
INDUSTRY OVERVIEW

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COPPER MARKET OVERVIEW

Introduction

Since 2000 the copper market has experienced significant growth. According to GFMS and the International Copper Study Group (“ICSG”), global annual consumption and production of refined metal increased by 28 per cent. and 29 per cent., respectively over the period. The key drivers of this trend have been the ongoing urbanisation and the continued growth of industry in China, which saw consumption almost quadruple from 2000 to 2010, adding over 5 Mt to global annual demand. This growth in China was partially offset by a reduction in demand in mature economies over the same period. As an aggregate, North American, EU and Japanese consumption fell from 8.9 Mt in 2000 to 6.3 Mt in 2010. This decline was largely a result of the transfer of industrial capacity from mature to emerging economies; substitution of copper by other metals (driven by higher prices of copper) in certain applications and, in part, due to the impact on end use industries of the global financial crisis in the second half of 2008 and throughout 2009.

The financial crisis also had a profound impact on commodity prices partly, as outlined above, due to its effect on key copper consuming industries, such as construction, consumer goods and automotive vehicles. Further, the hike in risk aversion that was seen during the financial crisis, led to liquidations of copper positions by investors. However, in contrast with other base metals that saw their prices fall to levels below marginal production costs, the price of copper maintained levels that were profitable for the majority of operations around the world. Moreover, copper prices were quick to resume their upward trend, having been boosted both by positive underlying fundamentals and most importantly, by the resumption of strong investment demand, illustrated, for instance, by the rise in investors aggregated net-long on copper futures listed on the Comex, from the equivalent of less than 49,000 tonnes at end-2008 to their historical peak of 851,000 tonnes on 5 January 2010, and an average net-long amounting to 632,000 tonnes during 2010. Estimates on investment positions in Comex futures are based on weekly disaggregated data provided by the Commodities Futures Trading Commission. In January 2011, the official LME spot price peaked at the all-time-high of US\$/t 9,754, while the three-month future on the Comex briefly broke through US\$/t 9,900 level on the first trading day of 2011.

The copper market is extremely diverse geographically in the nature of both production and consumption. On the supply-side, mining output is a function of where orebodies are located, whereas traditionally smelting and refining tends to be carried out in areas of copper consumption. These factors have led to the establishment of what is termed as “custom smelters/refineries”, which tend to be heavily reliant on imported concentrates.

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In part, reflecting the diverse regional structure of the sector, there is a relatively low concentration of ownership within the industry. GFMS estimates that the top ten mining companies in 2010 accounted for 51.8 per cent. of total production.

In GFMS' view, a major barrier to entry to the copper market is the limited number of low-cost mining projects that have been discovered over the last decade. Equally important are the exceptional high capital costs required to develop new orebodies. However, some smaller mines (typically with capacity of less than 50,000 tonnes per year) have been developed but in a market with a total size of approximately 19 Mt this has had a limited impact on the industry.

In terms of copper pricing, the key reference price is the official daily cash settlement price established on the LME. Most physical contracts in the copper market are based on the LME price (often based on the monthly average price prior to delivery). Prices quoted on other exchanges such as the Shanghai Futures Exchange (SHFE) and COMEX (based in North America) tend to broadly follow LME prices.

Individual suppliers to the copper market have little or no direct influence on pricing trends. In addition to the underlying LME price quotation, there are a series of physical premiums (the cost of providing metal to consumers), which tend to reflect local market conditions and also are a function of factors such as shipping and insurance charges. It should be noted that these regional differences are small and underlying copper prices tend to reflect the LME prices, which is a highly liquid and transparent market.

Copper Production Processes

Copper can be produced as either a primary product or as a co-product of other metals, including gold, lead, zinc, nickel or silver. A large proportion of copper mining takes place in very large scale open pit mines; and since the global average copper ore grades are less than 1 per cent., it is important to achieve economies of scale. As part of the mining process, the rock is initially drilled and blasted with explosives and subsequently transported to crushers by large dump trucks. Waste rock, or overburden, is dumped.

