CSR Fulfillment by the State-owned Enterprises Directly under the Central Government released by the State-owned Assets Supervision and Administration Commission (SASAC) of the State Council. During its compilation, the ISO 26000: Guidance on Social Responsibility (2010) released by the International Organization for Standardization and the Sustainability Reporting Guidelines (G3.1) by the Global Reporting Initiative (GRI) were consulted.

Reporting Scope

The report involves nine enterprises established and run by CNMC in Zambia, including Zambia-China Economic & Trade Cooperation Zone Development Limited (ZCCZ), NFC Africa Mining Plc. (NFCA), Chambishi Copper Smelter Limited (CCS), CNMC Luanshya Copper Mines Plc., Sino-Metals Leach Zambia Limited (SML), CNMC Mpongwe Mining Company Limited, Fifteen MCC Africa Construction & Trade Limited, Sinotra Company Limited, and China Nonferrous Kabwe Mining Company Limited.

Reporting Period

From June 1998, when CNMC purchased Zambia Chambishi Copper Mine and started its operation in Zambia, to December 31, 2011 (except the data with special notes)

Data Sources

The data in the report are taken from the official documents and statistical reports of CNMC and its enterprises in Zambia. Unless otherwise stated, the deadline for data collection is December 31, 2011.

References

For easy expression and reading, this report uses “CNMC,” “the Company,” “the Group,” or “we” to refer to China Nonferrous Metal Mining (Group) Co., Ltd., and the term, “enterprises in Zambia,” to refer to the nine enterprises established and run by CNMC in Zambia.

Access to this Report

This report is in both Chinese and English versions. For a paper copy of the report, please contact CNMC’s Strategy Research Department or ZCCZ. In addition, you may download the electronic version on CNMC website --- <http://www.cnmc.com.cn>.

CNMC Strategy Research Department

Contact person: Wu Lin
Tel.: +86 10 84426825
Email: wul@cnmc.com.cn

Zambia-China Economic & Trade Cooperation Zone Development Limited
Contact person: Meng Zhiguo
Tel.: +26 0976160934
Email: zhiguomeng@gmail.com

CONTENTS

Message from the President Dialogs	02 04
------------------------------------	----------

About Us

Brief Introduction	06
Global Business Distribution	07
CNMC’s Development Course in Zambia	08
Government Support	10

Social Responsibility Management

Corporate Culture and Development Strategy	12
CSR Declaration by CNMC Enterprises in Zambia	12
Social Responsibility Management Structure	13
Stakeholders' Expectations and Communication	14

Common Development

An All-Weather Friend	17
Extension of the Industry Chain	20
Cooperation Zone Mode	23

Long-term Operation

Abiding by the law	27
Work Safety	28
Technological Innovation	30
Modern Management	32

Respecting the Employees

Employee Localization and Cultural Fusion	35
Rights and Security	37
Working Conditions and Labor Protection	38
Improving and Developing Skills	39
Topic: Lovable and Respectable Chinese Employees	40

Cherishing the Environment

Environmental Management	43
Comprehensive Utilization	44
Circular Economy	45
A Garden-Like Mine	48

Contributions to the Community

Community Development Plan	51
Infrastructure Construction	52
Medicine and Health	53
Culture and Education	53
Supporting Women’s Development	54
Charitable Donations	54
Topic: Brightness Mission —— Spread Brightness and Lighten Hope	55

Future Prospect	56
-----------------	----

Message from the President



Economic globalization is one of the basic trends and characteristics of the present time. The optimal combination and allocation of production factors such as capital, information, technology, labor, and resources in the whole world have promoted the common development of global economy.

Since its establishment in 1983, CNMC, as one of China's large central enterprises, has been sticking to its strategic direction of investing in the international mining industry, actively participating in the economic globalization, achieving sustainable development, and becoming a top mining company in the world with outstanding core businesses, advanced management, and strong international competitiveness and influence.

CNMC is committed to providing green, energy-saving, safe, and recyclable nonferrous metal products for social development. Now, it has completed certain scale of nonferrous metal resources development layout in

countries around China, in central and southern Africa, and also in countries and regions with developed mining capital. It has operations in more than 30 countries and regions and its overseas businesses include 22 mines, 6 smelting plants, one economic and trade cooperation zone, and 6 listed companies. CNMC has established a nonferrous metal resources development system covering the entire industry chain.

Zambia is a charming country with rich nonferrous metal resources, beautiful natural environment, and kindhearted and honest people. Every time I set foot on its land, I am deeply impressed. No longer a stranger to this country, I have deep feelings for Zambia and its people.

Zambia is one of the most important regions in CNMC's global investment, operation, and development. During our development in Zambia, we aim to accomplish the mission of "China-Zambia Cooperation for Common Development" proposed by Chinese President Hu

Jintao. We have always been focusing on our long-term operation while fulfilling our political, economic, environmental, and social responsibilities. We have been adhering to the social responsibility concept that we should "make every project built by us a success so as to promote local development." We, by sticking to the principle of establishing responsible operation modes, have been trying to become a witness and promoter to China-Zambia friendly development in the new era, build a positive social image for CNMC, and maintain China's image as a responsible power.

We abide by Zambian laws and regulations, maintain ethical operations, adopt a standardized corporate governance system, and do business and pay taxes according to the law. CNMC's enterprises in Zambia have paid over 100 million USD of taxes in Zambia.

We have brought "mining – concentrating – smelting," the complete industry chain in nonferrous metal resources development, to Zambia to upgrade local resources development skill, leave more value to local people, upgrade our employees' technical capability, and improve local industrialization. We have made contribution to the development and prosperity of local mining industry.

We have introduced to Zambia China's economic development mode and experience, including China's construction and development speed, China's commitment to quality improvement, the advanced and applicable technologies grasped by Chinese enterprises, and China's innovative "economic development zone" mode. These have brought new ideas and new vitality for Zambia's economic development

Not only have we invested in Zambia, but we have provided local people with 12,500 jobs. In fact, over 85% of the employees of our enterprises in Zambia are local people. We have also invested 130 million USD to improve the local infrastructure. Our Sino-Zam Friendship Hospital offers free medical services to our employees and their registered family members. We take part in and help the holding of local anti-AIDS and anti-malaria training to improve local health conditions. We also help local women secure jobs and give subsidy to small farmer households so as to promote local social and economic development.

Our enterprises in Zambia have stepped up environmental protection efforts. They keep on adopting the discharge standards and technological standards that are stricter than Zambia's statutory requirements. In addition, they

strengthen technological innovation, increase resources utilization rates, and maintain the clean ecological environment of Zambia.

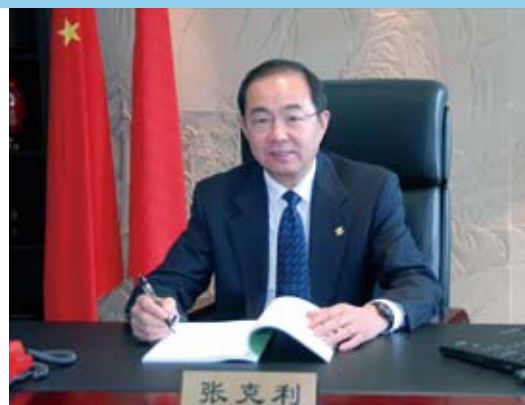
People with foresight make steady progress and those with aspirations are ever victorious. "Going abroad in steady and sound paces" is what CNMC has achieved in Zambia. In doing so, it has accumulated valuable experience in overseas investment and operation for Chinese enterprises. We believe that an enterprise cannot achieve great development if it fails to fulfill its responsibilities. Only by earnestly fulfilling its responsibilities and contributing to local development can an enterprise survive, develop, and thrive.

CNMC may not have achieved so much in Zambia but for the attention, guidance, and support from governments of both countries, the hard work of its Chinese and Zambian employees, and the care and support of the local communities. On June 29, 2012, China Nonferrous Mining Corporation Limited (CNMCL), a company reorganized from four of our enterprises in Zambia, was successfully listed in Hong Kong. This was the first Africa concept stock listed in Hong Kong. Here, on behalf of CNMC, I would like to give my sincere thanks to the organizations and individuals who have helped and contributed to its development.

"China Nonferrous Metal Mining (Group) Co., Ltd. Zambia 2011 CSR Report" is our first country-level CSR report. Through it, we hope to showcase the responsible image of Chinese enterprises, highlight the outstanding contributions made by Chinese and Zambian employees, comprehensively summarize successful development experience of our enterprises in Zambia, actively communicate with all stakeholders, and write a new chapter of "China-Zambia Cooperation for Common Development."

Mr. Luo Tao
President of CNMC
Chairman of the Board and
Non-Executive Director of China Nonferrous Mining
Corporation Limited
Chairman of the Board of ZCCZ

Dialogs



Mr. Zhang Keli

Vice-President of CNMC
Vice Chairman of the Board of ZCCZ

How do CNMC's enterprises in Zambia understand corporate social responsibility?

CNMC believes that by fulfilling its CSR, an enterprise must, during its decision making and operation, act transparently and ethically, give consideration to stakeholders' expectations, and take responsibility for its impact on the economy, society, and environment. Fulfillment of CSR aims to promote the sustainable development of the enterprise and society, or their common development that takes root in present day and faces the future.

Wherever the company does its business, its responsibility will extend to there. CNMC's enterprises in Zambia shoulder the political responsibility for promoting friendship between China and Zambia, the economic responsibility for spurring business development, the environmental responsibility for protecting Mother Nature, and the social responsibility for bringing prosperity to local communities.

How do CNMC's enterprises in Zambia understand the operating environment and stakeholders' expectations?

Zambia is a country with rich nonferrous metal resources, beautiful natural environment, a relatively sound legal system, social stability, and honest and friendly people. CNMC has actively communicated with all stakeholders, including local governments, communities, and suppliers.

CNMC's investment and operation in Zambia have brought China's economic development experience and advanced technologies to local community and promoted the development of local economy, especially the mining industry. Meanwhile, CNMC abides by local laws and regulations, respects local culture and customs, protects the natural environment, and pursues common development with local community.

"China-Zambia Cooperate for Common Development" is the guiding principle for CNMC development in Zambia. How does CNMC understand "common development" and what efforts have been made to achieve it?

CNMC not only values highly its contribution to the economic cooperation and traditional friendship between China and Zambia, but also takes long-term operation and long-term interests seriously.

We stepped forward at the critical juncture to take over Chambishi Copper Mine after its 13-years shutdown and revived it. We solemnly promised "not to reduce our output, staff, or investment." We also took over the idling Luanshya Copper Mine Company and turned its losses into gains. We stood side by side with Zambian people to withstand the impact of the financial crisis.

We have brought to Zambia the entire industry chain. By establishing leaching plant and smelter, we have brought to Zambia the entire industry chain of "mining – concentrating – smelting" in nonferrous metal resources development and left more industrial added value in Zambia. Meanwhile, we have valued high our cooperation with local suppliers and increased the proportion of local purchases.

We have introduced the cooperation zone mode. We have shouldered the great task of constructing the Zambia-China Economic and Trade Cooperation Zone (ZCCZ), the first of its kind in Africa announced by Chinese Government. It is also the first Multi-functional Economic Zone announced by Zambian Government.

This is why CNMC is called an all-weather friend of Zambia.



Mr. Tao Xinghu

Vice-President of CNMC
President and Executive Director of CNMCL
Vice Chairman of the Board of ZCCZ

How does CNMC achieve long-term operation in Zambia?

Our long-term operation in Zambia is based on our rule-complying system, work safety, technological innovation, and modern management. We respect Zambian laws and regulations, keep ethical operation, establish a standard corporate governance system, do business and pay taxes according to the law, and combat any form of commercial bribery. We pay attention to work safety, combine Zambian requirements with the characteristics of Chinese enterprise, and develop a sound work safety management system. We persist in technological innovation, use applicable mining technology, apply the advanced smelting technologies, and try hard to build an innovative and learning-oriented enterprise. We have strengthened enterprise management, innovated on our management mode, improved corporate operational efficiency, and sped up the construction of digital mining through information management.

How does CNMC advance operation localization and safeguard the rights and interests of its employees?

We lay emphasis on operation localization and have provided 12,500 jobs for local people. In our enterprises in Zambia, the average proportion of local employees exceeds 85%, with the highest reaching 98%.

We firmly believe that respect can overcome national and cultural differences. We promote mutual understanding through learning and achieve mutual trust through communication.

We are committed to providing our employees with good working and living conditions, and expanding the development space for them through corporate development.

How does CNMC strike a proper balance between business development and environmental protection?

From the very beginning of our project planning and construction, we have focused on environmental protection, energy conservation, and emission reduction. When taking over the Chambishi copper mine, we proposed the goal of "building green enterprises without any harm to the clear water and blue sky."

We have developed a series of rules and regulations, including the Regulations on Environmental Protection, established a long-term environmental protection mechanism that gives priority to "prevention, protection, and comprehensive management."

Furthermore, we have made large investment in transforming our production technologies and processes and have strengthened our routine basic management. Our enterprises in Zambia have reached internationally-advanced level in energy consumption and discharge of waste water, waste gas, and waste residue.

We work hard to upgrade our resources utilization rate, advocate circular economy, and promote environmental protection to a new level through technological innovation.

How does CNMC contribute to the local community and achieve a good environment for development?

Enterprise sustainability and community development depend on each other. We make special plan on community development and actively repay the local community. We support the development of local community. We have invested 130 million USD in infrastructure construction and school repairs. We support the construction of local health care facilities and run the Sino-Zam Friendship Hospital to provide high-quality health care services to miners and local people. Furthermore, we support local education, culture, and sports causes and local women's development.

