
INDUSTRY OVERVIEW

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COPPER MARKET OVERVIEW

Introduction

Copper is a reddish-brown metal that is corrosion resistant, malleable and ductile. Due to its high conductivity and thermal properties, copper is commonly used in wires, electromagnets, printed circuit boards as an electrical conductor and heat exchangers as a thermal conductor.

Copper is one of the most recycled of all metals and recycled copper (also known as secondary copper) cannot be distinguished from primary copper (copper originating from ores), once processed. Copper is an important contributor to the national economies of mature, newly developed and developing countries.

Primary copper production starts with the extraction of copper-bearing ores. There are three basic ways of copper mining: surface, underground mining and leaching. Open-pit mining is the predominant mining method in the world. Copper exists in two broad categories of ore types: sulphide and oxide. Accordingly, two different processes are applied to deal with the ores. Copper oxide minerals can be readily leached and copper can be recovered from the resultant pregnant leach solution by an SX-EW process to produce marketable cathodes. Sulfide minerals are separated from the waste at the ore processing plant to form copper concentrate which is then shipped to a copper smelter which can be local to the mine or in a different country or continent.

The global demand for copper continues to grow; world refined usage has more than tripled in the last 50 years due to expanding sectors such as electrical and electronic products, building construction, industrial machinery and equipment, transportation equipment, and consumer and general products.

COPPER DEMAND

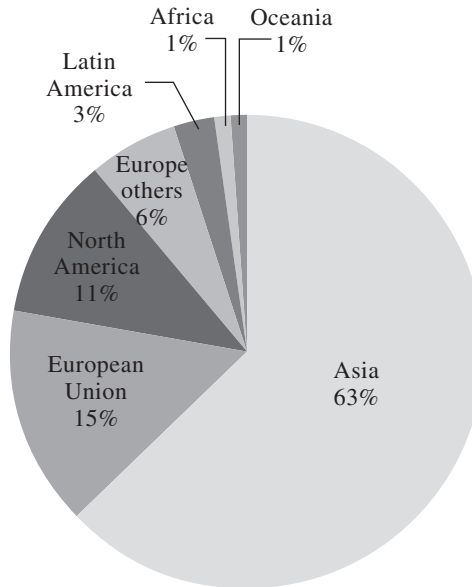
Copper Consumption by Region

According to ICSG, the global refined copper consumption was around 20.47 Mt in 2012. Asia was the largest refined copper consuming region which attributed for 63% in 2012. Europe, North America and Latin America accounted for 21%, 11% and 3% of global refined copper consumption respectively in the same period.

INDUSTRY OVERVIEW

The following chart shows the refined copper consumption by region in 2012:

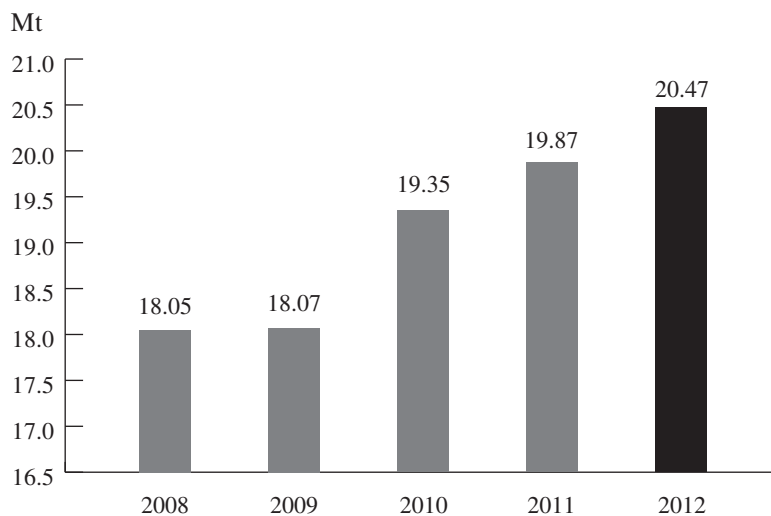
Refined Copper Consumption by Region in 2012



Source: *Copper Market Forecast 2012-2013*, ICSG. ICSG (International Copper Study Group) was established in 1992 to promote international co-operation on issues concerning copper by improving the information available on the international copper economy and by providing a forum for intergovernmental consultations on copper. ICSG regularly publishes and updates information and statistics on copper industry on its website.

World refined copper consumption remained flat in 2009 due to the shrinking demand during the financial crisis. The consumption picked up from 2010 and has continuously moved upward from year to year. The following chart illustrates the five-year historical data for world refined copper consumption.

World Refined Copper Consumption 2008 – 2012



Source: *World Refined Copper Production and Usage Trends 2006 – 2012*, ICSG

INDUSTRY OVERVIEW

Copper Consumption by Sector

First Use Consumption

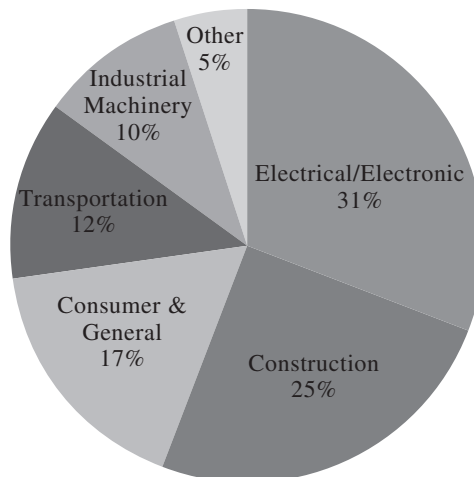
Copper and copper alloy semis can be transformed by downstream industries for use in end use products such as automobiles, appliances, electronics, and a whole range of other copper-dependent products in order to meet society's needs. Copper has the highest electrical conductivity of all metals apart from silver and therefore is mainly used for electrical/electronic purposes.

End Use Consumption

According to LME and CRU Group, copper consumption can be categorized into electrical/electronic, construction, consumer, transport, industrial machinery and others.

The following chart shows the global copper consumption by end use in 2011:

Global Copper Consumption by End User in 2011



Source: Industrial consumption 2011, LME and CRU Group

INDUSTRY OVERVIEW

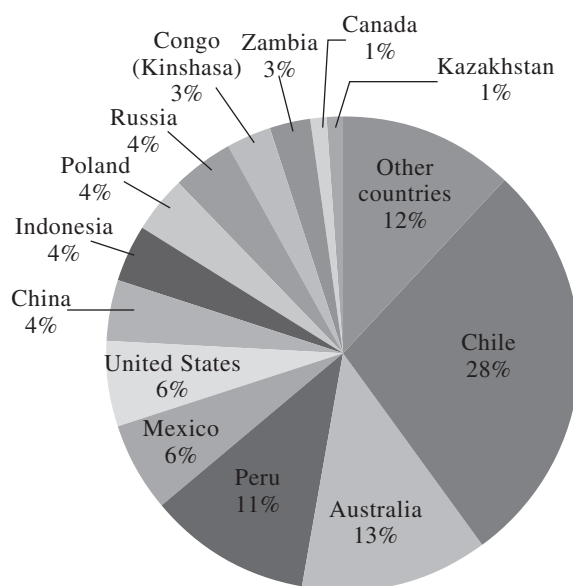
COPPER SUPPLY

Copper Reserve by Region

According to USGS, the estimated global copper reserves were 680 Mt at the end of 2012. The world's major copper deposits are located in South America, particularly in Chile and Peru, and Australia. The estimated copper reserves in these 3 countries make up half of the world's reserve. According to British Geological Survey, worldwide deposits typically grade between 0.2% and 2% Cu. According to "The Democratic Republic of Congo and Zambia: A Growing Global 'Hotspot' for Copper-Cobalt Mineral Investment and Exploration" published on 6th Southern Africa Base Metals Conference 2011, a reported one-fifth of all global copper resources with a grade of over 1.0% are located in the Central African copperbelt. In some instances, grades of 7% to 8% copper have been recorded. Most operations underway in the region report copper grades of between 1% and 4%, which are significantly higher than the average copper grade of worldwide mined/deposit.