Copper Extraction

At the start of the extraction process, the size of the ore is reduced by crushing. Once crushed, the ore is placed into a rotating mill, along with water and steel balls. The mill further grinds the rock to create a slurry. The separation and concentration of the copper minerals is then carried out by the process of froth flotation which includes the creation of a slurry, by mixing finely ground ore with water and reagents. When agitated and injected with air in flotation cells, the copper sulphide minerals in this slurry form a froth, which is skimmed off, filtered and dried. The resultant product, i.e. copper concentrate, typically contains about 30 per cent. copper. The remainder of the ground-up ore slurry (or tailings), which contains a small proportion of copper, is sent to a dam for storage.

Smelting and Electrolytic Refining

Copper concentrate is smelted in a furnace (for example, a reverberatory or a flash furnace) and then purified in various steps (by a process which is known as converting), under which oxygen is blown into the molten metal, to recover blister copper (which is approximately 99 per cent. purity). Blister copper is further upgraded and cast into anodes, which are then electrolytically refined to produce copper cathodes of 99.99 per cent. purity. The concentrating/smelting process is usually referred to as pyrometallurgical extraction.

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Increasingly, alternative proprietary hydrometallurgical technologies are being developed to by-pass the conventional pyrometallurgical process route, such as Teck's CESL and Outotec's Hydrocopper processes.

Leaching and Electrowinning (SX-EW)

Alternatively, low grade oxide or secondary sulphide copper ores can be treated by a hydrometallurgical process. This usually comprises the leaching of the ore with a sulphuric acid solution, followed by a solvent extraction of copper from the leach solutions and finally, electrowinning to produce a saleable-quality copper cathode. This process is usually referred to as SX-EW leaching and currently accounts for around 20 per cent. of global refined copper production.

Pure Copper Cathode

Cathodes of 99.99 per cent. purity may be shipped as melting stock to mills or foundries. Cathodes may also be cast into wire, rod, billets, cakes or ingots, as pure copper or alloyed with other metals. Further, in addition to pure cathode, secondary material can also be used directly in the production of these products.

Copper Consumption Sectors

Copper cathodes and intermediary products mentioned above are used by downstream producers to manufacture products such as copper wire, pipes, strips, plates, sheets and foil, which are then used in a variety of different end-use sectors. The sectors set out below are based on the Copper Development Association's end-use sector split definitions:

Building Construction (accounted for 31 per cent. of global consumption in 2010): includes building wire; plumbing and heating; air conditioning and commercial refrigeration; builders' hardware and architectural;

Electrical and Electronic Products (accounted for 37 per cent. of global consumption in 2010): includes power utilities; telecommunications; business electronics; lighting and wiring devices;

Transportation Equipment (accounted for 11 per cent. of global consumption in 2010): includes automobile, truck and bus; railroad; marine; aircraft and aerospace;

Consumer and General Products (accounted for 11 per cent. of global consumption in 2010): includes appliances; cord sets; military and commercial ordnance; consumer electronics; fasteners and closures; coinage; utensils and cutlery and miscellaneous; and

Industrial Machinery and Equipment (accounted 10 per cent. of global consumption in 2010): includes in-plant equipment; industrial valves and fittings; non-electrical instruments; off-road vehicles and heat exchangers.

Graph 1 on the next page features GFMS' estimates of global consumption by end-use during the period from 2006 to 2010 and demonstrates the growth in electrical and electronic

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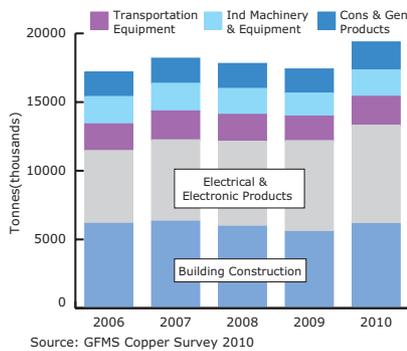
products consumption on the one hand, and the decline in building construction-related demand on the other, during the stated period.

The former was in large measure fuelled by growth in power/infrastructure related demand, the overwhelming bulk of which was noted in China, where ongoing urbanisation coupled with heavy government stimulus spending on power generation and distribution, as well as, communication projects saw electrical and electronic copper consumption rise by nearly a third in 2009 alone.