About Us

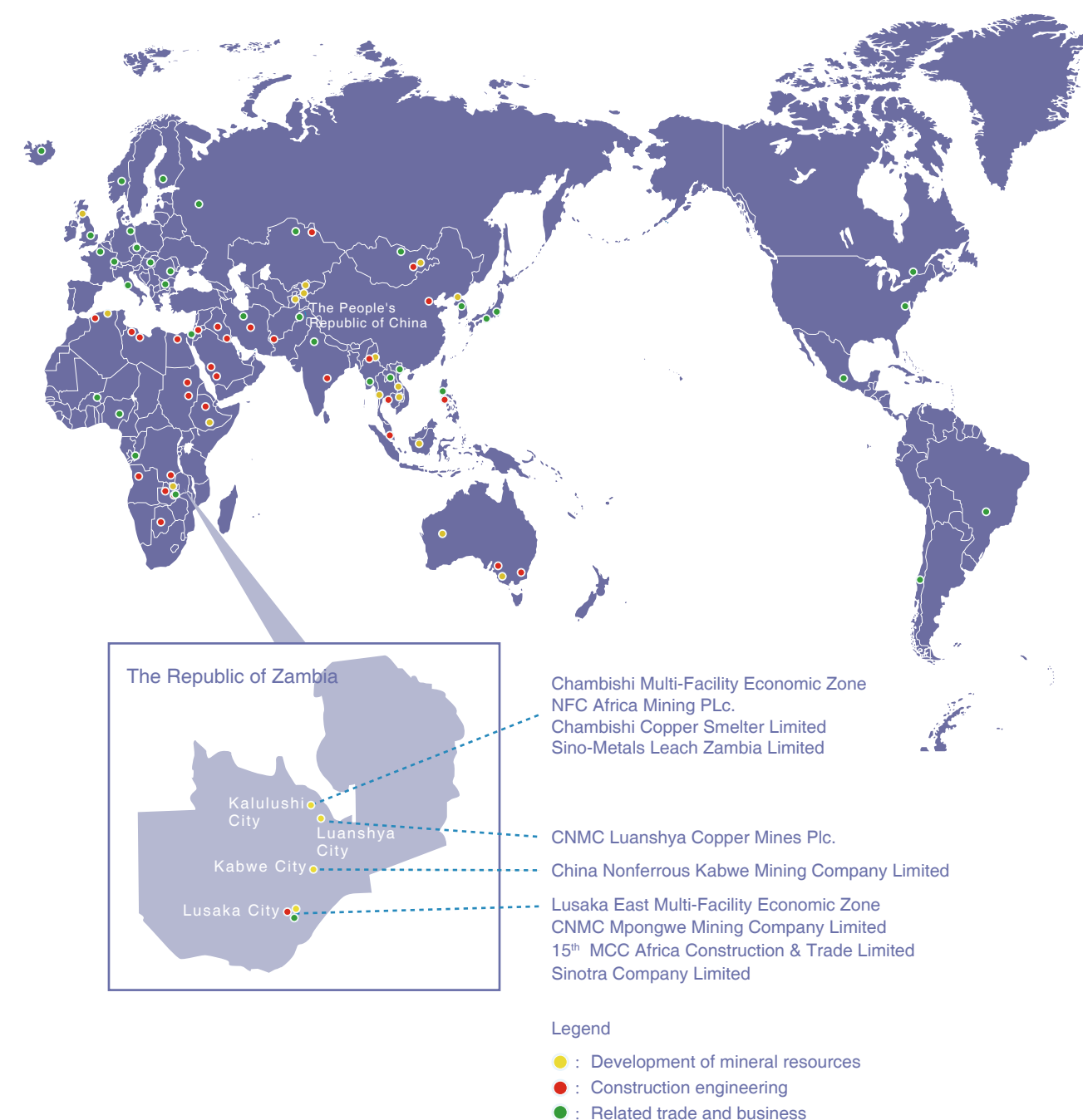
Brief Introduction

Founded in 1983, China Nonferrous Metal Mining (Group) Co., Ltd. (CNMC) is headquartered in Beijing. It is one of the large-scale central state-owned enterprises (central SOEs) under the direct management of SASAC Supervision Committee of the State Council. In 2011, CNMC achieved “Dual Hundred-billion” leap-forwards in its total assets and sales income. Compared with 2005, its total assets, sales income, and total profit had increased by 15 times, 20 times, and 10 times, respectively. Currently, CNMC has formed an industrial pattern featuring the coordinated development of three major businesses such as the nonferrous metal mineral resources development, construction engineering, and the relevant trade and services. As the holding company or a shareholder of 38 enterprises and controlling 25 overseas enterprises at various levels, CNMC is a pioneer Chinese enterprise that has made the first and the most investments in overseas nonferrous metal mining sector.

Upholding the principles of “mutual benefit and common development,” CNMC persists in international operation, makes great efforts to build itself into a world-class mining group with strong international competitiveness, and aims to carry out friendly cooperation and achieve common development with the countries in which its projects are located.



Global Business Distribution



CNMC's Development Course in Zambia

By the end of 2011, CNMC had established nine enterprises in Zambia, involving a total investment of two billion USD, and formed China's largest overseas nonferrous metal industry base with Zambia-China Economic and Trade Cooperation Zone as the platform, making it the largest Chinese enterprise in Zambia. On June 29, 2012, China Nonferrous Mining Corporation Limited, a company reorganized from four of our enterprises in Zambia (i.e. NFC Africa Mining Plc., NFC Luanshya Copper Limited, Chambishi Copper Smelter Limited., and Sino-Metals Leach Zambia Limited), was successfully listed in Hong Kong. This was the first Africa concept stock listed in Hong Kong. All the funds raised by the listed company are used for the construction of local projects.

Zambia-China Economic and Trade Cooperation Zone Development Limited (ZCCZ):

Chinese President Hu Jintao and then Zambian President Dr. Levy Mwanawasa attended ZCCZ unveiling ceremony on February 4, 2007 and wrote down "China and Zambia Cooperate for Common Development." The cooperation zone is the first overseas economic and trade cooperation zone in Africa announced by China and also the first multi-facility economic zone declared by the Government of the Republic of Zambia (GRZ). ZCCZ contains the Chambishi Multi-Facility Economic Zone (MFEZ) and the Lusaka East MFEZ and is developed and operated by ZCCZ Limited. By the end of 2011, the cooperation zone had hosted 17 enterprises, involving a total investment of 1.2 billion USD and an output value of 4.35 billion USD. A relatively complete nonferrous metal resources development system has preliminarily taken shape.

NFC Africa Mining Plc. (NFCA): It has built China's first, and also the largest, overseas nonferrous metal mine, Chambishi copper mine. The mine includes the Main Ore Body, West Ore Body, and Southeast Ore Body. In 1998, CNMC took over the Chambishi Copper Mine through international bidding. In 2003, production was successfully resumed at the Main Ore Body. By the end of 2010, the West Ore Body was put into production. The Southeast Ore Body is now under development.

Chambishi Copper Smelter Limited (CCS): It runs China's largest overseas copper smelting project. Constructed since 2007, the project was officially put into

operation in 2009 and has won the "Luban Award for China's Overseas Construction Engineering." Upon the completion of its phase-two expansion, which was started in 2010, the project will be able to produce 250,000 tons of blister copper and 600,000 tons of sulfuric acid each year.

CNMC Luanshya Copper Mines Plc. (CLM): In June 2009, CNMC purchased 80% of the stock of CLM; then, in December of the same year, the Baluba Mine under CLM resumed production after transformation. The Muliashi project was put into operation in March 2012.

Sino-Metals Leach Limited (SML): Built since 2004, the company started its operation in 2006. It has been called an "Energy-saving Model Enterprise" by Zambian Government and people. The leaching project is good for promoting resources comprehensive utilization and achieving good economic and social benefits.

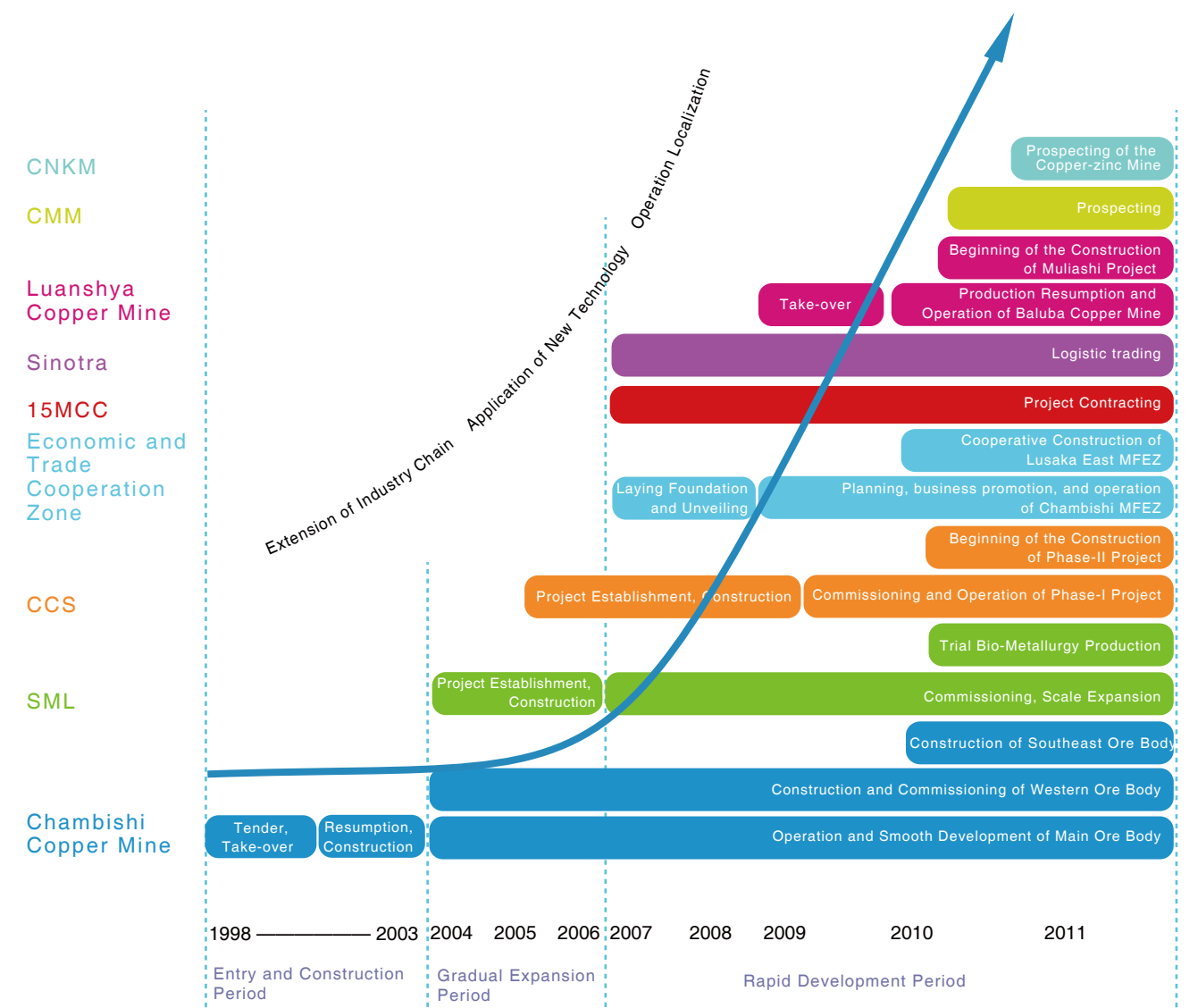
CNMC Mpongwe Mining Company Limited (CMM): Founded in May 2010, CMM has CNMC and Sanshika Bulalo Enterprises Limited as its shareholders. Its development project, 2,217 square kilometers in area, is located in Copperbelt Province, Zambia, close to the Luanshya Copper Mine.

15th MCC Africa Construction & Trade Limited (15MCC): Established in 2007, it is the only Chinese enterprise in Zambia that possesses five Class-A general contractor qualifications. It has undertaken several important projects of CNMC in Zambia.

Sinotra Company Limited (Sinotra): Established in September 2008, it is a governmental supplier approved by the Government of Zambia, and also the only Chinese company that has customs clearance qualification in Zambia. Its main businesses include international freight agency services centering on Zambia in Central and South Africa, purchase and sale of metallurgical and mining production equipment as an agent, and trade of nonferrous mineral products and processed products.

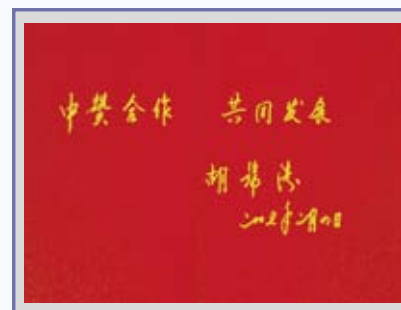
China Nonferrous Kabwe Mining Company Limited (CNKM): It mainly invests in the prospecting and development of the copper-zinc mine in the west of Kabwe, Zambia. The West Kabwe copper-zinc mine project is actually located in the northwest of Kabwe, capital of the Central Province in the middle of Zambia. The mining area is about 480 square kilometers. The prospecting began in 2011 and has produced relatively good results.

Chart of Development Course of CNMC in Zambia



Government Support

The development of CNMC in Zambia is the fruit of the cordial solicitude, support, and guidance of the governments of both countries.



On February 4, 2007, Chinese President Hu Jintao and then-Zambian President Dr. Levy Mwanawasa attended ZCCZ and CCS unveiling ceremonies and wrote down "China and Zambia Cooperate for Common Development."



On March 14, 2012, Zambian President Michael Sata met with CNMC President Luo Tao and made a presidential statement.



On November 6, 2004, during his visit to Chambishi Copper Mine, Mr. Wu Bangguo, Chairman of the Standing Committee of the National People's Congress, wrote down "Make Great Efforts to Govern Well and Realize the Ambition." He also attended the foundation-laying and ribbon-cutting ceremony for SML.



On April 13, 2009, Chinese Vice President Xi Jinping visited CNMC.



On December 22, 2009, Zambian First President Kenneth Kaunda, attended the reopening ceremony of Luanshya Copper Mine.



On November 27, 2010, then-Zambian President Rupiah Banda attended the commissioning ceremony of Chambishi West Ore Body.

Social Responsibility Management

Corporate Culture and Development Strategy

During its operational practice, CNMC has gradually formed the mission, vision, outlook on CSR, corporate spirit, operation management concepts, and development strategy during the “Twelfth Five-year Plan” period recognized and accepted by all of its employees.

Mission	Developing resources and contributing to the society
Vision	Becoming a leading mining company in the world with outstanding main business, advanced management, innovation initiative, enterprising spirit, and strong international competitiveness and influence
Outlook on CSR	Releasing the value of resources, building a harmonious society together
Corporate Spirit	Pursuing perfection, being a brave pioneer
Operation Management Concept	Accuracy and standardization, coordination and high-efficiency
Development strategy during the “Twelfth Five-year Plan” Period	<p>In accordance with the overall development idea of SASAC on sticking to scientific development and making central SOEs stronger and better, we will, during the Twelfth Five-year Plan period, aim to build CNMC into a top mining group in the world with strong international competitiveness. We will also completely fulfill our political, economic, and social responsibilities, give play to our influence on nonferrous metal industry, and ensure the implementation of the “12345” development strategy.</p> <ul style="list-style-type: none">● One direction: accelerating the development, becoming stronger and better.● Two markets: making great efforts to develop both domestic and international markets, and making the best of both domestic and international resources.● Three leaps: leap towards becoming an internally-driven innovative enterprise; leap towards becoming one of the world’s Top 500 enterprises; leap towards becoming a top mining group in the world with strong international competitiveness.● Four redoubles: achieving redoubling increase in total assets, business income, total profit, and the output of nonferrous metal products.● Five new levels: reaching new levels in the amount of controlled resources, management skill, technological innovation, energy conservation and emission reduction, and employees’ income.

CSR Declaration by CNMC Enterprises in Zambia

We are committed to creating a model of “China and Zambia Cooperate for Common Development,” and building a demonstrative overseas economic and trade cooperation zone of China, a demonstrative overseas nonferrous metal circular economy and technology zone of China, and a model of harmonious coexistence between central SOEs and overseas local communities.