The following chart shows the global copper reserves by region in 2012:

Global Copper Reserve by Region in 2012



Source: Mineral Commodity Summaries 2013, USGS

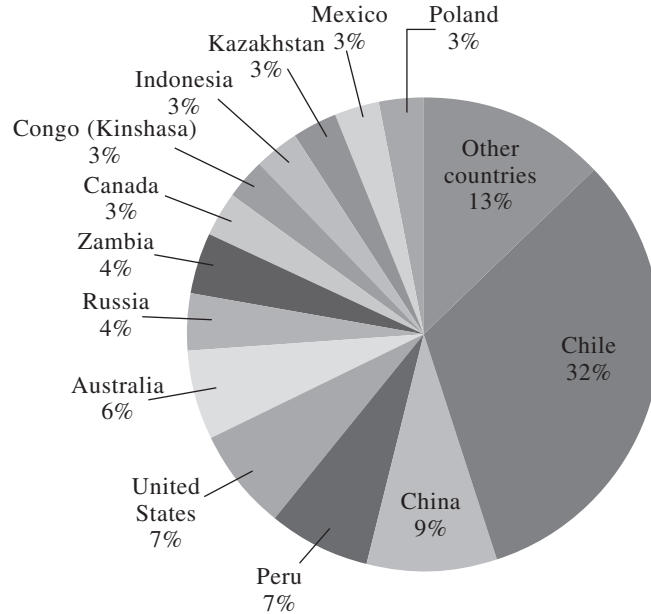
Copper Mines Production

In 2012, the total global copper mine production was around 16.74 Mt according to USGS. Chile was the world's largest producer of mined copper with an estimated 32% of the global market share. China, Peru and United States attributed for 9%, 7% and 7% respectively.

INDUSTRY OVERVIEW

The following chart shows the copper mines production by region in 2012:

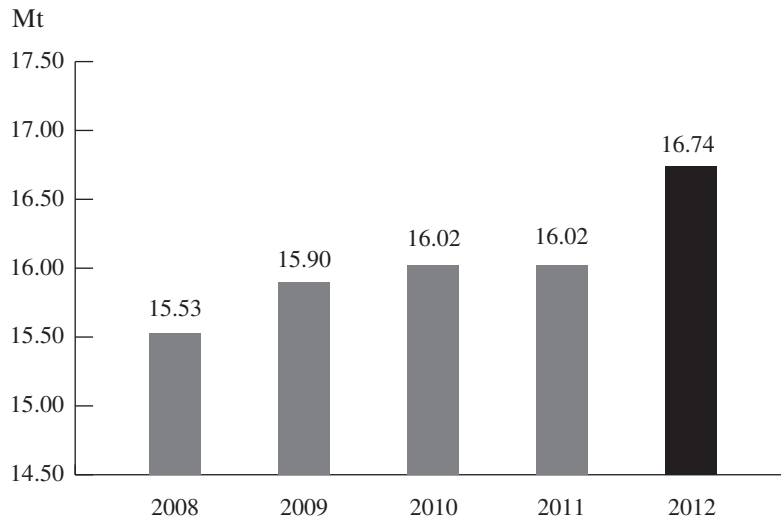
Copper Mines Production by Region in 2012



Source: Mineral Commodity Summaries 2013, USGS

The global copper mines production has been steadily increasing over the past five years. In 2012, it reached 16.74 Mt, representing a 4.50% increase over 2011. The following chart illustrates the historical world copper mines production during 2008 to 2012.

World Copper Mines Production 2008 – 2012



Source: World Refined Copper Production and Usage Trends 2006 – 2012, ICSG

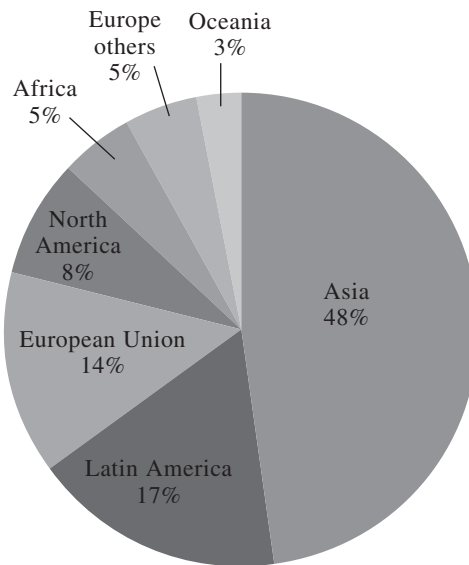
INDUSTRY OVERVIEW

Refined Copper

The total amount of world refined copper production in 2012 was 20.12 Mt. The production volume of refined copper in Asia has been increasing in recent years. In 2012, Asia accounted for almost half of the world's copper smelter output, followed by the Latin America, Europe and North America.

The following chart shows the refined copper production by region in 2012:

Refined Copper Production by Region in 2012



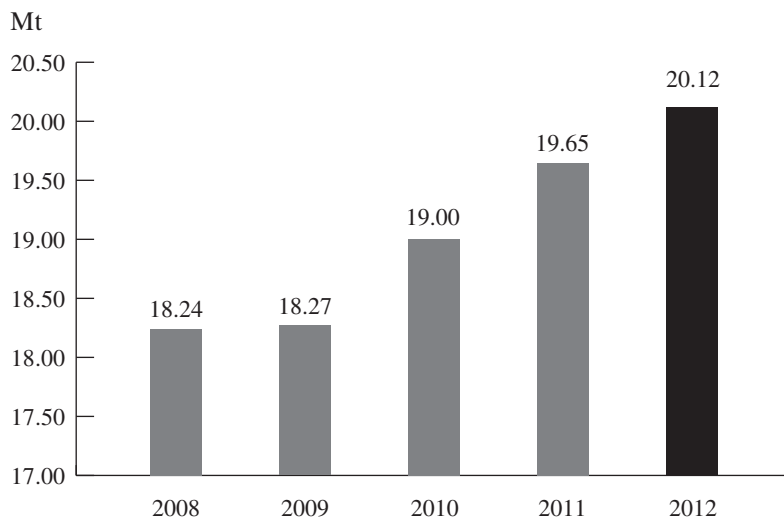
Source: *Copper Market Forecast 2012-2013, ICSG*

During the past five years, the world refined copper production has been growing at a steady pace. Copper consumption has also increased but at a faster pace, resulting in a shortage of supply between 2010 to 2012. In 2012, the world refined copper production was approximately 20.12 Mt, while the consumption in the same year was approximately 20.47 Mt, indicating a supply deficit of 350,000 t of refined copper in 2012.

