

## The Status of nickel resources in the world and the development of mineral resources in MCC

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Distinguished Chairman

Ladies and Gentlemen.

I am honor of attending this conference and giving a speech in the meeting.

With rapidly development of the global economy, the demand of consumption for stainless steel is fast increased; it results in increase of demand for nickel resources in the world. The development of stainless steel sector is obviously faster than the development of steel sector, in one hand, it intensifies the consumption of sulfur nickel resources, in other hand, it forces consumers to expedite the development of the laterite nickel in order to guarantee the supply of nickel resources and to meet the demand of economic development. This paper briefly introduces the status of nickel resources in the world and the practice of development of mineral resources in MCC.

The status of nickel resources in the world

The reserves of nickel ore in the world are about 23 billion tones , average grade 0.97 per cent, total contents of nickel metal is about 220 million tones; among of it the sulfur nickel ore are about 10.5 billion tones, average grade 0.58 per cent, the contents of nickel metal are about 62 million tones, about 28 per cent in total nickel resources; the laterite nickel are about 12.6 billion tones, average grade 1.28 per cent , the contents of nickel metal are about 160 million tones, about 72 per cent in total nickel resources.

It is classified into two kind of technology of pyrometallurgy and hydrometallurgy for recovery of the laterite nickel. There are about 4 billion tones of the laterite nickel fit to pyrometallurgy, average grade 1.55 per cent, the contents of nickel metal are about 62 million tones, about 38 per cent in total the laterite nickel, there are about 8.6 billion tones of the laterite nickel fit to hydrometallurgy, average grade 1.15 per cent, the contents of nickel metal are about 99 million tones, about 62 per cent in total the laterite nickel.

The output of mineral nickel is 1.28 million tones all over the world in 2004 and the output of electric nickel is about 1.27 million tones, about 60 per cent output of nickel comes from sulfur nickel ore, about 25 per cent comes from the laterite nickel by pyrometallurgy and about 15 per cent comes from the laterite nickel by hydrometallurgy.

The mineral nickel is mainly produced by Russia, Canada, Australia, Indonesia, New Caledonia, etc. Japan is the largest country producing electric nickel, also the largest country both importing mineral nickel and consuming electric nickel. Both Indonesia and New Caledonia are large country exporting mineral nickel. China produced separately 63.3 thousand tones mineral nickel and 75 thousand tones electric nickel in 2004, among of it Jinchuan nickel corporation produced

65 thousand electric nickel, about 87 per cent, Jilin nickel corporation produced 5 thousand tones electric nickel and others produced 5 thousand tones electric nickel.

The current situation of consumption of nickel in the world

It basically maintains dynamic balance of supply and consumption of nickel in the world. The output of nickel is about 1.28 million tones and the consumption of nickel is about 1.28 million tones in the world in 2004. The main countries and regions of consumption of nickel are Japan consuming about 186 thousand tones, American consuming about 150 thousand tones, china consuming about 140 thousand tones, South Korea consuming about 120 thousand tones, Germany consuming about 110 thousand tones, Chinese Taiwan consuming about 100 thousand tones in 2004. Japan is the largest country of consuming electric nickel.

The rate of production increasing of nickel is lower than the rate of consuming increasing in the world. It is predicted that the rate of production increasing is about 3.3 per cent, the output up to 1.3 million tones, rather than, the rate of demand increasing is about 4.1 per cent, the consumption up to 1.31 million tones, the deficit of nickel will increase to 16 thousand tones in 2005. The main consumption market of nickel is metallurgical industry, about 80 per cent of total consumption, stainless steel sector consumes about 65 per cent of nickel, besides, nickel are used in electroplating and battery sectors.

The stainless steel sector was quickly developed in last two decades. The output of stainless steel is 6.435 million tones in 1980 all the world, the output of stainless steel is up to 23 million tones in 2004. It is predicted that the output of stainless steel will be up to 30 million tones in 2010. The stainless steel sector was expeditiously developed in China, the output of stainless steel was 1.36 million tones in 2003, and the output of stainless steel is increased to 2.36 million tones in 2004.

The largest countries and regions of consumption of stainless steel are as follows: China, Japan, American, Italy, Germany, South Korea, Chinese Taiwan, France, Spanish, India, British. The consumption of stainless steel per capita in 2003 in the world are as follows: Chinese Taiwan 35 Kg, South Korea 23.5 Kg, Italy 22.8 Kg, Japan 17.2 Kg, Spanish 12.8 Kg, France 10.1 Kg, Canada 7.2 Kg, American 7.3 Kg, British 5 Kg, China 3.3 Kg, South African 3.1 Kg, Thailand 3 Kg, Brazil 1.6 Kg, India 0.6 Kg.