We promise to operate in a responsible manner, and fully implement the sustainable development strategy during our strategic planning, decision making, and daily operation.

Operating in a transparent way: regularly making public our status quo, planning, and measures in sustainable development; improving communication channels and dialog mechanism, and accepting the supervision by stakeholders on our own initiative.

Carrying out practices based on unified planning: trying to establish unified standards on issues related to sustainable development, carrying out long-term operation with integrated, consistent, and standardized strategies and actions.

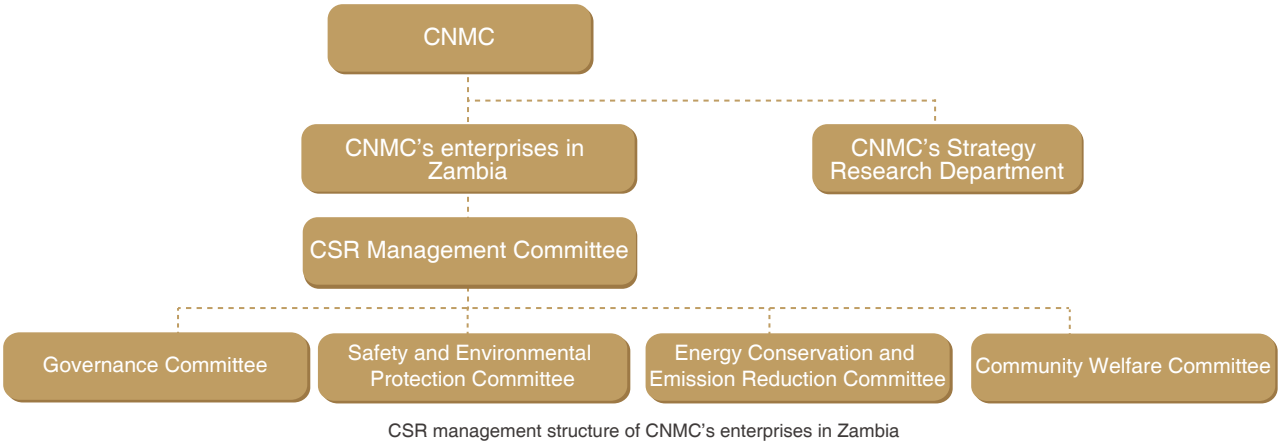
Operating in a responsible manner: merging the idea of sustainable development into the company’s operations, adopting the advanced international standards on the basis of listening, discussion, and cooperation to reduce and eliminate the impact on the environment by the company’s activities and the potential hidden safety and professional health perils, promoting the balanced development of local economy, environmental protection, and social justice.

Maintaining cooperation with stakeholders: participating in the development and implementation of local sustainability policy; promoting exchanges of the “ideal common practice” in sustainable development; proposing sustainable development initiatives to customers; helping the construction of local infrastructure facilities, the development of local culture, education, sports, and health causes, and the development the projects related to mining industry.

Social Responsibility Management Structure

CNMC attaches great importance to social responsibility management. Its top management takes charge of making its CSR strategies, plans, and systems.

CNMC Strategy Research Department is responsible for guiding, coordinating, and assessing the CSR planning, practice, and performance of our enterprises in Zambia. These enterprises set up their CSR management committees composed of their top management members to develop their CSR plans in the light of their operational conditions and stakeholders’ expectations. The CSR Management Committee works with the Company Governance Committee, Safety and Environmental Protection Committee, Energy Conservation and Emission Reduction Committee, and Community Welfare Committee to promote the implementation of the social responsibility plan.



Governance Committee: It is responsible for internal control systems, production and operation, and other matters related to corporate governance. It safeguards the interests and rights of shareholders, maintains good corporate operations, and ensures an open and transparent information handling and decision making process.

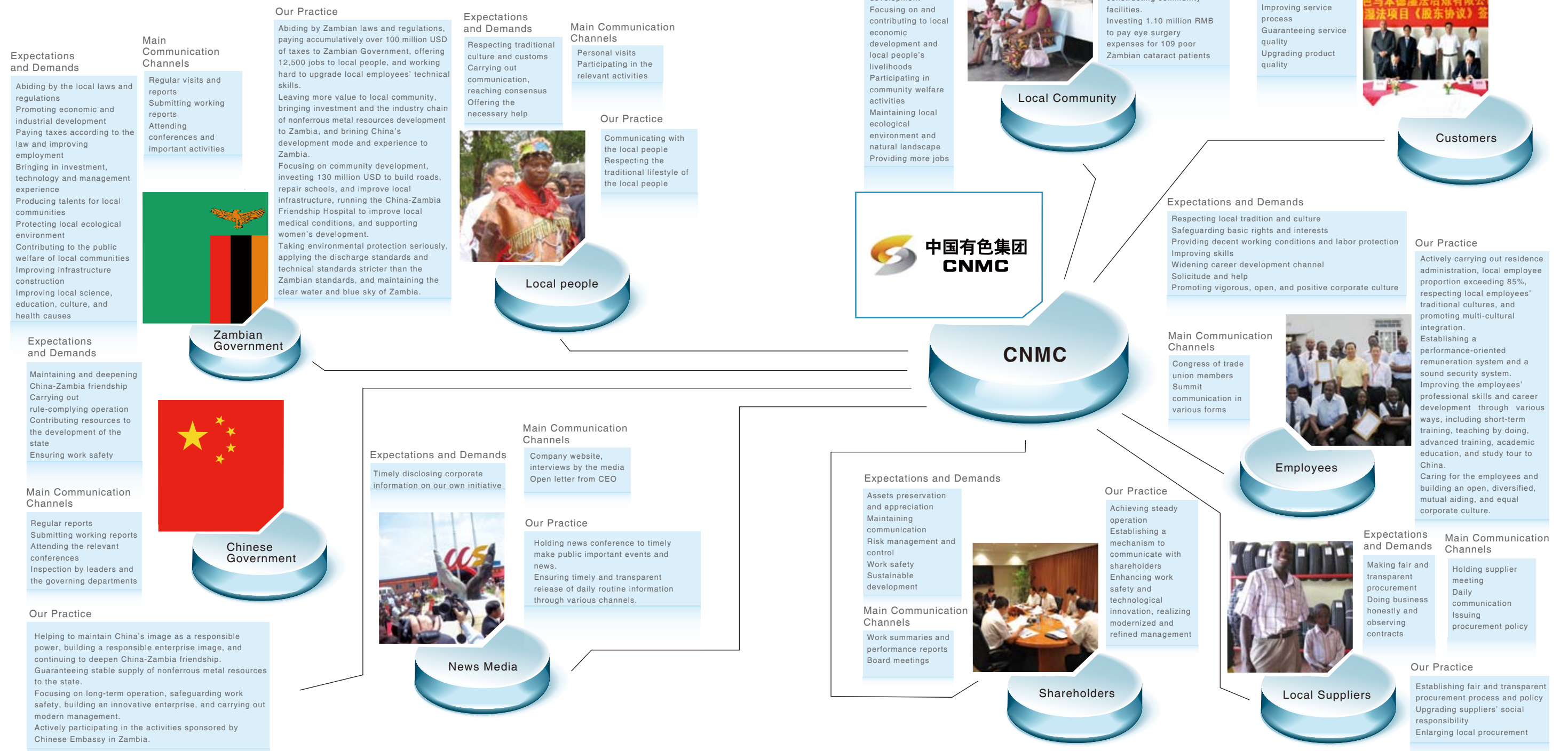
Safety and Environmental Protection Committee: It is responsible for regulating and managing environmental protection and work safety efforts of the corresponding enterprise, employee safety training and supervision, and stipulation of the regulations and performance assessment indicators on work safety and environmental protection.

Energy Conservation and Emission Reduction Committee: It is responsible for promoting energy conservation, emission reduction, and resources recycling, publicizing energy conservation policies in the mining area, and supervising the implementation of the energy conservation and emission reduction tasks.

Community Welfare Committee: It is responsible for developing and implementing social welfare plans, and keeping on carrying out public welfare activities such as road building and community donations.

Stakeholders' Expectations and Communication

CSR management of a company is based on its understanding of stakeholders' expectations. If a company knows well the impact on stakeholders by its decisions and operations, and respects, considers, and responds to their expectations, it will be able to consider more factors during its decision making and know how to manage their influences, avoid operational risks, and achieve common development with stakeholders.



Common Development

Common development is the goal of China-Zambia cooperation.

Zambia abounds in mineral resources, therefore, mineral resources development is an important backbone industry to power its economic and social development. Adhering to the idea of “win-win cooperation for common development,” CNMC has made considerable investments and used its advanced technology, equipment, and management to develop mineral resources, vigorously promote mining technology advancement and industry upgrading of the Zambia, introduce new economic development mode to Zambia, and build up its image as a responsible international mining company.

During the past 13 years, CNMC has invested over 2 billion USD in Zambia, paid over 100 million USD of taxes, provided 12,500 stable jobs, invested 130 million USD in infrastructure construction, and made donations equivalent to 10 million USD to the society.



An All-Weather Friend

China-Zambia friendship has a long history. The 1,000-kilometer Tanzania-Zambia Railway has witnessed such friendship for over half a century. Aiming to promote China-Zambia common development, CNMC took over the Chambishi Copper Mine after its 13-year shutdown to actively promote local economic and social development. Promising “not to dismiss a single employee, cut a cent of investment, or reduce a single ton of output,” CNMC stood side by side with Zambian people to withstand the impact of the financial crisis. It also, on its own initiative and as a gesture of help, took over the bankrupt Luanshya Copper Mine Company (LCM) and rapidly resumed its production, saving the local economy and society from any negative impact. CNMC has not only become the largest Chinese enterprise in Zambia, but also one of the most respected entities in this African country, making it the ideal demonstration of the all-weather friendship between China and Zambia.

Rebirth from Obscurity —— Chambishi Copper Mine Revives with New Vigor

Established in 1965, Chambishi Copper Mine is located in the middle of Copperbelt Province of Zambia. Due to problems with its mining conditions, management experience, and operation performance, it was shut down in August 1987 and had remained so for 13 years when Zambian Government held an international bid for its reopening.

In March 1998, CNMC won the bid and established NFC Africa Mining Plc. in cooperation with Zambia Copper Investment Holding Company (holding 15% stock rights on behalf of Zambian government) to run the mine.

Chambishi Copper Mine consists of the Main Ore Body, West Ore Body, and Southeast Ore Body. In July 2000, its resumption construction began and on July 28, 2003, it was officially put into production. Since then, its production capacity has been increasing by 20% annually. As its follow-up development project, the West Ore Body was put into production as of November 27, 2010. By the end of 2011, NCFA has become the largest China-Zambia joint venture with a total asset of 350 million USD.



Workers doing checks in the flotation workshop



Ore conveying belts for the Main Ore Body and West Ore Body

Chambishi Copper Mine involves an investment of more than 415 million USD. Its production resumption and development added to local tax income and the dividends for its Zambian shareholders, promoted local economic growth, and created more than 3,600 jobs for local people. When its West Ore Body is put into operation, it will offer another 1,500 jobs. In the coming five years, the Southeast Ore Body will require an investment of over 800 million USD and offer 5,000 jobs to local people.

“Three-No” Promise --- Riding out the Financial Crisis with Local Community

During 2008 financial crisis, the copper price at international market plummeted to the bottom, which dealt a heavy blow to the nonferrous metal industry. As the exports of copper and copper-related products accounted for 60% to 70% of the total export of Zambia, the fall in copper price had profound impact on its economy. Among the seven major foreign copper mine investors, three reduced and three suspended their production.

Facing such grim business environment, CNMC chose to tide over the difficulty together with Zambian people. In 2008, its President Luo Tao made a promise to Zambia that CNMC would “not dismiss a single employee, cut a cent of investment, or reduce a ton of output” (Three-No), which was highly praised by Zambian Government and people, and helped build a positive image of CNMC as a responsible company.



Sincere Cooperation

A Helping Hand in the Crisis — Taking Over LCM

LCM has nearly 100 years of history and is very famous in Zambia. Located in Luanshya City of Copperbelt Province, it covers a mining area of 145 square kilometers. For various reasons, it has seen the come and go of several owners and has been put into or out of production from time to time. During the international financial crisis, its former holding shareholder met with difficulties and filed for bankruptcy.

As Luanshya City draws 95% of its revenue from LCM, its shutdown resulted in the unemployment of thousands of workers and seriously affected local economic development and social stability. Zambian Government eagerly hoped that an investor with a long-term vision could take over LCM.

CNMC decisively put forward a package plan to Zambian Government, which covered LCM equity acquisition, production resumption, and reconstruction. During the following international bidding, CNMC won great support from Zambian Government and people relying on its fine reputation and outstanding technology. In June 2009, CNMC officially purchased 80% of the LCM equity (the other 20% held by Zambian Government) and renamed it “CNMC Luanshya Copper Mines Plc (CLM).”



Taking over LCM

The mine and smelter had old equipment when they were taken over. To achieve long-term development and turn losses into gains, CLM, upon careful and meticulous investigations, made great efforts to resume the production by increasing investment, introducing technology, and strengthening management.

The main assets of CLM include Luanshya Copper Mine, Baluba Copper Mine, and Muliashi Leach Project. After nearly six months of transformation, Baluba Mine has reached the standard of a new 1.5-million-ton mine in terms of equipment and technology.

CLM has employed 2,250 local workers, far exceeding the expectation of the local government. In addition, by running the living facilities, primary school, technical school, and hospital of the mine, it has benefited nearly 20,000 local people and effectively promoted the recovery and development of local economy and society. The Muliashi Project, built on a total investment of 368 million USD and put into operation in March 2012, is a large-scale open mining and leaching project that produces 40,000 tons of cathode copper each year.



The Monument to the Discovery of Deposits at LCM

We had had bosses from several other countries and they all ended up leaving us in the financial crisis. Now, Chinese people have taken over and they come with sincerity. My child is also working here. We feel very lucky that our government has chosen the best investor.
— Chairman of a local trade union

This is the day that the Luanshya people have long been waiting for. We have finally resumed production and regained happiness.
— From the log of Baluba Mine

Since we took over LCM, we have disciplined ourselves with new standards and built us a new image as an international mining company.
— Mr. Luo Xingeng, General Manager of CLM

Extension of the Industry Chain

Zambia is hailed the “Country of Copper Mines.” However, due to its weak smelting capability and backward smelting technology, it mainly exports its mineral resources as raw products.

While developing mines, CNMC has increased its investment in Zambia to establish a leaching plant and a smelter. It extends the mining resources industry chain of Zambia and leaves more added-value to Zambia by using the internationally advanced copper metallurgical technology and operation management experience. In addition, CNMC has increased the proportion of its local procurement to support local suppliers.