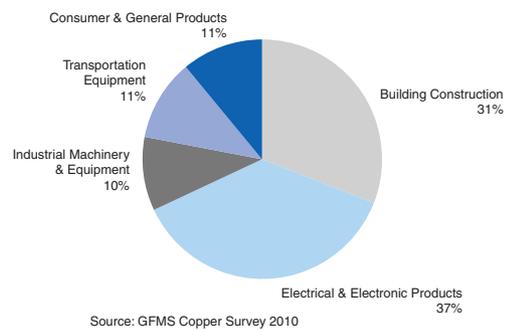
The decline in demand in the building construction sector during the years 2008 and 2009, was in large measure linked to the weakness of the construction sector in the aftermath of the financial crisis, in virtually all countries except China. Moreover, construction-related demand has suffered as a result of substitution related to higher prices of copper (see section titled “Demand” below). Similar trends were also noted in transportation equipment, consumer products and industrial machinery sectors and were also linked to China’s long-term growth and stimulus packages on the one hand and the weakness of mature markets due to the financial crisis on the other.

On a global basis, all end use sectors exhibited strong rebounds over 2010, as demand from China grew strongly, particularly from the construction sector, and consumption in the mature economies recovered from 2009 levels led by a growth in demand from the transportation equipment and consumer products segments. Graph 2 below illustrates the average breakdown of global consumption by end-use in 2010. By 2010, the share of global consumption accounted for by electrical and electronic products had grown to 37 per cent. from 31 per cent. in 2005. This increase came primarily at the expense of construction-related demand which fell from 36 per cent. of global demand in 2005 to 31 per cent. in 2010.

Graph 1: Copper Consumption by End-Use 2006-2010



Graph 2: Copper Consumption by End-Use 2010



TRADING, PRICING AND STOCKS

Prices and Futures Exchanges

The international benchmark price for copper is traded on the LME and quoted in terms of dollars per tonne. The LME publishes a daily “LME Official Price” for spot, 3-month, 15-month and 27-month deliveries, which are defined as the last bid and offer prices quoted in the second ring of the first trading session for copper, which currently occurs between

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12:30 pm and 12:35 pm (local time) every day. LME Official Prices are commonly used as a benchmark for daily prices and form the basis for most physical contracts.

The LME offers the ability to trade spot metal as well as futures which can be settled on a daily basis up to 3 months ahead, on a weekly basis (settlement on Wednesdays) up to 6 months ahead and on a monthly basis (settlement on the third Wednesday of the month) up to 123 months ahead. The contract size is 25t and in addition to spot and futures, the exchange offers American style options and European style Traded Average Price Options (both available monthly and up to 63 months). The LME has traditionally been the dominant exchange for copper (and other non-ferrous metals), holding both the largest open interest in the market and, until it was surpassed by the Shanghai Futures Exchange in 2009, the largest traded volumes.

The two other main exchanges where copper is traded are the CME Group's Comex and the Shanghai Futures Exchange (SHFE). The Comex offers futures contracts with monthly deliveries going forward 23 months as well as American options on these. Prices are quoted in terms of cents per pound and the contract size is 25,000 lbs. The SHFE is China's only futures exchange that lists copper futures. Futures are available on a monthly basis going forward 12 months, the contract size is 5t and pricing is done on a yuan per tonne basis. The price of copper on the SHFE is often at a premium (or discount) to the LME price (plus import duties and taxes), depending on the tightness of the local market. The SHFE does not offer options.

As illustrated in Table 1 below, although the LME used to traditionally see considerably higher volumes than both the Comex and SHFE, volumes at both of these have been growing over the last few years. This has been far more pronounced in the case of the SHFE, turnover on which surpassed that on the LME in 2009.

Table 1: Annual Turnover in Different Exchanges

<u>Mt</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>
LME	472	536	663	623
SHFE	52	162	209	812
Comex	34	42	50	70

Source: GFMS Copper Survey 2010

In addition to the relevant price benchmark, taking delivery of physical metal incurs a "physical premium", which usually covers shipping, insurance and other costs related to delivering the physical metal. During times of tightness, premiums tend to increase and vice versa.