INDUSTRY OVERVIEW

The following chart shows the world refined copper production during 2008 to 2012:

World Refined Copper Production 2008 – 2012



Source: World Refined Copper Production and Usage Trends 2006 – 2012, ICSG

The following tables set out the top players in copper mining and copper refinery industry:

Top 10 Copper Mines by Capacity in 2011

Rank	Mine	Country	Owner(s)	Capacity (kt)	Copper Reserve
1	Escondida	Chile	BHP Billiton (57.5%), Rio Tinto Corp. (30%), Japan Escondida (12.5%)	1,250	4,157Mt at 0.76%
2	Codelco Norte	Chile	Codelco	920	2,476Mt at 0.7%
3	Grasberg	Indonesia	P.T. Freeport Indonesia Co. (PT-FI), Rio Tinto	750	2,590Mt Cu at 1.0%
4	Collahuasi	Chile	Anglo American (44%), Xstrata plc (44%), Mitsui and Nippon (12%)	520	Copper Oxide 19.6Mt at 0.75%, sulphide 1550Mt at 0.95%, low grade sulphide 615Mt at 0.52%
5	Los Pelambres	Chile	Antofagasta Plc (60%), Nippon Mining (25%), Mitsubishi Materials (15%)	470	1,433Mt at 0.65%

INDUSTRY OVERVIEW

Rank	Mine	Country	Owner(s)	Capacity	
				(kt)	Copper Reserve
6	El Teniente	Chile	Codelco	434	4,176Mt at 0.84%
7	Taimyr Peninsula (Norilsk/ Talnakh Mills)	Russia	Norilsk Nickel	430	320Mt at 2.6%
8	Morenci	United States of America	Freeport-McMoRan Inc 85%, 15% affiliates of Sumitomo	420	4,250Mt at 0.27%
9	Antamina	Peru	BHP Billiton (33.75%), Teck (22.5%), Xstrata plc (33.75%), Mitsubishi Corp. (10%)	370	822Mt at 0.93%
10	Andina	Chile	Codelco	300	5,888Mt at 0.78%

Source: ICSG, public information

Top 10 Copper Refineries by Capacity in 2011

Rank	Smelter	Country	Operator/Owner(s)	Capacity (kt)
1	Guixi	China	Jiangxi Copper Corporation	900
2	Chuquicamata Refinery	Chile	Codelco	600
3	Yunnan Copper	China	Yunnan Copper Industry Group (64.8%)	500
4	Birla	India	Birla Group Hidalgo	500
5	Jinchuan	China	Jinchuan Non Ferrous Co.	500
6	Codelco Norte (SX-EW)	Chile	Codelco	470
7	Toyo/Niihama (Besshi)	Japan	Sumitomo Metal Mining Co. Ltd.	450
8	Amarillo	United States of America	Grupo Mexico	450
9	El Paso (refinery)	United States of America	Freeport-McMoRan Copper & Gold Inc.	415
10	Las Ventanas	China	Codelco	400

Source: ICSG, public information

INDUSTRY OVERVIEW

Copper trade

Copper products across the value chain are traded internationally. Often, countries where upstream copper production exceeds downstream production capacity will export the raw materials to meet production needs in other regions. Major product categories of copper traded internationally include: copper concentrates, copper blister and anode, copper cathode and ingots, copper scrap and copper semis. Asia is a major importer of copper concentrates and products.

The World Copper Factbook 2012

Major International Trade Flows of Copper Ores and Concentrates¹



¹Figure is intended to illustrate trade flows but not actual trade routes.

Source: ICSG, *The World Copper Factbook 2012*

China Copper Market Overview

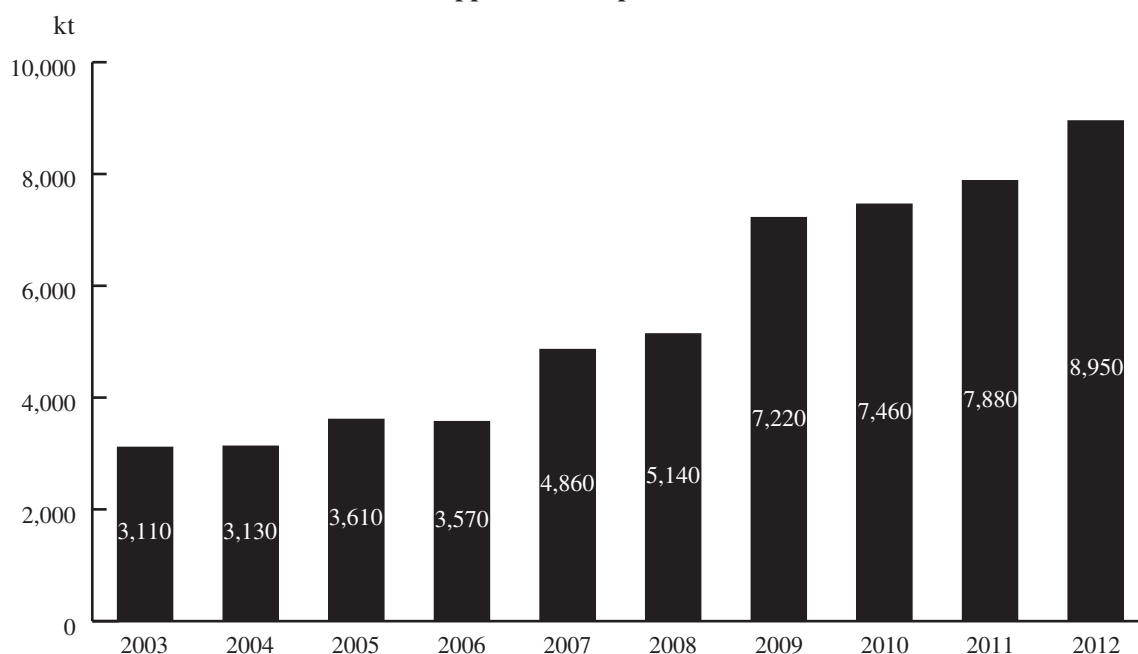
Since 2000, the copper industry has increased rapidly, especially with continuous demand growth from China due to the overall economic growth during the period. The attractiveness of copper and its related products as investment products has also resulted in an increase in demand.

According to Copper Market Forecast 2012-2013, ICSG, China is the leading consumer of copper worldwide, accounting for approximately 40% of global total consumption of copper. Though China is the largest copper consumption country in the world, it does not have abundant copper mine resources and also lacks large-scale high-grade copper mines. Thus many Chinese companies are seeking overseas copper mining assets to ensure the supply of refined copper, as well as signing long-term contracts with overseas suppliers to avoid the copper price volatility. The domestic copper production can only partially meet the domestic demand in China, therefore China needs to import raw material and refined copper to make up the domestic production deficit.

INDUSTRY OVERVIEW

According to the Chinese Industry Association, the consumption of refined copper in China has been steadily growing during the last decade, from 3.1 Mt in 2003 to 8.95 Mt in 2012, representing a CAGR of 12.5%. The following chart sets out the consumption of refined copper in China during 2003 – 2012.

Refined Copper Consumption in China 2003-2012



Source: Chinese Industry Association

According to the Chinese Industry Association, as China's economy picks up, the consumption of refined copper in China will keep growing at a growth rate of around 5% for the next five years.

According to Mineral Commodity Summaries 2013, USGS, the copper supply and demand balance remained tight during recent years, in part due to the increasing China net imports, which reached 80% year-on-year increase for the first half of 2012.

The following table sets out the China copper concentrate balance during the past ten years from 2003-2012:

China Copper Concentrate Balance 2003 – 2012

kt	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Production	604.4	742.2	761.6	872.9	928.0	1076.1	1044.5	1155.8	1271.9	1624.0
Import	2669.9	2880.0	4058.9	3611.9	4516.2	5192.1	6132.3	6468.1	6375.5	7830.0
Export	620.8	144.3	9.2	0.5	6.1	24.1	4.6	1.9	0.5	0.5
Apparent consumption ^{Note}	2653.5	3477.9	4811.2	4484.3	5438.1	6244.1	7172.2	7622.0	7646.9	9453.5
Increase rate		31.1%	38.3%	-6.8%	21.3%	14.8%	14.9%	6.3%	0.3%	23.6%

Note: Apparent consumption = Production + Import – Export

Source: China Non-ferrous Industry Association, Chinese Custom Department

INDUSTRY OVERVIEW

According to Beijing Research Institute of Mining & Metallurgy, for the years from 2013 to 2016, the self-sufficiency rate of copper concentrate in China will maintain at 40%-42%. The demand of imported copper concentrate in China will continue to grow as the Chinese copper smelting industry will keep developing rapidly, and the trading amount of copper concentrate is expected to reach USD20 billion in the near future.