Investing in Hydrometallurgy --- Reaching the Treasure in Tailings

Mining produces a large amount of tailings, a heavy burden on the environment of Zambia. To protect local environment and achieve long-term development, CNMC has developed and utilized the rich tailing resources of Zambia and the oxide copper ores left from open mining. In September 2004, CNMC and the Hainan China-Africa Mining Investment Co., Ltd. jointly established Sino-Metals Leach Zambia Limited and Sino Acid Products Zambia Limited (which was shut down after CCS has been put into operation) and adopted hydrometallurgical process to produce electrowinning copper.



Copper produced in the extraction and electrowinning workshop

Construction of SML Project began on November 6, 2004. On September 8, 2006, the construction was completed and the project put into production. To make full use of the oxide mineral resources in the Chambishi West Ore Body, in September 2010, SML invested nine million USD to build a 1,000-ton concentrator with an annual output of 2,000 tons of copper concentrates and 2,000 tons of leaching solution. SML Project has promoted the construction of local copper smelting industry chain and created good economic, environmental, and social benefits.

Developing a Copper Smelting Project --- Leaving More Copper Industry Added-Value to Local Community

Smelting capability marks a country's ability to develop and utilize mineral resources. However, the copper smelting project requires large investment and gives relatively low profit due to the influence by raw materials prices. It may even suffer short-term losses.

Focusing on improving Zambia's smelting technology and capability, CNMC, in cooperation with CHALCO Yunnan Copper CO., LTD BRANCH (Yunnan Copper), invested 300 million USD to establish Chambishi Copper Smelter Ltd., aiming to leave more copper industry added-value to local community. Zambian former President Rupiah Banda called it “a significant project that reflects the friendship between China and Zambia and powers the takeoff of Zambia.”

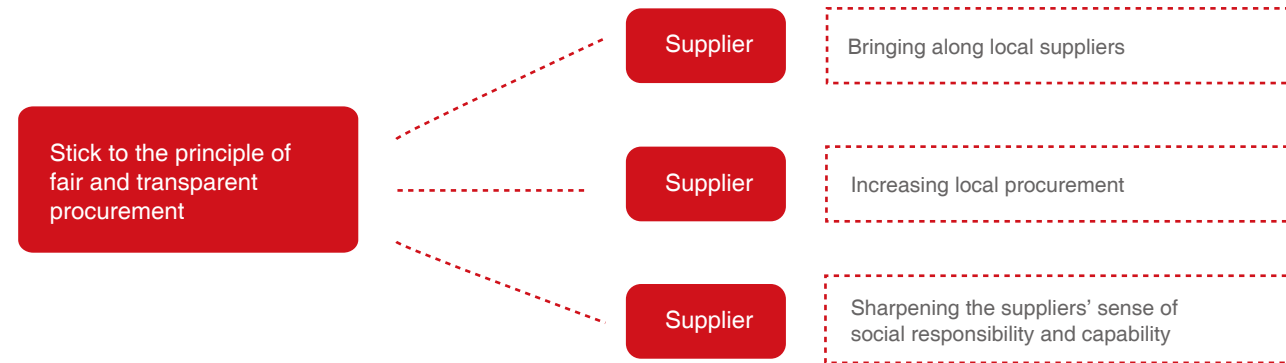
On February 14, 2007, construction of CCS began. On February 18, 2009, with the joint efforts by builders of the two countries, the plant turned out its first piece of blister copper ingot with 99.2% metal content. In May of the same year, the plant reached its designated capacity of 150,000 tons of blister copper. CCS's first-phase project is designed to process 400,000 tons of copper ore concentrates and produce 150,000 tons of blister copper ingots and 280,000 tons of sulfuric acid each year. Its technical process is as follows: one-shot batching – ISA smelting – electric furnace dilution – BOF blowing – blister casting. By 2011, all of its technical and economic indicators surpassed the design standards. Its energy consumption was 182.34 kg-BM/t-Cu (kg of standard coal / ton of blister copper), ranking among the best in the world.

To make the best of the mineral resources advantage of Zambia and achieve scale effect, CNMC has invested an additional 200 million USD in phase-two 100,000-ton expansion of CCS Project. Upon its completion, the project will be able to produce 250,000 tons of blister copper and 600,000 tons of sulfuric acid each year. By the end of 2012, the second phase of the project will be completed.



Sulfuric acid plant

Strengthening Supply Chain Construction --- Bringing along Local Business Development



Upgrading the suppliers' sense of social responsibility and capability

CNMC has worked out its procurement flow by following the principle of fair and transparent procurement. The indicators for selecting qualified suppliers include product quality, environmental performance, delivery time, price, reputation, scale, sense of CSR, and capability.

We hold that the suppliers should first make their products meet environmental protection requirements during design, packaging, and shipping. During transport, they should use reusable or recyclable packaging materials to reduce the impact on the environment. We have invested special funds to invite manufacturers to train our workers on equipment operation to reduce equipment damage caused by misuse and cut down fuel consumption and environmental pollution.

Procurement Localization

We give priority to local suppliers, carry out extensive technical cooperation with local enterprises, advance procurement localization, bring along local suppliers and promote their development, and continuously increase local procurement amount.



Case: NFCA carries out old and waste product recycling. In 2010, it cooperated with several suppliers to recover old parts like the cage copper liners and water pumps to produce new products. Furthermore, it introduced old tyre recovering and processing methods to local enterprises and used the processed tyres to pave stadium indoor fields and outdoor roads, protecting the environment to the maximum extent.



Case: In the construction of the Muliashi project, CLM entrusted the thickener, stirring tank, and anti-corrosion rubber lining (for about 20,000 square meters) engineering to local companies, which meant many job opportunities. In April 2010, CLM announced that during its future procurement, 75% of the purchase contracts would be earmarked for local suppliers. If local suppliers lack the supply capability, other suppliers in Zambia will have the priority. The secretary-general of the Suppliers Association of Luanshya Mining said that they welcomed such measures, and he believed that they would be good for the development of local suppliers and boost local employment.

Cooperation Zone Mode

Establishing "Special Economic Zone" and "Economic Development Zone" is an important piece of experience got from China's reform and opening up and rapid economic development. To establish economic and trade cooperation zones in African countries is an important measure proposed by Chinese Government during 2006 China-Africa Cooperation Forum Beijing Summit for promoting the economic and trade cooperation between China and African countries. Such mode is good for African countries to share China's experience in economic development, develop their economy, and benefit their people. It is also good for Chinese SMEs to "go abroad" and for world economy to achieve balanced growth. It is a new growing point for the development of the economic and trade relations between China and Africa.



Investment Promotion and Protection Agreement Signing Ceremony

A New Stage of China-Zambia Cooperation

To develop China-Zambia friendship, expand their cooperation in various fields, and open up a new mode of economic development for Zambia, CNMC established the Zambia-China Economic and Trade Cooperation Zone in Zambia, which is the first of its kind established in Africa by China and also the first Multi-Facility Economic Zone declared by Zambian Government. By the end of 2011, ZCCZ had fulfilled a total investment of 900 million USD.

ZCCZ not only serves as an overseas operation platform for Chinese enterprises, but also welcomes the entry of Zambian enterprises and enterprises from other countries. The enterprises in the zone enjoy a series of preferential tax policies. At the same time, cluster operation can improve the industry chain, achieve mutual advantage supplement and support, and give full play to cluster effect and capital concentration advantage. These factors provide a guarantee for resisting both nonoperational and operational risks in finance, insurance, and border entry and exit, make the investment more likely to succeed, and expand the industry development in Zambia. ZCCZ represents not only an innovation on China's overseas investment pattern, but also an innovation on the development and construction of China's overseas economic and trade cooperation zones.



CNMC and Zambian Ministry of Commerce, Industry, and Trade Signing an MOU

On February 25, 2010, CNMC and Zambian Ministry of Commerce, Industry, and Trade signed an MOU on the Construction and Cooperation of the Lusaka East MFEZ of the Zambia-China Economic and Trade Cooperation Zone at the Great Hall of the People. Chinese President Hu Jintao and then Zambian President Rupiah Banda attended the signing ceremony.

To speed up the development of the cooperation zone, in June 2009, proposed by CNMC, China's Ministry of Commerce and Zambian government jointly organized

the "Seminar on the Construction of Economic & Technological Development Zone for Zambian Ministerial Officials," which introduced to the trainees the development course of the economic development zones in China. The trainees were given opportunities to visit the zones, see for themselves the zones' status quo and roles in China's economic development, and share China's success experience. These are to help Zambian economic and trade zones achieve faster development on a higher platform.

China's experience has shown that the construction of the cooperation zone will play a major role in promoting the economic development in Zambia. Accelerating the development and construction of the cooperation zone has been included in the emergency agenda of Zambia.

— Mr. Vernon Mwaanga, Seminar leader and Parliamentary Chief Whip of Zambia

The seminar proved valuable. We have learned a lot from China's experience. We have seen the resolution of Chinese people in concentrating their efforts on development. We are also surprised at China's achievements in such a short time. We really want to learn from China. We would like to thank the seminar organizers and workers for their thoughtful arrangements, hard work, and efforts. Long live the friendship between China and Zambia!

— Mr. Mwansa Mbulakulima former Provincial Minister of Copperbelt Province, Zambia

Zambia-China Economic and Trade Cooperation Zone

The Zambia-China Economic & Trade Cooperation Zone (ZCCZ) includes Chambishi MFEZ and Lusaka MFEZ. Of its total planning area of 17.28 square kilometers, the initial planned area of Chambishi MFEZ is 11.58 square kilometers and the planned area of Lusaka MFEZ is 5.7 square kilometers. Committed to the development, construction and management of ZCCZ, CNMC has invested a great deal in the construction of the infrastructure and function facilities, which made ZCCZ a landmark project for China-Zambia friendship after the Tanzania-Zambia Railway. The zone is also a symbol marking CNMC's active assumption of its social responsibilities.

Chambishi MFEZ will be built into an integrated park with radiating and demonstrating effects that focuses on nonferrous metal industry, extends nonferrous metal processing industry chain, and properly develops other supporting industries and services.

Lusaka MFEZ will be built into a modern airport industry park facing the markets in Zambia and southern Africa and focusing on commercial trade, logistic, processing,

and real estate industries by relying on Zambia's strategic location in the heart of southern Africa, giving full play to Lusaka's advantage as the transport hub of southern Africa, and depending on Lusaka's capital status and the international airport.

By the end of 2011, ZCCZ had involved an accumulative infrastructure investment of nearly 130 million USD and housed 17 enterprises. It had attracted a total investment of nearly 1.2 billion USD, of which, 900 million USD have been fulfilled, and created over 7,000 jobs for Zambia. ZCCZ has become an overseas economic and trade zone of China with the best development, the fastest progress, the most standard management, and the most beautiful environment. According to its overall plan, its infrastructure facilities will get complete, its functional facilities will be enriched, and the enterprises entering it will be bigger and bigger. In near future, it will create more jobs for Zambia and pay more taxes to it and will make outstanding contribution to Zambia's economic development, social progress, and improvement of local people's living standard.



The gate of the Chambishi MFEZ, ZCCZ

Long-term Operation

During mine development in Zambia, many foreign investors paid excessive attention to immediate interests, which resulted in the irregular operation of the mines and unfavorable impact on local economic and social development. CNMC has carried out intensive development in Zambia for more than a decade. It is committed to building itself into a first-class mining enterprise trusted by Zambian people. During its operation, it respects Zambian laws and regulations, values high honesty, integrity, and fairness, increases its investment in work safety and technology, and works hard to be a model in work safety. It has brought the advanced technology and management to the nonferrous metal industry of Zambia for the healthier and quicker development of the local economy.



Respecting the Law

CNMC is one of the first Chinese central enterprises to carry out overseas operation. Since its investment and operation in Zambia from 1998, it has been strictly abiding by Zambian laws and regulations, carrying out rule-complying management and honest and transparent operation, and striving for its long-term and orderly development.

Rule-complying Operation

Zambia has a relatively sound legal system. CNMC actively learns local laws and regulations and makes sure that its investment and business activities are within the framework of the relevant laws. It regularly checks its law compliance performance so as to maintain good corporate citizenship in Zambia. In addition, it pays great attention to its commitment to stakeholders, follows high standards of business ethics, and strives to be a model company engaged in responsible investment and operation.

A sound corporate governance structure is both the basis for healthy operation of modern enterprises and an effective guarantee for their long-term development. CNMC's enterprises in Zambia have gradually established a rather complete corporate governance system. They select directors strictly in accordance with the relevant laws and their articles of association. They adopt the president responsibility system under the leadership of the board of directors. They also attach great importance to reasonable return to investors. In fact, they regard their return to their shareholders and the society as an important duty of their development and operation.

CNMC's enterprises in Zambia have improved their internal monitoring systems. They have developed internal assessment methods as part of their economic responsibility system, strengthened the management and supervision of their economic, environmental, and social benefits, and regarded the fulfillment of their production and operation goals as the general principle. They have formed a series of internal control and management systems for production, finance, investment, personnel, and other important affairs based on the responsibilities and management authorities of their different departments and units and the principles of combining responsibility with rights and interests, giving priority to profit, and taking fairness into consideration.



CCS's first shareholders' meeting, board of supervisors' meeting, and board of directors' meeting



The first board meeting of CLM

Combating Bribery

CNMC takes anti-bribery work seriously and its management is in charge of prevention of commercial bribery. Taking its actual operation into account, it makes clear the responsibilities of different institutions, posts, and employees, and gives them reasonable authority so as to effectively manage anti-bribery efforts. Whenever commercial bribery occurs, the relevant units and employees take their responsibilities based on the duty division. In addition, CNMC pays attention to the relevant policies and documents on fighting commercial bribery and clean government construction and continuously strengthens dynamic supervision to prevent any illegal events from happening.

Work Safety

Development and utilization of mining resources is a high-risk industry, so safety management is a top priority in its production and operation. Following Zambian laws and regulations on mining, CNMC has focused its efforts on grassroots and basic work, accident control from the source, and the inspection and handling of hidden dangers. It has also established a long-term mechanism on work safety and environmental protection that focuses on prevention and constant improvement, and has developed and improved its safety management systems. It requires all of its employees and contractors to take their responsibilities and give priority to attaining the goal of zero casualty and zero loss during all operations, actively building a healthy and safe working environment and creating a secured, environmental-friendly, and harmonious enterprise.

Construction of the Safety Management System

Based on the work safety regulation system and standard system issued by the Zambian Government, CNMC's enterprises in Zambia have established their own safety management systems, continuously strengthened the establishment of their work safety regulations and systems, and constantly made their safety management an institutional, normal, standard, and scientific task. Meanwhile, they have worked hard to implement the regulations, regularly check their enforcement by grassroots units, and carry out comprehensive assessments, which have effectively improved their work safety conditions.

Based on its strict safety management system and the characteristics and experience of Chinese enterprises in work safety, CNMC's enterprises in Zambia use "Work Safety Month" as an opportunity to carry out intensive safety checks, hidden danger elimination, and diversified safety publicity and education activities, which are important supplements to their work safety management systems. These efforts have been welcomed and fully affirmed by their employees and Zambian environmental protection departments.