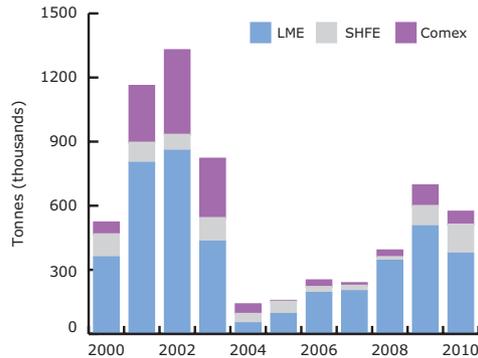
Copper Stocks

Copper inventories (both reported and unreported) are held by consumers, producers, trading houses, governmental organisations and speculators. Reported stocks comprise of stocks held at warehouses approved by the various exchanges as well as consumer, producer and government stocks tracked by industry groups such as the ICSG. Graph 3 provides a historical overview of reported inventories at year-end, based on data made available by the respective exchanges as well as the ICSG. Tracking changes in unreported

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inventories is however more complex. For example, in 2009, GFMS estimated that 750 kt of metal were absorbed by unreported inventories. Part of the 750 kt increase in unreported stocks was accumulated by the Chinese State Reserve Bureau and the bulk of the balance by the private companies and individuals, the vast majority of which located in China. The corresponding figure for 2010 stood at 176 kt tonnes and, again, was largely accounted for by China.

Graph 3: Copper Inventories



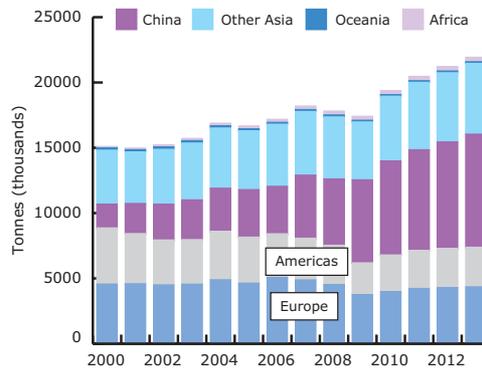
Source: GFMS Copper Survey 2010

DEMAND

Historical overview

GFMS estimates that the average annual growth rate in demand over the period 2000 to 2010 amounted to 2.5 per cent. This is one of the lowest rates for all of the base metals and reflects substitution and miniaturisation (i.e. the use of less copper in an existing application) pressures that have affected copper consumption due to high prices and competition from aluminium and plastics in particular. The growth rate would have been significantly lower except for the growth in demand from the rapidly expanding emerging economies led by China.

Graph 4: Copper Consumption by Region (Historical and Forecast)



Source: GFMS Copper Survey 2010, ICSG (March 2010)

In 2000, the U.S., Europe (excluding Russia) and Japan accounted for 59 per cent. of world demand. In the same year, the BRICs consumed 2.7 Mt (accounting for a mere 18 per cent. of total global demand). By 2009 the former group's consumption had fallen to 5.8 Mt, a

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drop of 35 per cent. Coupled with the global market growing by 2.3 Mt over the period, this saw their share of global demand fall to just 33 per cent. in 2009. In contrast, BRICs' share of overall consumption rose to 44 per cent. over the corresponding period and, by 2009, China alone accounted for 37 per cent. of the global consumption figure. This trend was in part exacerbated by the financial crisis in 2009, when copper consumption in the mature economies was affected far more strongly than that in many emerging markets. In 2010, the mature economies' market share continued to decline, albeit marginally, despite the strong rebound in demand to over 6.3 Mt and GFMS expects this theme to continue going forward.

The decline in consumption within mature economies during the previous decade can largely be attributed to three broad factors:

- (1) The relocation of manufacturing to emerging economies, especially China.
- (2) Slower underlying economic growth in the mature economies than in the emerging economies and a relatively larger contribution to growth from the service sector (which is less metals intensive) in the former. For instance, during the decade from 1990 to 1999, US and EU real GDP growth averaged 1.7 per cent. per annum, while Chinese and Indian growth averaged 9.8 per cent. and 7 per cent. per annum, respectively.
- (3) Substitution, notably by aluminium, fibre optics and plastics, and miniaturisation.