The development status of the laterite nickel in the world

The projects of the laterite nickel are producing in the world as follows: Moa Bay In Cuba, Murrin Murrin in Australia, Bulong in Australia, Cawse in Australia, Soroako in Indonesia , Pomalaa in Indonesia, Cerro Mastoso in Colombia, Loma de Niquel in Venezuela, Rio Tuba in Philippine.

The projects of the laterite nickel are constructing in the world as follows: Coro in New Caledonia, Rawensthorpe invested by BHP in Australia.

The projects of the laterite nickel are going to feasibility study as follows; Ramu in Papua New Guinea, Nonoc in Philippine, Mindoro in Philippine,

The basic views of development of the laterite nickel in the world

1. It is an inexorable trend to expeditiously develop and utilize the laterite nickel resources due to the decrease of sulfur nickel ore resources and the increase of demanding for nickel resources.

2. The saprolite nickel is normally recovered by pyrometallurgical technology in which it consumes more energy and needs high grade of the saprolite. With the high grade of the saprolite decreasing and increasing of the price of energy, the proportion of recovery of the saprolite by pyrometallurgical technology will be gradually decreased in recovery of the laterite nickel resources.

3. With the gradual improvement of pressure acid leach technology, it will be a main development trend to develop and utilize low grade of the limonite nickel resources and it will have a broad prospect.

The basic principle of development mineral resources for MCC

MCC Group is a huge conglomerate under the direct guidance of the SASAC (state-owned assets supervision and administration commission of the state council), It has a diversified business interest and shows an integrative competence in scientific research, consulting services, planning, geotechnical surveying, design and supervision, civil construction, installation and commissioning, manufacturing and complete plant, not only having a competent team in design and construction of mining, beneficiation, metallurgy, but also accumulating valuable experience in long term practice. It made an important basis of development metal resources for MCC. Entrance into WTO in China creates not only the condition of utilizing the domestic and abroad of resources and market, but also the opportunities of going abroad to develop resources for enterprises.

The principle of developing mineral resources for MCC is taking advantage of self-superiority, satisfying the demanding of economic construction, operating in diversified manners and improving common development.

The main manners of MCC in developing mineral resources are as follows: direct investing in mine, cooperating in mine, operating by leasing a mine or plant, operating committed by owner, exchanging resources by engineering construction (by EPC) and direct trading resources.

The practice of development mineral resources for MCC

#### 1. Shandak Copper and Gold Mine in Pakistan

MCC obtained the right of operating Sandak copper and gold mine by bid for the mine in 2002. The production of the mine had recovered and produced 3000 tons blister in 2003. The mine produced 13000 tons blister in 2004 and will produce about 16000 tons blister in 2005; the mine offers more than 900 job positions for Pakistani and reactivates the idle assets in the mine. It creates vigor for local economy.

#### 2. Duddar Lead & Zinc Mine in Pakistan

The Duddar lead & zinc mine is invested by MCC, Zhuzhou Lead & Zinc Smelter and Huangshaping Lead & Zinc Mine and MCC holds the majority of the equity in the mine. The mine starts to construct in first half of 2005, the period of construction will be two and half year. The capacity of designing is 660 thousand tons per year for mining and beneficiation, 100 thousand tons per year for zinc concentrate, about 54 thousand tons content of zinc, 32 thousand tons per year for lead concentrate, about 20 thousand tons content of lead.

#### 3. Ramu Nickel Project in Papua New Guinea

The Ramu nickel project will be invested by MCC, taking 85 per cent equity for Ramu nickel project, taking 15% by RNL, MRDC/OMRC, MRRL together in former exploration, applying for and settling down all procedures of development, including land title.

The capacity of design in Ramu project is 4.65 million tones per year for mining and beneficiary and 3.21 million tones per year for metallurgical treatment. The sulfur nickel & cobalt is designed as the final product, producing 58 thousand tones of sulfur nickel & cobalt per year, about 32 thousand tones content of nickel and 3.2 thousand tones content of cobalt.

The Ramu nickel project will start to construction the end of this year, the period of construction will be 24 months and ramp up will be 24 months.

Ladies and Gentlemen

MCC would like to develop diversified cooperative manners in mineral resources with your corporation in the future on the basis of the mutual benefit and trust. And you are welcome to visit MCC in any time when you are convenient.

Thank you very much for your time!