Outlook of Copper Market and Challenge

As stated by SRK in Competent Person's Report, The outlook for copper is focused mainly on China and India, which are forecast to make up 50% of demand by 2020:

- Projections suggest that by 2025, 220 Chinese cities will have over one million inhabitants. This will translate into an increased demand for buildings and transit systems, with 5 million buildings and 170 transit systems projected to be constructed by 2025. Ultimately, whether it is more people, more buildings, or more infrastructure, more copper will be needed to facilitate construction.

However, one of the largest drivers of copper will be the growth of the Chinese consumer. More consumers, means more demand for cars, appliances, garments, electronics. China has set a goal of 65% urbanization rate by 2050, which translates into 300 million rural residents becoming urban residents over this time period.

- India also provides a very compelling case for copper demand, especially with respect to their power needs. According to the International Energy Agency, India's power production needs to rise by 15% to 20% annually and to meet that, India needs to invest US\$1.25 trillion by 2030 into energy infrastructure. From this new infrastructure, India's annual copper demand is expected to more than double during the period.

Chinese demand is not the only major factor to consider in the outlook for copper. The world has also been impacted by supply challenges. The industry is experiencing difficulties with respect to the production of copper from various aspects of the production cycle. Some of the challenges faced by the copper industry are as follows:

- Discoveries of higher grade deposits are becoming less frequent;
- More copper is produced from underground mines, usually, at a smaller output capacity and higher production costs than open pits;
- More challenging environments due to remote locations with limited existing infrastructure imply an increase in the capital intensity of new projects;
- Declining average grades;
- Supply disruptions will continue due to:
 - Technical complexity;
 - Project delays;
 - Labour strike action.

INDUSTRY OVERVIEW

COPPER PRICING

Copper price is mainly driven by several factors such as supply-demand relationship, monetary supply and global economy situation. The copper price has been fluctuating vastly in recent years. It is expected that the global copper production deficit will continue, and thus the copper price is expected to remain robust in the near future.

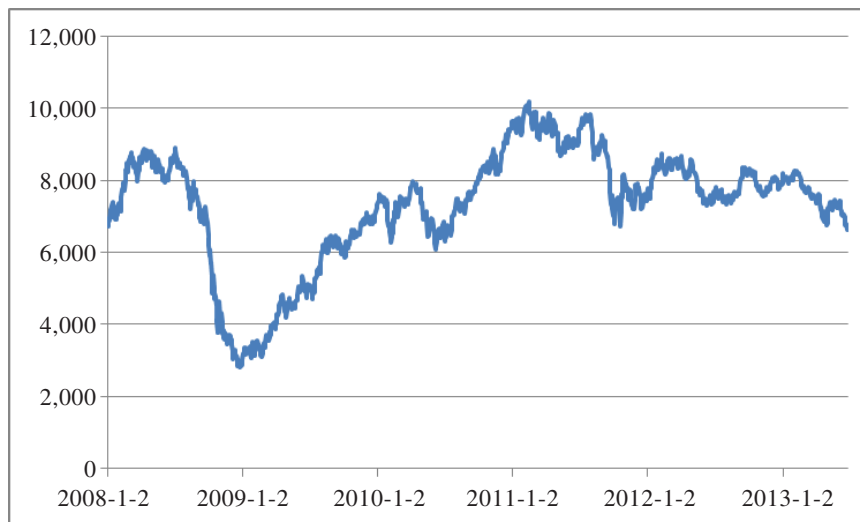
LME Copper Price

LME provides a transparent and terminal market for the buying and selling of pure copper. The copper stocks are stored in LME designated warehouses and brands are registered at the LME to ensure that they meet the prescribed criteria for shape, weight and quality. Prices are set amongst producers, consumers, investors and speculators on the exchanges and are traded on the spot market or using futures contracts. References to the LME prices contained in this section refer to LME copper and cobalt end of the day cash prices.

The following graph shows the LME copper price in the past five years:

LME Copper Price January 2008 – June 2013

Copper Price (US\$/t)



Source: Bloomberg

INDUSTRY OVERVIEW

The table below sets out the average copper price for the past seven years of 1 July 2006 – 30 June 2013, for the past five years of 1 July 2008 – 30 June 2013 and past three years of 1 July 2010 – 30 June 2013.

US\$/t	Historical Copper Price		
	7 years	5 years	3 years
	1 July 2006 – 30 June 2013	1 July 2008 – 30 June 2013	1 July 2010 – 30 June 2013
Historical Average Price	7,291	7,229	8,171

Source: Bloomberg

The following table sets out the historical average copper price for each of the year 2005 to six months ended 30 June 2013.

US\$/t	Average Price for Each of the Year								
	2005	2006	2007	2008	2009	2010	2011	2012	Six months ended 30 June 2013
Average Price	3,681	6,740	7,139	6,959	5,178	7,543	8,813	7,958	7,543

Source: Bloomberg

Unlike pure copper, copper concentrates have no terminal market. The copper content in the concentrates is priced on the basis of published LME prices averaged over an agreed fixed time known as the quotational period, less a deduction for treatment charges and refining charges. Benchmark treatment charges and refining charges are settled through an annual or semi-annual negotiation process between buyers (smelters) and sellers (miners). As at the Latest Practicable Date, all of the Chibuluma South Mine's copper concentrate production is sold to CCS, a company incorporated in Zambia and a subsidiary of China Nonferrous Mining Corporation Limited, negotiated between Chibuluma plc and CCS on an annual basis. The pricing mechanism for the concentrates is based on published metal prices for copper as traded on the LME, less a deduction for the treatment charges, refining charges and penalties for impurities, if any. Valuable by-products such as gold and silver are added to the final price as payables.

COBALT MARKET OVERVIEW

Introduction

Cobalt is normally associated with nickel and copper containing ore and mined as a by-product or co-product of these operations.

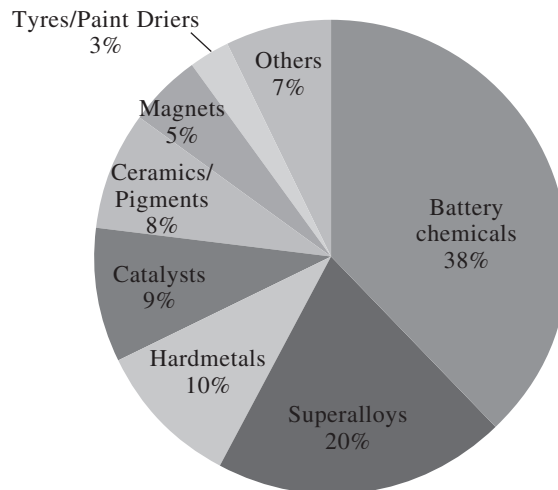
INDUSTRY OVERVIEW

Cobalt Demand Analysis

Cobalt is a strategic and critical metal used in many diverse industrial and military applications. Current market data suggests that global cobalt consumption continued to see positive and considerable growth during 2012. Battery chemicals and superalloys are the major consumer of cobalt and demand from both these industries accounted for 58% of global cobalt consumption in 2012 according to Cobalt Market Review 2012-2013, Darton Commodities Limited. Though the end user market suffered from European debt crisis, the cobalt market performed relatively well. The overall consumption increased by approximately 6.8% during 2012, reaching 73,900 t according to Cobalt Market Review 2012-2013, Darton Commodities Limited.