Demand Growth in China

The growth of consumption in China was fuelled by the rapid industrialisation and urbanisation of the country over the last decade, its strong economic growth and the fact that the latter was overwhelmingly fuelled by industrial production. In 2009 and 2010 in particular, Chinese demand growth has been closely linked to government stimulus spending. In the aftermath of the 2008 financial crisis, the Chinese authorities commenced a US\$586 billion stimulus package, aimed at insulating the economy from the global economic slowdown that was underway at the time. This boosted demand across the majority of end-uses, through major infrastructure projects boosting consumption by the power, railways and transportation industries, increased availability of credit favouring major real estate projects and consumer-focused stimuli leading to increased passenger car production as well as a healthy growth in "white" goods and other consumer appliances. As a result, Chinese consumption growth averaged 14 per cent. per annum during the decade between 2000 and 2010 and saw annual demand rise from 1.9 Mt in 2000 to 7.2 Mt last year. During 2009 and 2010 in particular, boosted by the aforementioned stimulus package, consumption grew by 25 per cent. and 13 per cent. year-on-year respectively.

Outlook

As per latest estimates by GFMS global demand for copper increased by approximately 11 per cent. on a year-on-year basis in 2010. This exceptionally strong growth rate was in large part a reflection of the low base owing to the dip in demand in 2009. In contrast to trends observed over most of the previous decade, there were strong increases in demand in both mature economies as well as the emerging markets. Demand in the mature economies rebounded swiftly in 2010 from a low base, supported by an economic recovery

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and boosted also by consumers replenishing inventories that had been run down during the crisis. Emerging markets' growth was yet again driven by China where consumption rose by approximately 13 per cent.

As illustrated in Graph 5, GFMS forecasts above-trend growth throughout the next six years in relation to global consumption, at an average 3.7 per cent. per annum. The strength of demand during this period reflects GFMS' expectation that consumption in mature economies will see positive, albeit modest, growth over that period, contrasting with the declines suffered during the period 2000 to 2010. This is expected to be only partly offset by reduced growth in developing nations.

In line with its expectations that prices will be maintained at elevated levels over the next three years, GFMS expects consumption growth to be increasingly affected by substitution and thrifting pressures during that period through to 2014. Following a correction in 2014, a modest acceleration of demand may be seen in the following year. Growth is expected to be maintained at above-trend rates in 2016, by which point consumption is expected to reach 24.1 Mt.

GFMS expects Chinese demand growth will be more limited than it has been in the previous decade. More specifically, GFMS forecasts annual growth in the country to average at 5.7 per cent. per annum over the next six years, compared to 14 per cent. between 2000 to 2010. In part, this is due to the fact that infrastructure development in many major urban centres is approaching a point of saturation and growth from lower-tier cities and rural areas is likely to be more limited. Elsewhere, Chinese authorities have made it clear that a key objective of the 2011-2015 five year plan will be penetration into higher-value industries, suggesting economic growth will be less industrial-metals intensive. Ultimately, whereas in the previous decade consumption growth tended to exceed real GDP growth by a few percentage points, GFMS expects this to be reversed in the next few years. Elsewhere, GFMS' projections see economic growth in China over the next half-decade being marginally lower, on average, than during the period 2000 to 2010.

Even taking into account a potential slow-down in 2014, GFMS' projections indicate healthy rates of consumption growth being maintained for the next six years. Although over the last two decades China has experienced significant infrastructure development and urbanisation, there remain vast portions of the country and its population that have not as yet gone through this process. For instance, in 2009, 53 per cent. of the population, amounting to more than 700 million, lived in rural areas. Moreover, looking at the rate of urbanisation (i.e. the annual increase in the percentage of the urban population), although this rate has slowed in comparison to the late 1990s and early 2000s (it averaged approximately 1 per cent. over the last five years), it still remains significant.

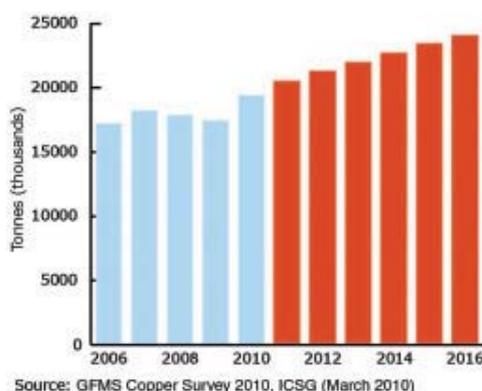
Further, even though China's next Five-Year Plan (spanning 2011-2015) is focused on higher value-added industries, a number of such industries, for instance renewable energy and higher-end electronics (which are not as copper intensive as heavy industries) do require the use of copper. Finally, the authorities' focus on improving income distribution will likely see the continued growth of the local middle classes contributing to construction, transport and consumer-related demand for copper. GFMS expects demand in China to grow by an average 5.8 per cent. over the next six years. Coupled with a much higher base, this suggests

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that China will continue to be the single biggest contributor to global consumption growth. Overall, the country is expected to provide 63 per cent. of the cumulative growth in annual global consumption by 2016.