Work Safety Knowledge Contest



Mine Fire Brigade



Case: During 2010 "Work Safety Month," NFCA held a Typical Accidents Seminar to deeply analyze the sites, links, causes, features, and regularities of the typical accidents happened in recent years and discuss the countermeasures for preventing and controlling the accidents. In addition, it organized "Work Safety Knowledge Contest," pushing the Work Safety Month to the climax. Director of Zambia Mine Safety Administration and some senior officials from the relevant departments of Copperbelt Province attended the activities.



Case: NFCA Mine Rescue Team conducts regular drills and training every month and constantly checks its rescue gears to keep its members ready for any possible emergency. Each year, it actively participates in the "Mine Rescue Competition" organized by Zambia National Mine Association. NFCA sponsored the event in 2009, during which, it not only exchanged rescue skills with other companies, but ranked high in the contest.

Work Safety Responsibility System

President is the first person responsible for work safety. Other personnel responsible for work safety make inspection and appointment and specify work safety responsibilities for their own levels. All CNMC leaders and units at different levels have clear safety responsibilities.

Work Safety Performance Assessment

Work safety performance management system and performance assessment mechanism for responsible personnel in units at all levels have been established. Safety indicator has become one of the important indicators for assessing the performance of the responsible personnel at all levels.

Work Safety Supervision System

Setting up the Work Safety and Environmental Protection Department, manning it with full-time safety management personnel, and improving and forming a relatively independent work safety supervision and management system under unified management

Work Safety Reporting System

Once a safety accident occurs, the safety personnel should carry out rigorous investigation and analysis, put forward preventive measures, and turn out a report. For any major accident, they should promptly deal with it, prevent it from worsening, and timely report the situation to the higher level and the relevant department in accordance with due procedure.

Safety Training System

Improving safety education and training at the enterprise, workshop, and shift levels, strengthening pre-job training to new employees, workers from other posts, and workers resuming their former jobs, carrying out various kinds of on-the-job training, and organizing safety qualification training, assessment, and certification for workers engaged in special operations

Safety First-Aid System

Setting up the Mine Rescue Team, giving professional training to team members, equipping them with professional first-aid equipment, and enabling them to respond quickly to any serious mining accident and take the necessary measures to minimize casualty and property loss

Strengthening Facility Transformation

Keeping mining facilities reliable is a very important step to guarantee work safety. Systems for power supply, lifting, and drainage are the lifelines of the mine. CNMC sticks to the principle of "putting safety over production" to effectively ensure work safety on workplace. It has been increasing investment in mining safety equipment and improving work safety conditions. It has managed to maintain a stable work safety condition.

Transforming the Drainage System of Chambishi Copper Mine

Zambian mines have lots of groundwater. In Chambishi Copper Mine, 30,000 cubic meters of water has to be discharged every day. NFCA has always been concerned about the construction of the drainage system, and has worked hard to continuously optimize and transform the drainage system. In 2010, it invested five million USD to build a 400-meter and a 700-meter pumping station, the third drainpipe, mud discharge system, and water supply system in Chambishi Copper Mine to separate water from sand. As a result, the quality of the discharged water has been greatly improved, cutting water supply from outside the pit by 3,000 cubic meters per day and realizing water recycling under the mine. All these have great significance to improving the overall safety of the drainage system under the mine, promoting groundwater drainage from the deep ore body, and achieving energy conservation and consumption reduction.

Transformation of Baluba Copper Mine for Production Resumption

The drain-and-fish operation mode adopted by previous investors had resulted in the obsolescence of many facilities and equipment in Baluba Copper Mine, along with serious hidden dangers threatening work safety. In 2010, CLM invested 70 million USD to upgrade 58 items in 12 systems of Baluba Mine, including those for lifting, underground transportation, underground crushing, power supply, ventilation, drainage, underground communication, surface conveying, and the Luanshya River flood discharging. The upgrading has laid a solid foundation for Baluba Mine to enlarge its capacity and improve its safe conditions.

Baluba Mine's underground 480mL and 580mL central haul roads have had serious cave-in, which posed a grave threat to the safety of underground workers. To completely restore their capacity, CLM carried out the relevant research and developed a long-lasting support system. The specifically designed special steel arch frame alone costs 1.7 million USD. The 580mL central haul road was put into use on July 7, 2010 and the support for the 480mL central haul road was also safely completed by November 16.

Technological Innovation

CNMC relies on scientific and technological advancement and innovation to forge its core competitiveness and propel its development. It attaches great importance to technological innovation, actively improves its innovation system, and focuses on building a high-tech talent team. It has several research institutes and technology centers, undertakes a number of ministerial or provincial research projects, and owns many core technologies as independent holder of their intellectual property rights. In March 2011, it was entitled a national "Innovative Enterprise" in science and technology by the Ministry of Science and Technology, the State-owned Assets Supervision and Administration Commission, and All China Federation of Trade Unions.

CNMC has brought creative ideas, superior technologies, and advanced equipment to Zambia. It constantly improves production processes, continuously sets better technical and economic indicators for mining-dressing-smelting process of Zambian copper mines, and promotes mining technology development in Zambia.

Construction of the ISA Furnace

CCS has adopted internationally leading technologies and sulfuric acid system to reach the leading position in Zambia in discharge of smoke, powder dust (stive), and "three wastes" (waste water, waste gas and waste solids), and noise pollution. It truly is a top smelting plant in the entire Africa and even the whole world. Its ISA furnace has run for consecutive 29 months from January 20, 2009 to May 31, 2011, creating a new world record in ISA furnace life span during the first furnace cycle. During that period, the furnace processed 976,000 tons of copper concentrate and 62,000 tons of cold charge and its performance fully exceeded all design parameters.

The core ISA smelting system, which was independently designed by CCS and China Enfi Engineering Technology Co., Ltd. (CNMC as one of its shareholders) has fulfilled the integrated innovation of a series of copper smelting technologies and equipment. The spraying system, the core equipment of the ISA furnace, can now be produced in China. We can independently fulfill and optimize the integration, configuration, and debugging of ISA automatic control system, the core technology of the furnace. In addition, we have creatively developed some world's first advanced technologies, including ISA furnace stratified emission, efficient double spiral-flow disc sprayer, and burning-control flue cohesion. We have also boldly optimized process design, shortened its length, adopted efficient production process and self-heating smelting process, and reduced energy consumption by a large margin.

The integration achievements in the ISA smelting system of CCS have already been used by following smelting plants built in China. Of these, the manufacturing drawings of the spraying system and the waste heat boiler, and the logics and configuration of the control system have been used by Kunpeng Smelting Plant, a new plant built by Yunnan Copper. The Integrated Innovation and Application of ISA Furnace and the Integrated Automation Control System of Chambishi Copper Smelting Plant won First Prize for Progress in Science and Technology in 2010 awarded by China Nonferrous Metals Industry Association. The Creative Design and Application of Efficient Sulfuric Acid Drying and Absorption Tower won Second Prize for Progress in Science and Technology.



ISA Furnace

Transformation of the Lifting System

Lifting system is the throat of a mine. When CNMC took over Luanshya Copper Mine, the lifting system of its subsidiary Baluba Copper Mine had been quite old with poor performance. In fact, it had been out of its term of service for many years. CLM invested seven million USD to have it completely upgraded. As a result, the operation speed of the main lifter increased from 8.5m/s to 10m/s while that of the secondary lifter from 4.5m/s to 6m/s, which greatly improved lifting efficiency. Operating stably and under high degree of automatic control, the lifting system is the best in Zambia.



Operation Panel of the Upgraded Lifting System

Bio-Metallurgy

With the development of Zambia's copper ore resources, a large number of low-grade ores, sub-marginal ores, waste rocks, and tailings that are difficult to process with traditional metallurgical techniques have appeared. A cutting-edge technology in the world for mineral resources processing and utilization, bio-metallurgy is capable of not only economically and effectively recovering the above-mentioned resources, but also significantly increasing the utilization rate of the sulfide mineral resources in Zambia. This will allow Zambia to maintain its position as a copper production power and make its national economy more sustainable. In a word, this technology has great significance to increasing the nonferrous metal production capacity of the entire Africa and to promoting its economic and social development.

In 2010, CNMC established in Zambia the CNMC-Central South University Bio-metallurgical Technology Industrialization Demonstrative Base to develop and study bio-metallurgical technologies. Compared with traditional pyrometallurgy, this technology can cut down per-ton-copper investment and cost by over 70%. Since the stockyard is under closed operation, it realizes zero discharge of waste water and zero production of polluting gases such as CO₂ and SO₂.

Modern Management

Modern management has provided institutional guarantee for CNMC to carry out its production and operation and achieve sustainable development. It also guarantees its fulfillment of effective cost management and competitiveness upgrading. CNMC's enterprises in Zambia have strengthened their internal management and established a systematic modern enterprise management system that can meet their development needs and fulfill self-improvement. They have developed and implemented a series of management systems for managing production technology, operation, finance, work safety, human resources, and quality affairs. These systems are subject to nonstop improvement with the development of the enterprises.

Lean Management

Following lean management requirements, CNMC's enterprises in Zambia begin with design optimization and actively carry out the "two-increase and two-cut" campaign. They improve their internal economic responsibility systems with clear duties and clear distinction between penalties and rewards. They clarify cost and expense indicators for different departments, workshops, and individuals. They carry out regular checks, quarterly assessments, and annual general accounting, mete out rewards or penalties accordingly, and keep cost and expenses under sound control. Moreover, they establish and improve their financial budgeting management system, standardize financial management, strictly control non-productive expenditures, and set expenditure criteria for different expenses.

CNMC's enterprises in Zambia use management defect diagnosis as an opportunity to enhance their basic management in an all-round way by taking their production and operation reality into consideration. They carry out internal self-examination and summarization inside their departments and units, put forward corrective measures, and continuously upgrade their corporate management skills. In addition, they focus on lean management and urge their managerial personnel to deeply analyze, study, and solve the problems with their reform and development. They also pay close attention to production organization, continuously improve their production system, step up production process adjustment, get strict with production organization and workplace management, upgrade production capability and product quality, and work hard to attain their production and operation goals.

Innovative Management Mode

CNMC has created a series of "Chinese speed" and "Chinese quality" models during its development in Zambia. It completed the construction of the West Ore Body of Chambishi Copper Mine within three years. It completed the copper smelting project within 27 months and the copper leaching project within 20 months. It resumed the production of Baluba Copper Mine within five months upon its take-over of LCM. All these projects were completed in a safe and efficient manner, a concrete reflection of the management innovation efforts made by CNMC's enterprises in Zambia.



Work Discussion



Management Forum

Innovating Cooperation Mode

CNMC cooperates with other strong enterprises to make use of each other's advantages and form comprehensive superiority. For example, it cooperates with Yunnan Copper to jointly invest in the Chambishi 150,000-ton copper smelting project. Their cooperation maximizes their advantages. CNMC has rich experience and extensive resources in Zambia while Yunnan Copper has excellent project management and organization capability, especially the rich experience in the construction of ISA furnaces.

Innovating on Engineering Construction and Management Mode

Chambishi Copper Smelting Project is run by considering the reality of Zambia, adopting the independent operation and building management mode, and accentuating the subject responsibility status of project owner in the construction project. Project construction is put under complete management and control of the project owner. Meanwhile, CNMC adopts the engineering supervision system, which effectively controls construction investment and project progress on the premise of guaranteeing engineering schedule, safety, and quality. The project owner has been fully involved in the construction, especially the equipment installation and debugging process, which laid a foundation for operation success at the first trial run. All 63 individual engineering items are qualified, helping the project win the first Luban Award for overseas projects.

IT Construction

CNMC standardizes its management flow and upgrades its management skill through IT construction. Its enterprises in Zambia carry out all tasks in accordance with its overall plan on IT construction. They have gradually set up video surveillance over mining production scheduling, carried out real-time monitoring over key posts and sites, and enhanced workplace process control. Now, equipment purchase has been completed for production scheduling command system and shipment from China is under way. The equipment will soon be installed and put into use. It is planned that digital mine will be gradually materialized in one or two years' time.

CNMC's enterprises in Zambia have basically completed installation of its ERP (enterprise resource planning) hardware and will soon complete ERP software installation and debugging and put it under partial and phase-by-phase trial run. Presently, CNMC is promoting the use of the ERP system in material supply and finance management and is conducting online test run. Its office automation system has been put into use. The system can easily handle complex and ever-changing businesses and business flows, effectively fulfill centralized management, monitoring, and sharing of enterprise information resources, and meet the need of the organizations / departments at all levels for coordinated business handling.



Plant construction site of CCS

Respecting the Employees

Human resources have strategic significance to enterprises operating abroad. Employees' dedication to their career forms the solid foundation for the sustainable development of the enterprise. Adhering to the concepts of **"people first, harmonious progress, and common development,"** CNMC respects its employees, their families, and the traditional cultures and customs of its Zambian employees. It tries hard to create a comfortable, peaceful, friendly, cooperative, and promising working atmosphere and living environment for its Chinese and Zambian employees. It also unswervingly implements localized management and gives full play to the positive role of multicultural fusion.

We solemnly promise

- To eliminate any form of discrimination, forced labor, or personal abuse during daily work;
- To provide all employees with a fair, reasonable, and competitive remuneration system;
- To build a constructive platform for handling the affairs of common concern of all employees
- To provide all employees with appropriate training and development opportunities.



Employee localization and cultural fusion

Creating more job opportunities for local people is the principle CNMC has always followed during its investment and operation. Employee localization is also the most important part of its residence management. Its enterprises in Zambia pay attention to the employees' expectations, recognize the value of their work, and respect their basic rights and tradition. They give full play to the employees' advantage in knowing well local politics, economy, tradition, and customs so as to better achieve healthy development in Zambia.

Employee Localization

CNMC strictly abides by the policy on employee localization issued by Zambian labor department. Its employee localization rate has exceeded 85%. Zambian employees work in all operational and managerial departments, including executive units, mines, and workshops in branch factories. Their salaries and treatment are always better than average of local enterprises.