The following chart shows the cobalt consumption by end use in 2012:

Cobalt Consumption by End Use 2012



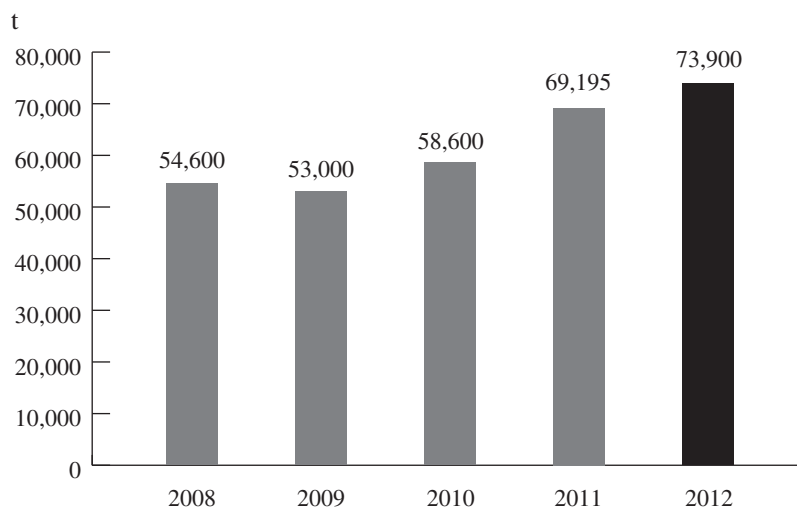
Source: Cobalt Market Review 2012-2013, Darton Commodities Limited. Darton Commodities Limited was established in October 2000 by Guy Darby and Roy Walton who have a combined experience of over 50 years in the procurement, supply, finance and movement of metals and ferro alloys. Every year, Darton Commodities publishes Cobalt Market Review as free report.

According to Cobalt Facts 2011 of “CDI”, over the past 8-10 years, there have been two major shifts in cobalt demand patterns. First, there was a significant shift in demand from the United States of America and Western Europe to Asia. The apparent demand in Asia has increased significantly since 2002, whereas demand in the United States of America and Western Europe has remained relatively steady. Second, the increase in demand resulted almost exclusively from increases in chemical applications, most notably rechargeable batteries and catalysts.

The global refined cobalt consumption has seen a steady growth between 2009 and 2012, reaching 73,900 t in 2012, representing a CAGR of 11.7% during the period. The following chart shows the historical world refined cobalt consumption over the past five years:

INDUSTRY OVERVIEW

World Refined Cobalt Consumption 2008 – 2012



Source: Cobalt Market Review 2009, 2010-2011, 2012-2013, Darton Commodities Limited

Battery Chemicals

Rechargeable batteries are an important end use sector for cobalt, accounting for close to 38% of total cobalt demand in 2012 according to Cobalt Market Review 2012-2013, Darton Commodities Limited. Nickel-metal hydride batteries have historically dominated cobalt use in vehicle batteries, but within the next decade, cobalt use in lithium-ion batteries is expected to surpass nickel-metal hydride batteries, driven by increasing demand for the use of large-scale power storage systems, environment friendly cars and consumer electronics.

Superalloys

The superalloy industry represents the second largest cobalt consuming market after the rechargeable battery sector. Much of the industry's demand growth continued to be driven by a buoyant aerospace sector as airplane and engine build rates remained high. Whilst the short term outlook for the superalloy sector continues to be influenced by prevailing economic uncertainty, most superalloy producers anticipate continued and strong demand growth from the aerospace sector in the coming years.

Hard Metals

Approximately 10% of global demand was consumed in the hard metal sector during 2012 according to Cobalt Market Review 2012-2013, Darton Commodities Limited. This has been primarily in the form of fine cobalt powder, used as a binder material in cemented carbide and diamond tool applications.

Catalysts

Approximately 6,600 t of cobalt was consumed by the catalyst industry in 2012 according to Cobalt Market Review 2012-2013, Darton Commodities Limited, of which a majority was used in the production of polymerization catalyst. Purified terephthalic acid is primarily used in polyester fibers and polyethylene terephthalate or PET packaging materials.

INDUSTRY OVERVIEW

Others

Demand from other end use markets was to a lesser or greater extent impacted by the economic slowdown which negatively affected downstream markets in key geographic markets. The use of cobalt in pigments and ceramics was negatively impacted by a significantly weaker construction sector in primarily the southern European countries. The use of cobalt in rubber adhesion promoters for tires dropped due to lower demand from the European automotive industry.

Cobalt Supply Analysis

Cobalt usually is produced as a by-product of another metal. There are four types of cobalt deposit: nickel-bearing laterites, nickel-copper sulphide deposits, strata-bound copper deposits and silver-cobalt sulfarsenide deposits.

The following chart shows the cobalt production by Ore Type:

Cobalt Production by Ore Type 2011



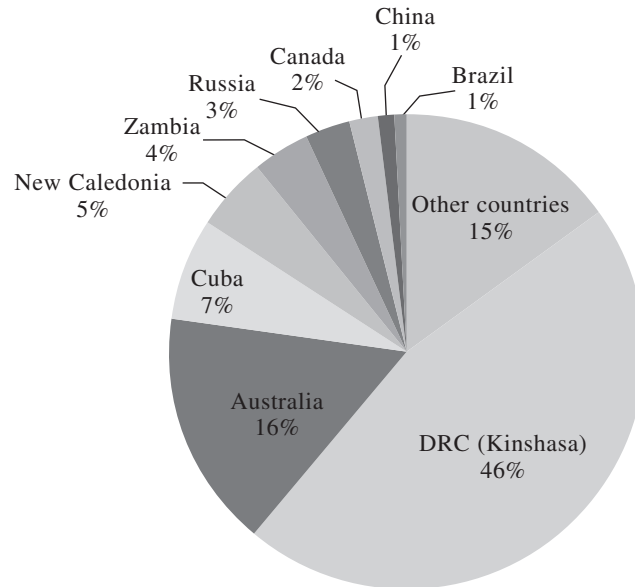
Source: Cobalt Facts 2011, CDI

Global reserves of cobalt total approximately 7.5 Mt, which is predominantly in Africa and primarily in the copperbelt of the DRC and Zambia which approximately contribute 50% of the total global reserve base. Other important cobalt producers include Australia, Cuba and New Caledonia.

INDUSTRY OVERVIEW

The following chart shows the global cobalt reserve split in 2012:

Global Cobalt Reserve Split 2012



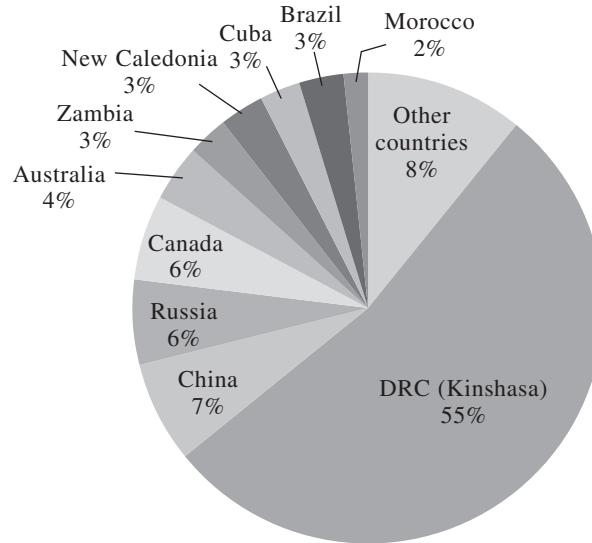
Source: Mineral Commodity Summaries 2013, U.S. Department of the Interior, USGS

According to Mineral Commodity Summaries 2013 of USGS, global cobalt mine production in 2011 and 2012 was 109,000 t and 110,000 t respectively. During 2012, DRC produced approximately 55% of the total global cobalt mine production. The cobalt mine production has steadily increased since 2009.