The other emerging markets are also expected to continue to show growth, although GFMS does not envisage the emergence of “another” China within the period from 2011 to 2013. For instance, GFMS’ economic assumptions see the Indian economy growing by 7.3 per cent. per annum on average over the next few years, around 2.5 per cent. slower than China’s average during the 2000s. Copper consumption growth in India is also forecast to be slower than Chinese growth has been over the last decade, averaging 5.6 per cent. over 2011-2016. In addition to the BRICs, there is the potential of growth in other countries with large populations such as Turkey and the ASEAN countries (including Indonesia).

Graph 5: Copper Consumption (Historical and Forecast)



In relation to mature economies, such as the US, EU and Japan, consumption is forecast to increase by less than 2 per cent. per annum on average over the period 2011 to 2014, with a further slow down (at the margin) in the subsequent two year period. This is based on GFMS’ conservative projections for economic growth in these economies, coupled with trends in relation to the intensity of copper consumption in such economies (i.e. the comparison of copper consumption to GDP) turning negative (in line with the experience of these economics throughout most of the 1990s and 2000s), after the post-crisis adjustments are made. Substitution pressures are expected to further augment this slow-down. Copper demand growth in the original “tiger” economies of South Korea and Taiwan is expected to be yet lower, given increasing competition from nearby China.

The factors that are expected to affect the end-use breakdown of consumption over the next few years relate to, (i) the sectors that are expected to drive industrial production growth; and (ii) substitution pressures. The ongoing industrialisation of developing economies is expected to continue to see consumption growth from both the power utilities sector as well as construction. On the other hand, it is expected that there price-related substitution pressures will continue, relating to sectors such as plumbing applications, air-conditioning, telecommunications and even, in some cases and to a lesser extent, power utilities. Although in absolute tonnage terms GFMS expects growth to be positive on average over the period from 2011 to 2016, it is unlikely that construction’s share of global demand will rise significantly from 31 per cent. in 2010. Although electrical and electronic applications growth will be hampered by the move to fibre-optic telecommunications wire, GFMS believes that the

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growth of power-utilities-related demand will more than offset this. The significantly high share of total demand (37 per cent.) accounted for by this segment of consumption in 2010, which reflected high stimulus spending in China may, however, be hard to sustain in the long run.

Investment demand

Investor demand has been a major factor with respect to copper prices having surged to reach their peak, both in 2008 and on the first trading day of 2011. In GFMS' view, investor activity has been the principal driver of copper price fluctuations from the mid-2000s through to 2010 and GFMS expects that this situation would continue for the foreseeable future.

Investor involvement in copper commonly forms part of a wider strategy covering a number of commodities, which could be either passive i.e. through investment in a commodity basket or index fund, or active, for instance through a specialised commodity fund. The involvement of investors in commodity markets grew strongly during the period 2000 to 2010. For instance, combined net non-commercial and non-reportable net positions¹ in 22 commodity futures listed on various exchanges stood at nearly US\$59 billion by end-2009, compared to US\$5 billion in early 2003. Moreover, as noted earlier, over the last few years interest in managed strategies has increased, as investors have become more comfortable with the asset class and also given the realisation that the returns offered by passive index funds are often considerably lower than the performance of the respective indices, due to many of the commodities included being in contango and thus having a negative roll yield.

Investment demand for copper (as is the case with other commodities) is driven by motivations such as a structurally constrained supply scenario in the context of rapidly industrialising emerging markets and the growth of middle income classes therein and the appeal of metals, which are considered to be "hard" assets in view of the troubles suffered by some of the major "de facto" reserve currencies, such as the US dollar and the Euro. Moreover, inflationary expectations against the backdrop of an ongoing loose monetary policy and the increased number of vehicles for both private and institutional investors to access the commodities markets have also boosted copper investment demand. This trend looks set to continue.