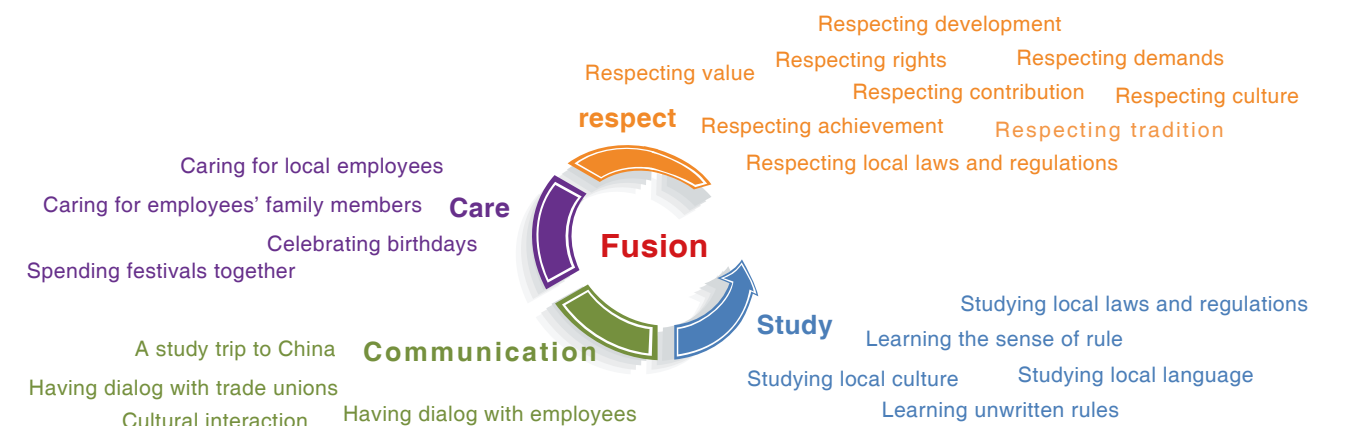
CNMC's enterprises in Zambia improve the living conditions of their local employees and their families by establishing a stable labor-management relationship with them. This has effectively narrowed local gap between the rich and the poor, reduced unemployment, and improved local social stability. They have also turned their Zambian employees into better and more skilled industrial workers and built wider platform for their promotion and career accomplishment.

CNMC has full confidence in its Zambian employees. It

actively trains and uses local managerial staff members. Most managers in the HR department and external affairs department are local employees. For other managerial posts, the company tries to use qualified local employees under the same conditions. In CLM, Zambian employees have assumed many managerial posts such as vice-president, president assistant, department manager, or department chief. In addition, two vice managers of its technical department are Zambians.

Cultural Fusion

CNMC's enterprises in Zambia fully implement the concepts of "mutual respect, candid communication, open-mindedness, and common development." They call on Chinese employees to actively learn Zambian language and culture, and strengthen their communication with local employees to achieve multicultural fusion.



Sense of respect

We respect the basic rights and interests of our Zambian employees, respect their customs, culture, language, tradition and law, respect their contributions and achievements, and also respect their expectation for skill improvement and career development.

Active Learning

We have taken the initiative to learn from our Zambian employees local language, culture, customs, traditions, and local written laws, unwritten rules, and evidence-respecting attitude, and also their sense of sincerity, rigorousness, and rule abidance.

We encourage our Chinese employees to communicate with Zambian employees. Through English classes and night study on a daily basis organized by the Company, our Chinese employees can now communicate with Zambia employees on most occasions, which makes their work much easier.

Learning has increased our understanding of Zambia. The Zambian spirit and attitude demonstrated by Zambian employees are also a good help for our corporate management.

Caring for Employees

Our enterprises in Zambia have set up canteens dedicated to Zambian employees. Local chefs are hired to cater to their tastes. The canteens are subject to regular inspection to ensure food safety for Zambian employees.

We celebrate birthdays for Chinese and Zambian employees, hold Christmas Party and other celebration activities, and distribute benefits and send Christmas cards and other souvenirs to employees. We make donations, provide loans, or pay wages in advance to employees in need. In addition, we hold an annual meeting to honor excellent employees for their support and help to the company, and grant them year-end bonuses and domestic goods. We also adopt people-centered management and provide our employees with sports facilities for them to enjoy exercise and rest in their spare time. We also adopt people-centered management and provide our employees with sports facilities such as swimming pool, gym, chess and cards room, table tennis room, and billiard room for them to enjoy exercise and rest in their spare time.

Dialog and Communication

Our enterprises in Zambia have established a variety of means and mechanisms to have dialog and communication with employees on an equal footing. This is to increase mutual understanding of values, corporate culture, environmental protection, and other issues, and discuss the way to face the challenge and seek cooperation and win-win result.

Dialog with the trade union: The HR Department communicates with the local trade union to deal with issues such as commuter bus, labor security, and treatment.

Dialog with employees: Our enterprises in Zambia hold regular meeting with Zambian employees, set up a president reception day for him to meet local senior employees on a monthly basis, and hold regular meetings for Zambian management and non-regular meetings for shift leaders to ensure a smooth information flow and implementation of all measures.

Cultural interaction: The scene of communication between Zambian and Chinese employees has been a commonplace in our enterprises in Zambia. We have bought musical instruments such as drums and electric bass to help local employees set up a band. We also spend Christmas together with Zambian employees. Chinese culture and the occupational dedication of Chinese people have gradually influenced and encouraged Zambia employees.



Our employees in the May Day Parade



Case: At CCS, a Zambian employee's wife had to go to South Africa for a surgery, but they were short of the necessary funds. Hearing the news, Chinese employees made the life-saving donations for them. Zambian Former President Rupiah Banda was moved by the incident and remarked: "The Zambian and Chinese employees of CCS get along with each other so well that they are more like a family."

Rights and Security

Non-Discrimination

Our enterprises in Zambia provide equal employment and development opportunities for all employees. During employment, determination of remuneration and welfare, and granting of training and promotion opportunities, they avoid prejudice and discrimination based on race, skin color, sex, age, nationality, ethnicity, religion, marital status, sexual orientation, disability, and health status (such as catching of HIV virus / AIDS patient).

Against Forced Labor and Child Laborer

Our enterprises in Zambia have established their labor systems strictly in accordance with local Labor Law. They are firmly against any form of forced labor or child laborer.

Trade Unions and Collective Bargaining

Joining trade union is the basic right of employees under Zambian laws. Our enterprises in Zambia ensure the freedom of their employees in organizing trade union and carrying out collective bargaining.

Our enterprises in Zambia attach great importance to equal dialog and communication with employees and trade union. Each year, they carry out collective negotiation with the branch organizations of the Mineworkers Union of Zambia and National Union of Miners and Allied Workers stationed in the Company, discussing and jointly determining some important matters concerning the interests of the employees, including labor relationship, wage increase, welfare improvement, labor protection, training, safety and health, leave and work attendance system, special protection for female employees, working time, and discipline and penalties. They hold regular workers' congress with Zambian trade union, give full play to Zambian employees' role as enterprise master, and involve them in the discussion regarding the Company's production and operation.

Protecting Vulnerable Groups

Our enterprises in Zambia work hard to protect and help vulnerable groups such as disabled workers and women. They arrange workplaces suitable for the disabled and help them to make a living under good conditions. They also participate in programs that promote youth employment and sex equality in employment.

Notification in Advance

When an employee is dismissed as an effort to cut redundancy, The Company should give notification at least one month in advance and offer final welfare in accordance with the law.



The Company's free bus for employees

Enterprises operating abroad must respect local customs, culture, tradition, and laws and regulations, and try to achieve multicultural fusion, localized operation, and employee localization.

— Mr. Wang Chunlai, General Manager of NFCA

Zambian employees are smart and industrious, and have a fine sense of pride. They are proud of working in Chinese enterprises and proactively safeguard the rights and interests of the company. Their spirit and action of dedication are evident and impressive. Despite the cultural differences between China and Zambia, we know what they feel by putting ourselves in their shoes. We treat them well and sincerely create favorable conditions for them, and in return, they love the company deeper and pursue common development with the company.

— Mr. Xie Kaishou, General Manager of SML

Working Conditions and Labor Protection

Remuneration and Welfare

We have strengthened signing of labor contracts with our employees and established a routine mechanism to safeguard the rights and interests of our employees in fields of post guarantee, wage guarantee, social security, welfare increase, training, and improvement of working conditions and living environment. In 2011, the Company has signed labor contracts with all employees.

Through collective agreement and based on their reality and the condition of the industry, our enterprises in Zambia have established a remuneration system which grants higher pay than what is required by local laws and regulations. We offer more than 30 items of welfare to Zambian employees, including basic wage, housing subsidy, education allowance, extra-hour pay, annual vacation, medical subsidy, transport subsidy, and funeral subsidy. We promise to timely pay our employees in full amount, grant them labor protection articles, food allowance, subsidies for dining at canteen and participating in trade union activities, and free ride to and from work. Adhering to the principles of "giving priority to efficiency with due consideration to fairness," we have established a complete set of scientific incentive and examination mechanism, in which payment is closely related to personal development and performance, and organization performance.

Our enterprises in Zambia have established various basic social insurances for their employees, with a view to relieving them from worries and upgrading their standard of living. In 2011, they bought insurances for all employees and paid 100% of insurance premiums. They also offered commercial accident insurance for the employees. Apart from local statutory holidays and annual leave with pay, the employees working abroad can also enjoy annual vacation and special vacation when their spouses go abroad to visit them.

We pay special attention to maternity protection for our female employees and their responsibility for their families. After working for two years upon their employment or last maternity leave, the female employees can enjoy a maternity leave with full pay (in addition to other due vacations) and a one-day leave each month.

Health and Safety

Medical Security

All employees are entitled to free medical care. Their registered family members can also enjoy free medical service and ambulance emergency service provided by the company. Each year, the company organizes physical examination and "occupational disease" checks for employees, and carries out occupational disease protection publicity activities.

Labor Protection Articles

In accordance with the Zambian laws on labor protection and based on the characteristics of the mining industry and field investigation results, our enterprises in Zambia have worked out the Standard on Use and Distribution of Labor Protection Articles, which specifies much better protection for laborers than the national standard of Zambia. This standard clearly specifies the distribution, use, and replacement of labor protection articles within the plant. It designates anti-acid overalls and protective shoes for workers engaged in corrosive waste acid treatment and product acid storage and transport. The operators are given hearing protection equipment, goggles, and high temperature protective clothing and masks. The standard also includes clear rules for punishing violating behaviors.

Working Environment

In accordance with the relevant Zambian regulations on safety, our enterprises in Zambia have adopted the building design that meets the requirements on fire control, safety, ventilation, and sun lighting. They set up safety signs at places and on equipment prone to cause accidents and incidents threatening personal safety and health. They adopt the advanced, mature, and reliable processes, use safe and reliable equipment, and soundly analyze occupational hazards and take necessary protective measures during production. All of their working conditions and environments are in line with the occupational and safety standards specified in local laws and regulations.

Improving and Developing Skills

CNMC provides its employees with education and training opportunities, a stage to grow their career, and room for professional growth. It has turned out a group of local talents at different levels, including skilled industrial workers, and medium and high-level managers with modern management experience and technological know-how.

New Employee Training: This includes introduction to the company, its remuneration and welfare system, organizational structure, examination and evaluation system, discipline, safety education, etc.

Skill Training: This includes theoretical training and practical operation training. The latter is done on workplace and scheduled according to the nature of the post and its degree of difficulty. In addition, we provide short-term training for employees to obtain post proficiency certificate. Training is also arranged for underground blasting operators and blasting operation managerial personnel, who will then be examined and granted certificate by Zambian Mine Safety Department.

On-job training: Chinese and Zambian employees form teach-and-learn teams to pass techniques.

First-Aid Training: The Company gives first-aid training to all employees in production departments and some employees in executive management departments. After

the training, all the trainees will be examined by officers from Zambian Red Cross.

Developing Local Management: The Company selects from local employees talented persons, train and appoint them to be managerial personnel and senior professional technicians, and provide them with opportunities and subsidies for advanced training or academic education.

Advanced Training: We send Zambian managerial personnel and special professional technicians to receive training at colleges and universities, enabling them to obtain college, junior college, technical, and secondary school diplomas or senior technician certificates.

Academic Education: We give financial support to backbone employees on important posts for them to receive academic education. In 2010, the company actively contacted the Beijing University of Science and Technology to set up on-the-job postgraduate courses for Masters of Engineering in Zambia, so that ordinary employees may achieve academic upgrading in their spare time.

A learning tour to China: Each year, we send outstanding Zambian employees to China for a visit or training, which promotes mutual learning and joint training between senior Zambian employees, even ordinary workers and Chinese employees.



Issuing training completion certificate



Case: Nelson Jilowa joined NFCA in 2001 as a security guard. In 2006, the company funded him for further study. After completing the study, he was promoted to be manager of the external affairs department. Mr. Jilowa said, "Chinese companies respect cultural differences, understand us, and respect us. Chinese companies send us to receive higher education and even to China for further study. I am also looking forward to studying in China and see for myself China's development. My Chinese colleagues work very hard and are very friendly, just like our friends. Chinese companies are our own companies; they have become a part of Zambia, and are sure to enjoy long-term development in Zambia."

Topic: Lovable and Respectable Chinese Employees

Zambia, a country with blooming flowers all the year round, sees the coming of a group of Chinese investors and builders. They are diligent, dedicated, loyal, kind, passionate, vigorous, and capable workers with considerable talent. They represent the image of millions of Chinese builders and the spirit and vigor of Chinese enterprises. They are the creators of "Chinese Speed" and "Chinese quality."



Dedication, Contribution, Loyalty

Our Chinese employees are loyal to the motherland. They value high her honor and interests and discipline themselves all the time to build a model of China-Zambia cooperation. They are loyal to their cause, untiringly and selflessly working overtime, holding a high sense of responsibility and assiduity. They are also loyal to the company, working abroad for many years without complaints and regrets, and always ready to contribute. With a passion for technology, they have done a lot for project development and are truly the shining stars in this industry.

They are friendly to Zambia and its people, make contributions to Zambia's economic prosperity and

industrial development, and treat their Zambian colleagues as friends, brothers, and family members. Here in Zambia, they are working together to build a brilliant enterprise, leaving behind them sweat, youth, and many touching stories...

Some of our employees have been working abroad for more than 13 years. It is not that they do not miss their motherland or their families. They make such sacrifice for their noble mission and the development of the enterprise. They work hard without complaints or regrets. Each time I go to project sites abroad, I am deeply impressed by them.
— Mr. Luo Tao, President of CNMC

Mr. Wang Jingjun, Deputy General Manager of CLM, takes delight in talking about his work and often shows his effusive love and excitement for his work. He has been working in Zambia for eight years, a true expert in local safety and environmental management. With groundbreaking working philosophy, he combines normalized and institutionalized management in Zambia with periodic and flexible management in China. He introduces to Zambia a series of activities, including Safety Month, Safety Knowledge Contest, safety production seminar, and A Family Letter Reporting Safety. These have been welcomed and positively responded to by Zambian employees. Local safety and environmental department has also profusely praised his work, saying to him: "We are confident in your work. There won't be any problem."

During project development, Mr. Fan Wei, Deputy General Manager of CCS in charge of technology, often worked far into night and fell into sleep by the computer. On many occasions, he had heated arguments with his colleagues about project optimization and progress. He said: "The Company has given full confidence in young men like me and entrusted us with such big project involving over a billion USD of investment. I feel the weight on my shoulder. This is where I can do something and achieve the value of my life. CCS project is just like my own child, I want to try my best to make it perfect."

Mr. Zan Baosen, General Manager of ZCCZ, is a rare talent with overseas studying background, outstanding work experience, and independent working capability. He said, "I always bear in mind what my motherland has taught me. It has influenced my outlook on life forever. Although I studied and worked in Canada for several years, I can never change the inside of me. My motherland needs me here and my company needs me here. That is why I give up many attractive opportunities at home and abroad and choose to work here."