INDUSTRY OVERVIEW

The following graph shows the global cobalt mine production in 2012:

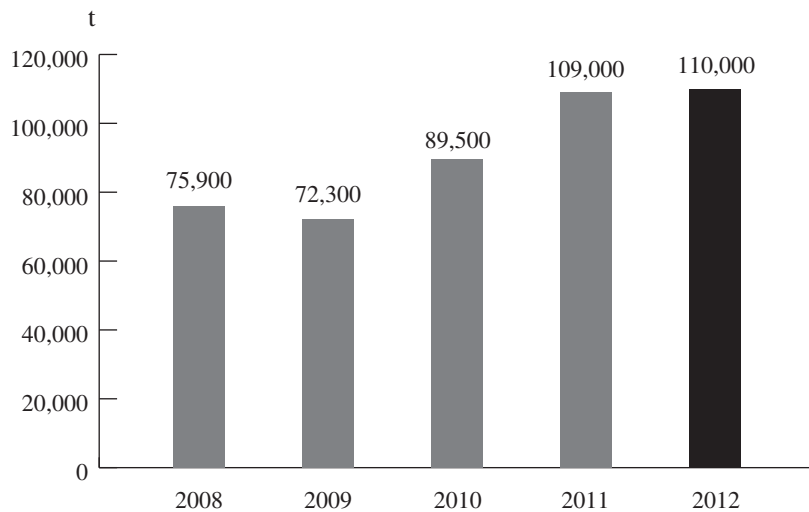
Global Cobalt Mine Production 2012



Source: Mineral Commodity Summaries 2013, USGS

The following graph shows the historical global cobalt mine production from 2008 – 2012:

Global Cobalt Mine Production 2008 – 2012



Source: Mineral Commodity Summaries 2010, 2012, 2013, U.S. Department of the Interior, USGS

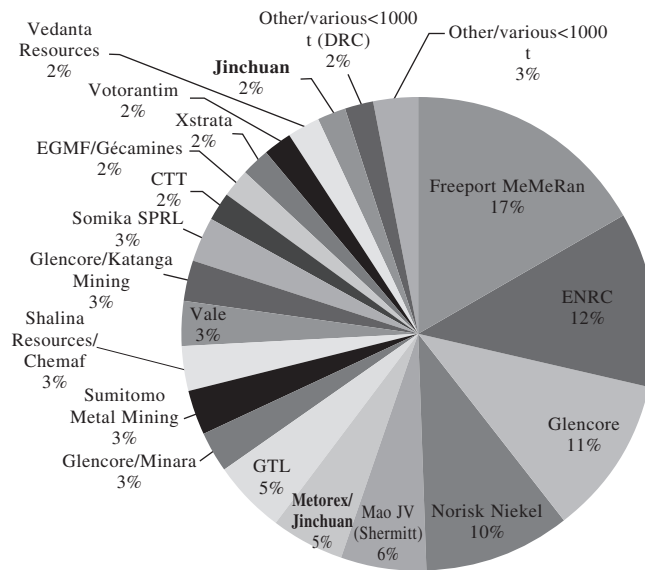
The cobalt market was also affected during the global financial crisis which impacted all commodities in 2008/2009. Since 2009, production of refined cobalt, particularly in China, has continued to increase and the market recorded significant growth of refined cobalt production in 2011.

INDUSTRY OVERVIEW

According to Darton Commodities Limited, the production recorded for mined/semi-refined cobalt sources and the tonnages ultimately made available to and processed by the various producers of refined cobalt products in 2012 was 68,400 t; while the recorded world refined cobalt production in 2012 was 76,040 t, representing a shortage of around 7,000 t of mined/semi-refined cobalt sources, which suggests a substantial destocking of refining cobalt material inventories. Jinchuan Group is the largest miner/operator of mined/semi-refined cobalt in China and accounted for approximately 2% of the global mined/semi-refined cobalt sources, while Metorex Group accounted for approximately 5%.

The following graph shows the mined/semi-refined cobalt sources by miner/operator in 2012:

Recorded Global mined/semi-refined cobalt sources by Miner/Operator 2012

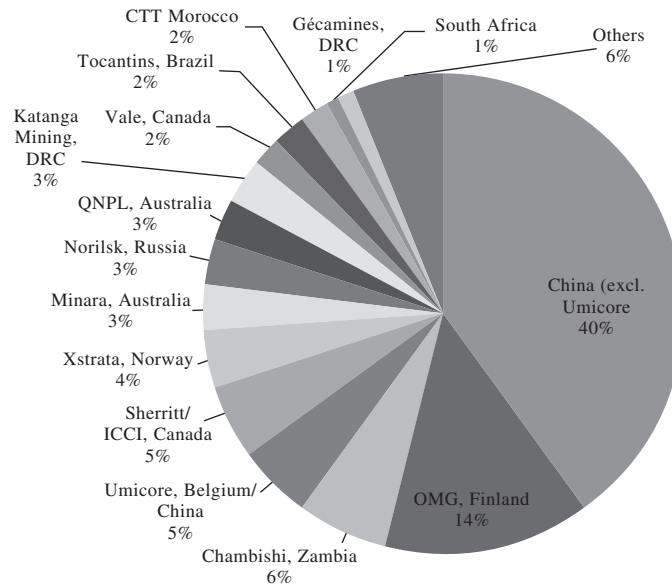


Source: Cobalt Market Review 2012-2013, Darton Commodities Limited

INDUSTRY OVERVIEW

The following graph shows the composition of global refined cobalt production by producer/refiner in 2012:

Recorded Global Refined Cobalt Production by Producer/Refiner 2012

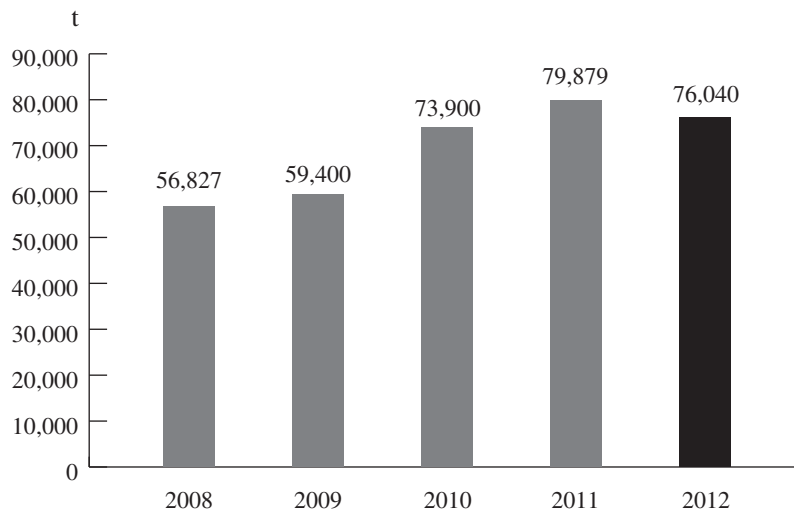


Source: Cobalt Market Review 2012-2013, Darton Commodities Limited

Over the past five years, world refined cobalt production has experienced steady growth from 2008 to 2011, but a decline of 5% in 2012 over 2011.