In addition to the above factors, which apply to most industrial commodities, copper investment particularly, has benefited from its solid fundamentals and a positive outlook for these. In GFMS' view, it is due to the latter that the recent all-time-high price of US\$/t 9,754 was achieved, which was 252 per cent. higher than the post-Lehman trough, and marked the strongest performance among base metals over that period.

GFMS is of the view that investors will continue to be active in the copper market for the foreseeable future and the long positive bias in favour of copper noted during the last few years will continue to remain in place. It is expected that the growing appeal of managed commodity strategies would further favour investments in copper as fund managers tend to "overweight" portfolios on commodities with favourable fundamentals, such as copper. As

¹ Non-commercial and non-reportable positions were constructed using the weekly "Commitments of Traders" reports, published by the Commodities Futures Trading Commission. At first, the nominal dollar value of gross long and short positions was calculated for different commodity futures, based on the respective commodity's contract specification and spot price. These were then "netted out", by subtracting the nominal value of the gross short from that the gross long. Finally, the values of different commodities net positions were summed up.

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discussed in the section titled “Market Outlook” below, growth of investment demand is a key assumption with respect to GFMS’ outlook for copper prices and its expectation that these will keep to levels far above marginal production costs throughout the next three years and that the subsequent correction in 2014 and 2015 will be relatively soft. However, the ongoing presence of speculators in the market is expected to perpetuate the high levels of price volatility. Although, as discussed earlier, we expect investors will generally maintain a long bias, there will likely be periods of considerable activity on the short end, which could, at least in the short term, augment moves downwards.

SUPPLY

Historical overview

Over the last few years, copper mine production has tended to be one of the most problematic amongst the various base metals. It has consistently under-achieved expectations, having been plagued by a variety of labour disputes and technical problems set against a background of a structural shortage in capacity (the result of limited past investment and declining grades in certain key operations).

The average grade of ore processed at mines producing copper globally has gradually and steadily declined at an average rate of roughly 1 per cent. per annum, over the past 25 years, which equates to an annual average fall in copper head grade of 0.01-0.015 per cent. per annum. This decline has been driven by several factors. In large part it is a function of the increasing maturity of the population of mines, with the rate at which new, large scale world class mines are commissioned falling over time. Further, there are fundamental geological reasons for this, as the grade of copper porphyry orebodies often decreases at a greater depth. Also, the head grade of a given mine tends to fall as it matures, as miners optimise mine plans to exploit higher grade ore early on, thereby reducing project risk.

There has also been a pronounced tendency to increase the scale of operations, to take advantage of the economies of scale provided by the larger, more efficient mining and processing equipment which have become available. This has, in turn, allowed copper output levels to be maintained or expanded, while grades have fallen.

Another trend that has affected production and, to some extent, could hold consequences for the security of copper supply going forward, has been the migration of copper mine capacity away from politically stable countries towards developing countries with higher political risks. For instance, a significant part of new capacity that was added over the period between 2003 to 2009 has been located in African countries, some of which suffer from significant infrastructure and operational constraints, as well as, a heightened economic and political risk.

It is estimated by GFMS that global mine production reached 15.9 Mt in 2010. A comparison of the above 2010 production figure with historical statistics provided by the International Copper Study Group (ICSG), suggests that over the 2000-2010 period, mine production rose by an average 2 per cent. per annum or a cumulative 21 per cent. Throughout the period, concentrate output accounted for the bulk of global production. Nevertheless, the faster growth of SX-EW production over the decade has seen the share of the latter increase from 18 per cent. in 1999 to 21 per cent. last year.