In their view, being with family is more often a luxury and a wish than a reality. At the end of 2008 when the 330 KV substation project was at a critical stage of its commissioning, the mother of Yang Xin'guo, President of CCS, was diagnosed with pancreatic cancer terminal stage. His family was afraid he would be distracted and didn't tell him. At the end of May 2009, the Company's leaders got information that his mother's condition worsened, and then ordered him to return and meet his mother for the last time. The unselfishness and support of family is also moving.

Activities

They not only have outstanding performance at work, but also have love for life as talented sportsmen and artists. The company has built basketball and badminton courts, and table tennis rooms for them. On holidays, they participate in a variety of sports and art activities, carry out contests, exchange sports skills with Zambian colleagues, and even plan and direct evening parties during which they perform on the stage.



Cherishing the Environment

Zambia has blue skies, vast forests, great prairies, blooming flowers, mighty waterfalls, and rare animals. People here live in harmony with nature. Zambians see environmental protection as part of their born nature and regard any act harming the environment as disgraceful.

CNMC has taken root in Zambia and is determined to **“build green enterprises without any harm to the clear water and blue sky.”** We cherish every inch of Zambian land and are willing to invest as much as necessary to protect environment and achieve optimal resources efficiency by adjusting production process, optimizing production layout, and developing and utilizing new technologies and equipment.



Environmental Management

Building resources-saving and environmental-friendly enterprises is necessary for achieving our sustainable development. CNMC has established the guiding ideology of “protecting the environment for long-term development” and developed its Regulations on Environmental Protection. It has set up a long-acting environmental protection mechanism centering on “prevention, protection, and comprehensive governance.” It performs well in environmental management by strengthening basic daily management.

In accordance with the Law of Zambia on Environmental Protection and Pollution Control, the Company has put the department of safety and environmental protection in charge of its safety and environmental protection efforts under the leadership of the Safe Production Committee and mine manager. It carries out environmental management strictly in accordance with local standards on pollutant discharge, and works hard to achieve unity between environmental protection and corporate economic benefit and social image.

- ▶ We continue to soundly manage the discharge of wastewater, waste oil, waste rubble, and industrial waste and prevent leakage, mudflow, and environmental pollution.
- ▶ Soundly monitoring and managing the tailings reservoir to prevent major environmental protection accidents from happening.
- ▶ Sampling and testing fume, stive, water from upstream and downstream of the discharge outlet, and underground water from neighboring area each month, comparing and analyzing the results against Zambian standards on discharge of atmospheric pollutants and water pollutants, and then, presenting a report;
- ▶ We have carefully designed both the mine plan and shutdown plan, soundly conducted environmental impact assessment (EIA) for new projects, and closely monitored the continuous impact on environment by mines and community infrastructure projects.

In 2008, Zambia Environmental Protection Committee established the Environmental Protection Fund, requiring mining companies to contribute to the fund for environmental restoration after the shutdown of the mines. CNMC’s enterprises in Zambia have actively responded to this effort and made timely payments to the Fund.

Our enterprises in Zambia have earnestly implemented the Group’s work plan on energy conservation and emission reduction, and further strengthened the organizational leadership in energy conservation. We carry out strict target responsibility management, strengthen whole-staff awareness of energy conservation, and maintain balance between development and energy conservation in order to carry out energy conservation and consumption reduction in a realistic way.

We conscientiously fulfill our energy conservation management responsibilities in order to prevent squandering such as leakage, machine idle running, and lighting in empty offices.



Case: NFCA has strengthened management of power supply and use relying on new technologies and products. In 2010, the Company replaced the old analog relays with VAMP40 digital protection relays to avoid overstep trips.

After setting the protection relays in No. 1 and No.21 high-voltage switch cabinets and conducting a bulge test, the Company successfully supplies power to the 11KV substation in the central auxiliary shaft of the West Ore Body.

The safe operation of the electric equipment has been guaranteed through measures such as transforming the tailings thickener, interlocking the flotation electric gate to prevent false operations, restoring the anti-slip devices on all leather belts in the ore-concentrator, and adding electronic automatic drain valves to air compressor tanks.

Adjusting and improving the peak load alone has saved over 240,000 USD. Meanwhile, the Company has strengthened internal and external peak load management, designated the person in charge of cutting or transmitting power and the standard for doing so when sudden power failure occurs, and stepped up management of power supply and use.

Comprehensive Utilization

CNMC cherishes the limited natural resources and makes most of the mineral resources through technological innovation. It has worked hard to increase resources utilization rates during mining, concentrating, and smelting. This maximizes resources value at minimum environmental cost and ensures the sustainable use of resources.

Increasing the Recovery Rates of Copper Mines

Chambishi Copper Mine contains the typical hard-to-mine ore body in the world. After adopting the brand new underground supporting mode, CNMC has reduced ore loss rate from 35.2%-42.1% to 34.6% in 2011 and increased the engineering utilization rate from 95% to 100%. Its mining efficiency has been upgraded. By studying and applying new ore concentrating technologies at Chambishi Copper Mine, it has broken free from conventional reliance on fine grinding for high grade copper and high recovery rate. Through nonstop improvement and optimization of production process, its copper concentrate grade has reached 44.56% and copper recovery rate has exceeded 95.88%. In 2009, the project won Second Prize for Scientific and Technological Progress in China's Nonferrous Metal Industry.



Work Comrades



Holding the trophy awarded

CCS Achieving Higher Recovery Rate

CCS has tried hard to upgrade copper recovery rate. It has cooperated with China's Northeastern University to carry out research on key technologies for the mining, concentrating, and smelting of the complex and hard-to-develop copper and cobalt resources. It has completed test and research of electric slag / converter slag flotation and slag leaching in cooperation with Beijing General Research Institute of Mining and Metallurgy. They have also set up slag recovering and smelting processes and achieved high smelting efficiency and high metal recovery rate, increasing copper recovery rate from 96% to 98%.

Knowing that there are rich nonferrous metals such as cobalt and bismuth in Zambia's copper concentrate, CCS has carried out basic research and process development for comprehensive recovery of metals. Since 2009, it has cooperated with Shenyang Nonferrous Research Institute to launch small-scale experimental research on cobalt recovery from copper smelting slag. To make comprehensive cobalt recovery more economical and feasible, in 2011, it has undertaken a more thorough feasibility study on the construction of the electric reduction and dilution furnace and the leaching basis workshop, a postponed project in Phase One. At present, it is cooperating with Beijing General Research Institute of Mining and Metallurgy to experiment the converter slag reduction and sulfurization process. It plans to start the construction of the electric reduction and dilution furnace in 2013. It also works with Yunnan Copper Science & Technology Development Limited to develop the system for bismuth recovery from converter smoke, also known as the smoke leaching workshop. As scheduled, the system will be put into trial production by the end of September 2013.

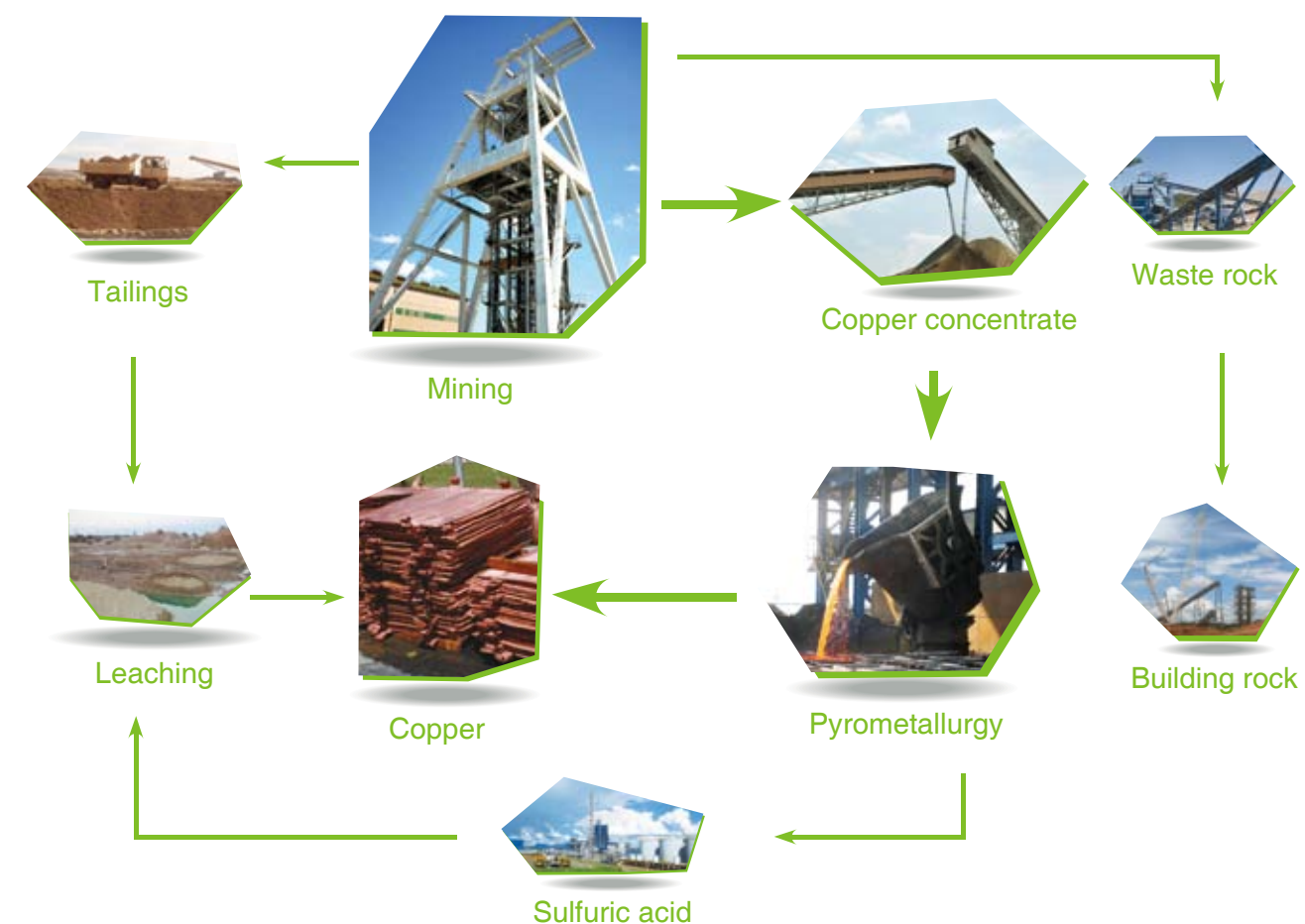
Circular Economy

Circular economy is an economic growth mode centering on efficient resources utilization and recycling, taking "waste quantity reduction, recycling, and conversion of waste into resources" as basic principles, featuring low consumption, low discharge, and high efficiency, and meeting the sustainable development concept. When establishing enterprises in Zambia, CNMC has considered the synergetic effect of the industry chains and tried to reduce waste discharge, form a huge recycling industry chain, and build green circular economy.

Great Cycle of Mineral Resources Industry Chain

The copper concentrates produced by NFCA and CLM are delivered to CCS for smelting while the tailings of the mine become the raw materials for Sino-Metals Leach Zambia Limited. The waste rock and mine residue are made into construction materials and used for the construction of ZCCZ and new Luanshya projects or sold to local enterprises, which not only solves the shortage of building materials, but also realizes a win-win result.

CCS and SML have jointly completed the Low-concentration Waste Acid Recycling Project and realized recycling of the waste acid from the sulfuric acid plant. This has soundly solved the common problem in waste acid treatment with copper smelting companies and truly achieved recycled production and green economy.



Green Smelting Plant in Zambia

At the beginning of its design, CCS has carefully designed its environmental protection engineering, trying to achieve zero discharge of waste gas, waste water, and waste residue. Upon its completion and operation, it has been hailed the “green smelting plant in Zambia” by local environmental protection officials due to its advanced technological concept, process, state-of-the-art environmental protection facilities, and recycled and economical use of resources. In 2011, its coal consumption for per ton of blister copper reached 182.34 kg-BM/t-Cu (kg of standard coal / ton of blister copper), an internationally leading performance.

CCS has established a series of water circulation systems, including those for smelting, quenching slag, oxygen station, power generation station, sulfuric acid, and waste acid treatment station.

CCS adopts the advanced rich oxygen top-blow submerged molten pool smelting technique to build the oxygen generation station for supplying oxygen. It also adopts the oxygen generating process using vacuum variable pressure adsorption method. Due to the fact

that molecular sieve has different capacities of adsorbing oxygen and nitrogen, it can separate them through pressure adsorption and step-down analytical, and thus reduce energy consumption and emission of carbon dioxide. The technology is economical, energy-saving, and safe.

A waste-heat power station --- providing approximately 18% of the electricity consumed in the plant area



All fumes from copper smelting are used to make acid



Smelting circulating water



Waste acid and sewage treatment station



Sulfuric acid absorption tower



Pollution source	Technology adopted	Result	Benefits
SO ₂ in the fume	Using copper and acid coordination to adjust and control fume components and transform sulfuric acid purification and dry absorption system, adopting double-spin and double-adsorption acid-making technology	The SO ₂ capture rate from the fume reaches over 90%. When the sulfuric acid II system is put into operation, the rate may reach 99.96%.	Stable production of 98% sulfuric acid is achieved. Clear as mineral water, it is known as “the best-quality metallurgical fume sulfuric acid in Zambia.”
Fume heat	Building the first set of waste-heat generating unit in Zambia, which uses the heat of the fume from the smelting furnace to produce medium pressure saturated steam for driving the turbine to generate electricity.	100% recovery of fume waste heat from melting, blowing and smelting	It generates 31,000MWh of electricity each year, accounting for 18% of the electricity consumed by the plant.
Waste acid water	Most of it is supplied to SML and the rest is treated with two-stage waste acid neutralization processes in waste acid water treatment station.	Meeting the requirements of the most strict environmental protection policies	The gypsum slag produced from the neutralization process is cheaply sold to a local cement factory as raw material.
Smoke dust	Process for recovering bismuth from smelting smoke dust	Reducing smoke dust pollution	Recovering bismuth metal
Slag	Electric reduction and dilution furnace and leaching basic workshop, copper and cobalt recovery process	Raising copper and cobalt recovery rate	Getting more copper and cobalt

Recycling Acid and Raffinate

By returning raffinate to tailings reservoir and heap leach field for circulated mining, SML achieves repeated use of acid-containing liquid, which can save energy, greatly reduce the impact on the environment, and bring about good economic results.

During each year’s rainy season, a large amount of waste water containing acid and copper will accumulate at the heap leach field and tailings reservoir and cannot be directly discharged. Its flowing to production process will cause water imbalance. To solve the problem, SML uses the raffinate neutralization and discharge system to discharge the neutralized water in a planned way to meet environmental protection requirements.