The following chart shows the historical data of refined cobalt production:

World Refined Cobalt Production 2008 – 2012



Source: Cobalt Market Review 2009, 2010-2011, 2012-2013, Darton Commodities Limited

INDUSTRY OVERVIEW

The following tables set out the top players in cobalt mining and cobalt refinery industry:

Top 10 Mined Cobalt Sources by Production in 2012

Rank	Mine/operation	Miner/operator	Country	2012 production (t)	Cobalt Reserve
1	Tenke Fungureme	Freeport McMoRan	DRC	11,300	155.7 Mt at 0.3%
2	BOSS Mining	ENRC	DRC	8,300	N/A
3	Mutanda Mining	Glencore	DRC	7,700	56.0 Mt at 1%
4	Kola MMC	Norilsk Nickel	Russia	6,500	
5	Moa Nickel	Moa JV (Sherritt)	Cuba	3,800	145 Mt at 0.085%
6	Ruashi Mining	Metorex/Jinchuan	DRC	3,035	13.6 Mt at 0.45%
7	Big Hill	GTL	DRC	3,200	20.8 Mt at 0.086%
8	Murrin Murrin	Glencore/Minara	Australia	2,300	145 Mt at 0.085%
9	Coral Bay	Sumitomo Metal Mining	Philippines	2,300	N/A
10	Etoile / Usoke	Shalina Resources/ Chemaf	DRC	2,200	N/A

Source: Darton Commodities Limited, public information

Top 10 Refined Cobalt Producers by Production in 2012

Rank	Producer/refiner	Country	2012 production (t)
1	Various (excl. Umicore)	China	30,400
2	OMG	Finland	10,500
3	Chambishi	Zambia	4,700
4	Umicore	Belgium /China	4,100
5	Sherritt/ICCI	Canada	3,800
6	Xstrata	Norway	2,750
7	Minara	Australia	2,300
8	Norilsk	Russia	2,250
9	QNPL	Australia	2,200
10	Katanga Mining	DRC	2,100

Source: Darton Commodities Limited, public information

INDUSTRY OVERVIEW

China Factor

China is the world's leading producer of refined cobalt despite limited domestic cobalt mine resources, and sources large part of cobalt ore and semi-refined cobalt from DRC. In recent years, China has accumulated a significant stock of cobalt feed. The tightening monetary policy and the appreciation of RMB has pushed up the cost of cobalt production in China. As a result, in the first half of 2012, the production of refined cobalt declined in China, according to Mineral Commodity Summaries 2013 of USGS. In November 2012, Beijing Antaike Information Development Co. Ltd. suggested that China destocked as much as 9,300 t in 2012 and that the Chinese market would continue to be in deficit during 2013, resulting in a further stock reduction.

Cobalt Market Balance and Pricing

Trends in cobalt consumption closely follow those of global industrial production. The global economic downturn that began in late 2008 resulted in reduced demand for cobalt in 2008 and 2009, affecting all major end use sectors. As global economic conditions improved in 2009 and 2010, cobalt consumption increased. In 2010, there was a firm recovery in superalloy orders, particularly from the aerospace sector, and growth in cobalt consumption for superalloy production was forecasted to rise by about 10% per year from 2011 to 2013. Cobalt consumption to make rechargeable batteries was forecasted to increase by 14% per year from 2011 to 2013, according to 2010 Minerals Yearbook of USGS.

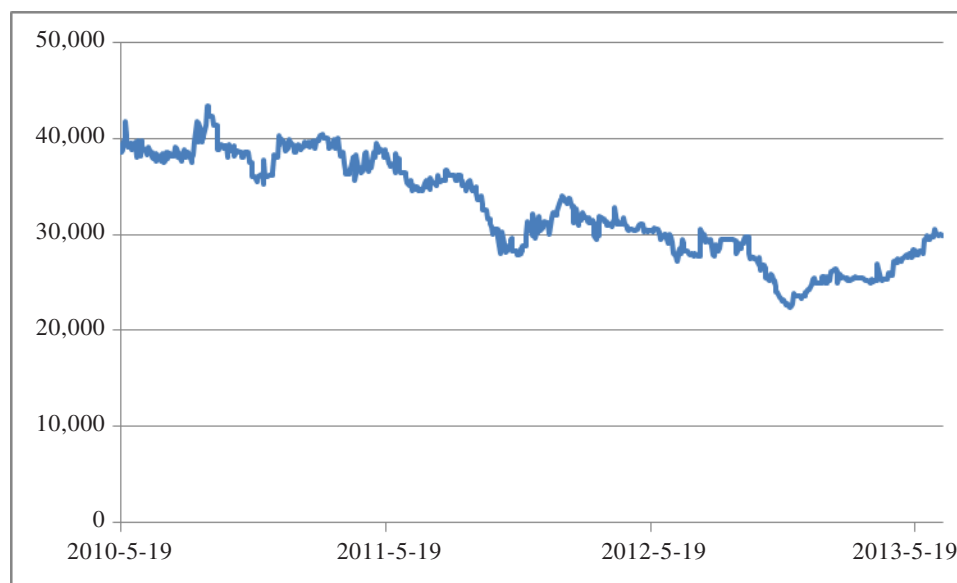
In 2011, cobalt prices were lagging behind those of copper and nickel as the greater demand fell due to the global financial crisis. The recovery in output at nickel and copper mines pulled cobalt supply up. Whilst production surpluses from previous years and available but declining metal stocks in China may continue to weigh on the market during 2013, the underlying short-term market fundamentals appear to be signaling a momentous improvement. This suggests that the cobalt market may see a gradual but structural price recovery over the course of the year, resulting in a higher average price range from that seen during 2012.

INDUSTRY OVERVIEW

The following graph shows the LME cobalt price in the past three years:

LME Cobalt Price May 2010 – June 2013

Cobalt Price (US\$/t)



Source: Bloomberg

Note: The LME began trading cobalt futures in February 2010 and producers have since then been referencing LME prices in contract negotiation.

The following table sets out the historical average cobalt price for each of the year 2010 to six months ended 30 June 2013.

US\$/t	Average Price for Each of the Year			
Year	2010 (May to December)	2011	2012	Six months ended 30 June 2013
Average Price	38,672	35,297	28,931	26,739

Source: Bloomberg

Cobalt price is affected by several factors such as historical volatility, the by-product nature of supply and its reliance on the DRC. The market is overall undersupplied, and the gap between demand and supply is expected to become wider in the following years, thus the cobalt price has begun to pick up since the low levels of November 2012, resulting an upward trend of cobalt price above the historical average.

OVERVIEW OF ZAMBIA COPPER AND COBALT MARKET

According to USGS, the Central African Copperbelt (“CACB”) is one of the most important copper-producing regions in the world. The majority of copper produced in Africa comes from this region defined by the Neoproterozoic Katanga sedimentary basin of the southern DRC and northern Zambia.

INDUSTRY OVERVIEW

Zambia

According to World Bank, Zambia contains the largest known copper reserves in Africa. Copper mining and refining were the dominant components of Zambia's mineral industry. In 2012, Zambia was ranked sixth in the world in terms of the production of copper and cobalt. The copper industry in Zambia has gone through significant changes in the past. Mines were privatized in 2000 which resulted in increasing investment and output. It also led to geographical expansion to other parts of the country, beyond the copperbelt, where geological surveys have suggested the existence of significant copper deposits. Government of Zambia has the long term target of achieving 1 Mt of copper production per year from 784 kt in 2011.