Dissolving and extracting

A Garden-like Mine

The mines operated by CNMC are covered with endless towering trees, green grassland, and colorful flowers all the year round. With fresh air, flowery scent, and chirping birds under blue sky and white clouds, Chambishi Copper Mine and Luanshya Copper Mine are more like gardens than operating mines.



NFCA in first rays of the morning sun

Beautiful Luanshya

To build a garden-like city, shortly after its take-over of Luanshya Copper Mine, CNMC started to perform its cleanup responsibility, including dismantling the old smelter located three kilometers southwest of Luanshya City. It was shut down in 1999 and on its location were broken walls and a scene of destruction. Clearing these away, CNMC leveled the ground and restored the landscape.

As the main tailing storage facility, Mushi Tailings Reservoir can serve Luanshya Copper Mine and Baluba Mine until their shutdown. However, the reservoir expansion project could not be done due to financial difficulties. From 2009 to the end of 2011, CLM heightened and reinforced Mushi Tailings Reservoir and closely combined the reservoir expansion efforts with the Muliashi Open Mine project. It uses the topsoil got during open pit mining to heighten and reinforce the tailings reservoir, solving two problems at the same time.



CLM Hotel



Avenue in CLM

Construction of the Seedling Base

ZCCZ takes ecological protection seriously. To restore the vegetation removed during ground leveling, it used the land and water resources available to plan and build a ten-hectare seedling base. Now, the base boasts more than 40,000 saplings of over 20 varieties to meet the landscaping needs of ZCCZ and EIA requirements. The base helps the company to cut investment.

Environmental-friendly Construction of the Tailings Reservoir

NFCA invested more than 3.8 million USD to complete phase two expansion of Musakashi Tailings Reservoir. The reservoir dam was heightened by four meters, increasing the reservoir volume by 5,734,300 cubic meters. This has not only fully met the safety and environmental protection requirements for tailings discharge, but also offered a safer living environment for downstream residents and guaranteed sustainable development and improvement of the ecological environment.

SML attaches great importance to tailings effluence. By the end of 2009, it had built No.7 and No.8 goafs into a 420,000m² leaching slag effluence reservoir. Thanks to the HDPE lining, the discharged liquid cannot ooze into the earth, which ensures safety during leaching slag discharge (no sinking, no draining). After gathering and settling in the tailings reservoir, the liquid is pumped back to production system by a circulation pump, which can increase the recycling, rinsing, and leaching rates of copper in the liquid, greatly reduce the consumption of lime and sulfuric acid, and avoid the impact on the environment by the liquid.



Case: Since 2005, NFCA has organized its employees to participate in World Environment Day charitable activities on June 5 of each year. During the event, it displays its determination and action to maintain ecological safety and establish an environmental-friendly enterprise. Meanwhile, it spreads ecological safety know-how, carries out environmental alert education, and instills greater awareness of ecological safety and environmental protection into its employees and people in neighboring communities.

On June 5, 2010, NFCA donated 100 T-shirts and some money to the Citizen Organization for Environmental Optimization to support its World Environment Day activities in Kitwe City of Copperbelt Province.

In October 2010, NFCA donated one million Kwacha to the Green Environment Supervision Organization, a nonprofit organization in Lusaka, to help it organize a general assembly on environment change.

In 2011, NFCA donated nearly 2,000 USD to Zambian Youth Association as its "Climate Warming Fund."

Contributions to the Community

Fulfilling responsibility is an inherent requirement for harmonious development of an enterprise and a solid foundation for its survival, development, and taking root abroad. It is also an important way to show the integrity of Chinese enterprises. CNMC fulfills its responsibilities wherever it carries out its operation.

CNMC has been operating in Zambia for 13 years. While advancing project construction and doing business according to the law, it has promoted Zambian economic development and regarded contribution to local people and participation in causes of public good its sacred bounden duty.

In 2010, winning top vote, CNMC was awarded the title of **“Top Ten Chinese Enterprises to have Deeply Moved Africa”** by the Chinese-African People’s Friendship Association.



Community Development Plan

For a multinational mining company, fulfilling its responsibility to the community is helpful to obtain license for its local operation and healthy growth. “Going abroad” is a gradual and continuous process for Chinese enterprises. In order to go steadily, go far, and go well, it is necessary for them to view “social responsibility fulfillment as a development strategy and part of core competitiveness,” and establish a broad and profound reciprocal relationship with local communities.

When implementing the “going abroad” strategy, Chinese enterprises should focus on their own development and also promote the economic development of the host country so as to reach a win-win result and achieve the leap-forward growth from acquiring short-term interests to long-term circular benefits. Only by taking root in Africa and merging into the local society can enterprises develop vigorously and fruitfully.
— Mr. Luo Tao, President of CNMC

Communication with Local Communities

CNMC carries out extensive communication with local communities to deeply understand their most pressing needs and work out community development plans based on their own advantages. Through visit, press conference, open letter from CEO, local supplier meeting, major news conference, and daily report, we have taken the initiative to strengthen our communication and contact with local government, regulatory authorities, and communities, and consciously accept their supervision and inspection. In the meantime, we continue to actively exchange with the communities, organize our employees to participate in community activities, and maintain a good relationship with local communities.

Our Community Development Plan

We have developed community development plans to normalize and institutionalize our actions for supporting community development, and bring more tangible benefits to Zambian people:



Recreational facilities for children of Chambishi Village built on our donation

- ▶ Knowing local communities and stakeholders, effectively communicating with stakeholders in a transparent way that meets local cultural traditions, respecting the culture, customs, interests, and rights of the communities, and establishing friendly and cooperative relations with them on the basis of mutual benefits and active participation;
- ▶ By implementing appropriate local social and economic development plan, helping local infrastructure construction in a long-term, continuous, and well-planned way; and developing and supporting projects that can bring benefits to the community in cooperation with government, community representatives, NGOs, and other stakeholders;
- ▶ Supporting local education and training causes, helping improve local education and vocational skills, encouraging local people to actively participate in project construction and operation, and achieving long-term development skills;
- ▶ Supporting the development of local SMEs, supporting the development of local mine-associated projects, providing and encouraging local business opportunities, and striving to foster and develop local business force with independent operation capability;
- ▶ Actively participating in public welfare, offering charity donations, disaster relief, and care for vulnerable groups, continuously carrying out social public welfare activities such as donations to students and women, AIDS prevention, and anti-malaria efforts; and helping develop local sports, culture, education, and health services.

Infrastructure Construction

Infrastructure construction concerns the long-term development of communities and the daily life of local people. Its soundness is an important foundation for a country or region to keep nonstop and stable economic development. By the end of 2011, CNMC had invested 130 million USD in infrastructure construction in Zambia, including the building of roads, bus waiting areas, farm product markets, and substations.

Power facilities — CNMC invested 27.8 million USD to build a 330KV/66KV substation in east Chambishi in association with ZESCO. This formed a new power supply and distribution loop with a capacity of 240 MVA. The project not only improved the lighting conditions for local people, but also laid a solid power supply foundation for promoting ZCCZ construction and the development of local economy.

Commercial facilities — CCS funded the construction of a farm product market for Garnaton community, which provided local traders with a shelter and local people with a food market, and promoted local commodity circulation and trade prosperity.

Highway facilities — NFCA invested 500,000 USD to have a five-kilometer road built between Chambishi Village and Kitwe City, together with four waiting pavilions in Chambishi Village, Kalulushi Town, and the transportation center of Kitwe City.

NFCA is committed to supporting the sustainable development of municipal facilities. Each year, it donates a heavy-duty machine to local government for infrastructure construction. In 2010, its donation was a road roller worth 100,000 USD.



Medicine and Health

Zambia has long lacked medical infrastructure. Its medical services are poor and patients often receive substandard medical treatment.

In order to improve the health and medical conditions in Zambian communities, CNMC has operated several hospitals in mine areas, equipping them with advanced medical equipment and introducing sophisticated medical technologies in their operation. Its efforts have improved local medical software and hardware conditions and formed a modern regional medical network.

CNMC is committed to reducing the hazards of common epidemics such as AIDS and malaria to the health of local residents. Each year, it publicizes disease prevention, carries out pest elimination, and advocates healthy lifestyles. In December 2007, it donated some office equipment such as computers worth over 40,000 USD for anti-AIDS activities sponsored by the Organization of African First Ladies against AIDS. In 2011, NFCA donated over 6,000 USD for improving health conditions; CLM donated pesticide spraying equipment to local government for supporting the anti-malaria program sponsored by Zambia's Ministry of Health; and CCS donated about 107,000 USD to build the clinic and iron bridge in Chambishi.



Case: The China-Zambia Friendship Hospital was built and transformed on the investment by CNMC. It is the second largest hospital in Zambia, with 100 beds, more than 100 doctors and nurses of different nationalities, and some advanced medical equipment such as the only CT and MRI in Zambia. With good medical conditions and superb medical skills, it offers excellent services to Zambian and Chinese employees. It has attracted many patients from all over Zambia and made great contribution to the health improvement of Zambian people. In recent years, NFCA has invested 1.5 million USD in the hospital to have houses repaired and more medical equipment purchased.



The only CT in Zambia

Culture and Education

Culture and education are the basis for social and economic development. CNMC participates in improving local education system, gives support to education programs at all levels, including primary school, technical school, and university, and actively helps Zambian people improve their education and vocational skills, and turns out industrial workers, professional experts, and managerial talents for Zambia.

CLM has borne all the costs in running local nine-year schools and technical schools. It establishes scholarships in Lusaka University for outstanding students, especially the excellent students majoring in mining, ore concentrating, machinery, and electric engineering. It provides jobs to outstanding graduates. NFCA funds scholarships at Copperbelt University each year. In 2011, it donated 30,000 USD of scholarship to Copperbelt University and invested nearly 100,000 USD to help Chambishi High School build more classrooms, encourage students to study hard, and contribute to Zambia's development. In addition, it donates stationery to public primary schools in Chambishi area.



Sponsoring local football team's match and training

CNMC has made contributions to local sports, sponsored Zambian national sporting events, maintained and run local public facilities such as swimming pool and ball clubs. CLM funds local Roan United Football Team to participate in the annual National Football League matches, donating to it footballs, T-shirts and other sporting goods, and paying wages to its players. NFCA has established a football club for its Chinese and Zambian employees and also built exercise facilities in Chambishi Village, Kalulushi Town, and Kitwe City.

Supporting Women's Development

Respecting women is conducive to social well-being. CNMC actively explores ways to promote local women's employment and career development, and inspires and guides local women to make effective use of resources to promote their entrepreneurship.

NFCA donated sewing machines to Chambishi Women Employment Program. It aims to help local women acquire a skill and a long-term working opportunity so as to achieve economic independence, upgrade the standard of living for themselves and their families, and realize their own value. Furthermore, it provides free chicks to the women of Chambishi Village and purchases the grown chickens back to create income for them.

In 2010, our enterprises in Zambia funded and mobilized about 80 Chinese and Zambian female workers to participate in the parade of Kitwe City on International Women's Day to advocate equal status and rights for women.



Zambian Vice President Mr. Guy Scott attending a ceremony for NFCA to donate 100,000 USD worth of articles to local community



Donating a bulldozer to Kalulushi City

Charitable Donations

As the president unit of the Chinese Chamber of Commerce in Zambia, CNMC takes active part in local charitable activities. Up to the end of 2011, it had invested 130 million USD in various infrastructure construction projects of Zambia and made social donations equivalent to over ten million USD.

When major natural disasters hit China, our Chinese and Zambian employees will actively make donations to disaster relief. Our enterprises in Zambia donated 58,300 USD to Wenchuan and 15,800 USD to Yushu for their post-quake reconstruction, and 10,500 USD to Southwest China for the drought relief.

CLM supports the development of local small-sized agriculture organizations. It donates fertilizers and seeds to them and encourages them to develop agriculture so as to provide high-quality and sufficient food to local people.



Donating to local communities



Contributing to local primary school

Topic: Brightness Mission to Spread Brightness and Hope

In April 2011, Zambia was bathing in vitality and hope. The Brightness Mission sponsored by Chinese People's Association for Friendship with Foreign Countries entered Zambia for the first time. It opens a brand-new life chapter for poor cataract patients in Zambia.

During the activity, CNMC donated 1.1 million RMB and brought to Zambia the world's leading medical devices, lenses, and China's top medical team from Beijing Tongren Hospital.

In the China-Zambia Friendship Hospital, the only hospital run by Chinese people in the African continent, 110 medical workers from China, India, Bangladesh, and Zambia devoted themselves into their jobs...

Some 109 poor cataract patients from all over Zambia gathered here to receive free operations. After years' suffering from cataract, they looked forward to seeing the light and picking up confidence in life again. All the operations succeeded.

When Mr. Abulahat Abdurixit, Vice Chairman of CPPCC and President of the China-Africa People's Friendship Association, and the then Zambian President Rupiah

Banda removed the gauze from their eyes, the Zambian cataract patients were extremely excited.....

Behind each pair of eyes was a family full of expectations. Committed to fulfilling its responsibilities, CNMC lights up the patients' lives and brings back the joy to their families.

In 2010, you won the title of "Top Ten Chinese Enterprises to Have Deeply Moved Africa." Today, I see firsthand your development and contributions in Africa. You have not only moved Africa, but China as well.
— Mr. Abulahat Abdurixit, Vice Chairman of CPPCC of China



The Sino-Zam Friendship Hospital built on the investment by CNMC has the best medical equipment and environment in the locality.

Future Prospect

Today, the concept of sustainable development has taken root in people's hearts. It has become an indispensable route for enterprise development and an eternal topic for human society to pursue nonstop progress.

During our 13-year operation in Zambia, we have assumed our social responsibilities and unceasingly pursued our operational mode of "going abroad in steady and sound paces, and achieving sustainable development." We shall continue to work with Zambian people to jointly create an even brighter future. We shall do nothing harmful to the long-term interests of the two countries, even if it brings great immediate benefits. We will do everything beneficial to the common development of the two countries, even if there are great difficulties on the way.

We shall continue to fulfill our mission of constructing the Zambia-China Economic and Trade Cooperation Zone, combine the successful experience of China in reform and development with actual needs and reality of Zambia, and enable the cooperation zone to play a greater role in the economic development of Zambia.

We shall continue to maintain coordination and balance between corporate interests and that of Zambia's economic development, upgrade the development of local mining industry, promote local economic development, offer more jobs, and further improve localization of our management and operation.

We shall continue to strengthen our communication with local communities, perfect our community support program, participate in and contribute to community development, help them solve the urgent problems arising during their development, and provide our maximum possible support to them.

We shall continue to step up environmental protection and speed up technological innovation. In particular, we shall, through bio-metallurgical technology, turn the waste tailings of Zambia into valuable products, and transform environmental pressures into resources benefits.

An "all-weather friend" of Zambia --- this is the highest praise for our development in Zambia. An ancient Chinese saying goes: "Time reveals a man's sincerity." During future development, we shall continue to bravely assume our responsibilities, fulfill "China-Zambia Cooperation for Common Development," and work hard to become a model in common sustainable development for enterprises and society.