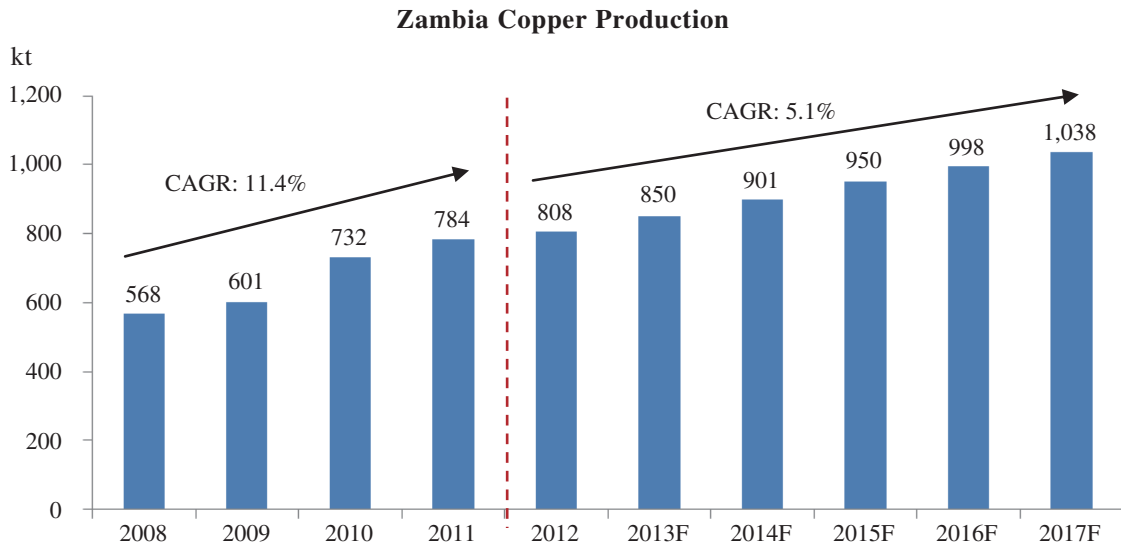
According to World Bank, historically, the performance of the copper mining industry has played an important role in Zambia's economy. Although the economy is diversifying, copper mining continues to account for a sizeable part of GDP and is one of the leading industries that contribute to economic growth. Many of the country's large copper mining and processing operations are located in Copperbelt Province in north-central Zambia. Many of the firms involved in Zambia's copper mining are the subsidiaries of large mining companies such as Glencore, Vale, Barrick, First Quantum, China Nonferrous Mining Corporation Limited, Vedanta and Jinchuan Group. Although Zambian copper mining essentially is a private industry, the Zambian Government retains minority interest in most of the large copper projects through its controlled entity, ZCCM.

Major operating companies and major equity owners	Main facilities	Mineral types
Copper and cobalt:		
Barrick Gold Corp.	Lumwana Mine	Copper
First Quantum Minerals	Kansanshi Mine	Copper
Vedanta Resources	Nchanga Mine, Konkola 1 & 3 shafts and Konkola Deep mining project	Copper, cobalt
Vale, African Rainbow Minerals, ZCCM	Lubambe Copper Mine	Copper, cobalt
Vale, African Rainbow Minerals	Lusaka and Kabwe	Copper, cobalt
Glencore, First Quantum Minerals, ZCCM	Mopani Copper Mine	Copper, cobalt
China Non Ferrous Metals Company Limited	Baluba Mine	Copper
China Non Ferrous Metals Company Limited	Chambishi Mine	Copper
Jinchuan Group	Chibuluma Mine	Copper, cobalt

Source: USGS, annual reports of the respective company

Copper production in Zambia has been growing rapidly from 568 kt in 2008 to 784 kt in 2011, representing a CAGR of 11.4%. Business Monitor International projects that Zambia's copper production will continue to grow at a steady pace, reaching 1 Mt in 2017.

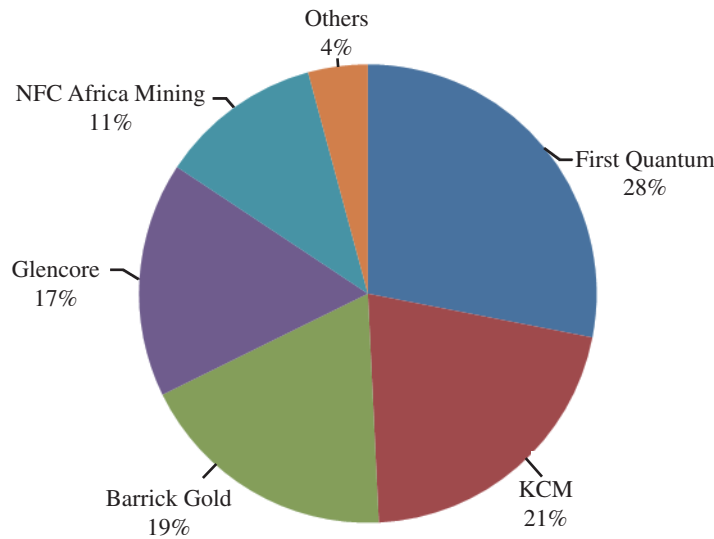
INDUSTRY OVERVIEW



Source: Business Monitor International – Zambia Mining Report Q2 2013, World Bureau of Metal Statistics

Zambia’s copper production is dominated by international players with First Quantum, Konkola Copper Mines (“KCM”, subsidiary of Vedanta), Barrick Gold Corp. and Glencore as the top 4 copper producers, making up approximately 85% of the total copper production in terms of volume.

Zambia Copper Production By Company, 2011

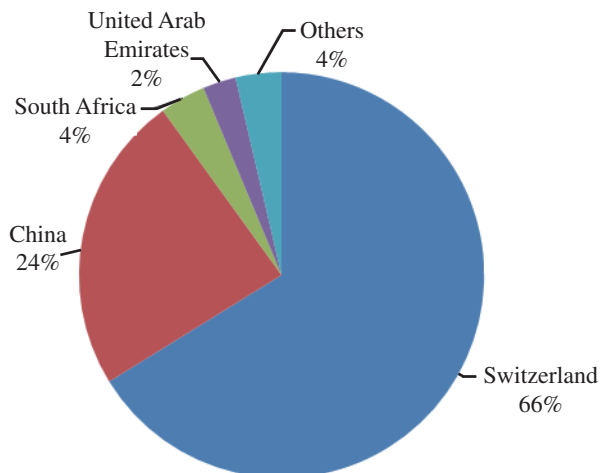


Source: Business Monitor International – Zambia Mining Report Q2 2013, annual reports of the respective company

According to USGS, the value of copper exports was estimated to be about US\$6.9 billion in 2011, accounted for an estimated 78% of Zambia’s merchandise export. According to Business Monitor International, the principal destination for Zambian copper is Switzerland, with 525 kt of copper imported from Zambia in 2011. However, almost all of this is re-exported, mostly to China, making China the largest importer of Zambian copper.

INDUSTRY OVERVIEW

Zambia Copper Exports By Immediate Destination, 2011



Source: Business Monitor International – Zambia Mining Report Q2 2013, World Bureau of Metal Statistics

According to Wood Mackenzie, there are primarily three copper smelters in Zambia – Chambishi, Mufulira and Nchanga. They have a smelter capacity of approximately 195 ktpa, 290 ktpa and 311 ktpa, respectively.

Major Copper Smelters in Zambia	Ownership %	Capacity
Chambishi Copper Smelter	NFC Africa	60%
	Yunnan Copper Industry Group	40%
Mufulira Copper Smelter	Glencore	73%
	First Quantum	17%
	ZCCM	10%
Nchanga Copper Smelter	Vedanta	100%

Source: Wood Mackenzie – Metals Cost Service November 2012