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Table 2: Top-10 Largest Copper Producers

<u>Company</u>	<u>Output in 2008</u>	<u>Output in 2009</u>	<u>Output in 2010</u>	<u>Share of global production* (per cent.)</u>
Codelco	1,548	1,782	1,760	11.1
Freeport McMoRan	1,565	1,613	1,512	9.5
BHP Billiton	1,360	1,171	1,132	7.1
Xstrata	903	872	899	5.6
Rio Tinto	691	817	701	4.4
Anglo American	641	666	626	3.9
Southern Copper	489	485	479	3.0
KGHM	429	439	425	2.7
Norilsk Nickel	417	401	384	2.4
Antofagasta	327	287	336	2.1
Kazakhmys**	371	359	335	2.1

Source: GFMS

* Based on GFMS' estimates for global mine production in 2010

** Kazakhmys ranked 10th largest in 2008 & 2009, 11th in 2010

On a regional basis, Africa has seen the strongest growth (amounting to an annual average of 9.9 per cent. over 2000-2010), and consequently its share of global production rose from less than 4 per cent. in 2000 to 8 per cent. in 2010. Elsewhere, the Americas have been and remain the largest producing region, accounting for 56 per cent. of global total production in 2010, followed by Asia.

The locations where copper is mined and the locations where it is smelted and refined into cathode differ significantly. This is due to the fact that regions where copper is mined often do not enjoy the labour and energy cost advantages related to refining. More importantly, refining operations are often set up in or near key consumption centres.

This feature is reinforced by the data relating to the regional split of mine and refined production in 2010. For instance, although 56 per cent. of mine production was sourced in the Americas, less than a third of global refined production came from the region. In contrast, although only around 20 per cent. of global mine production comes from Asia, the region accounted for 45 per cent. of global refined output.

The lack of integration of copper production adds an element of risk to miners' and refiners' operations, as the former have to ensure they can find a buyer for their concentrate and the latter have to secure material to process. In recent years, a key feature of the copper market has been the tightness at the concentrate stage. GFMS expects that constrained mine production growth against the backdrop of ample refining capacity going forward will see such conditions persist.

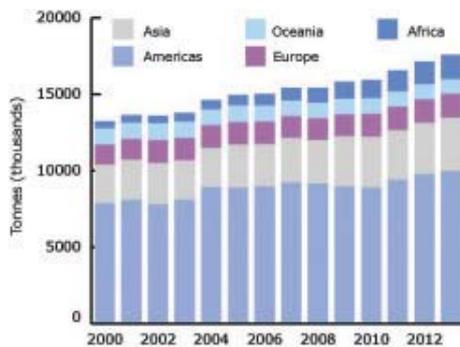
Global refined copper production grew by an annual average 2.6 per cent. from 14.8 Mt in 2000 to 19.1 Mt in 2010. The faster rate of growth of refined production compared to mine production can be attributed to strong growth of secondary production over the period, largely fuelled by higher prices encouraging increased recycling rates of old

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equipment. The increased output of copper semi-manufactured products has also boosted the supply of process scrap.

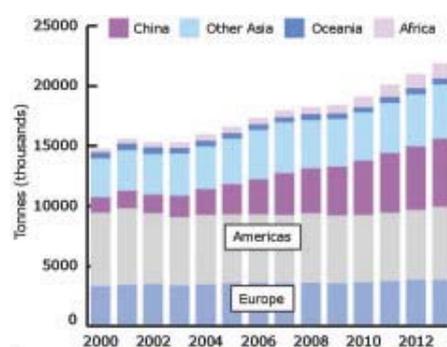
The overwhelming bulk of the growth took place in Asia and therein China was the biggest force. The region moved from accounting for 31 per cent. of the global production in 2000 to the aforementioned 45 per cent. share of global production in 2010. This increase in share came mostly at the expense of the Americas and, to a lesser extent, of Europe and the Oceania region, which have seen their share of global production diminish.

Graph 6: Copper Mine Production



Source: GFMS Copper Survey 2010, ICSG (March 2010)

Graph 7: Copper Refined Production



Source: GFMS Copper Survey 2010, ICSG (March 2010)

Outlook

GFMS estimates global mine production grew by 0.8 per cent. on a year-on-year basis to 15.9 Mt in 2010. However, the increase in mine supply was lower than the original projections, due to the numerous problems affecting the industry. For example, growth in the Democratic Republic of the Congo (DRC) was hampered by the suspension of activities at First Quantum's Frontier mine and increases in Zambia were lower than previously expected or forecast. Despite the above, the biggest contribution to the rise in global production is estimated to have come from Africa, with a smaller increase noted in Latin America (almost exclusively in Chile and Peru). Asia's decline was attributed to the lower output in Indonesia.

Over the next three years, GFMS forecasts that production growth will accelerate, to average 4 per cent. per annum. Africa is expected to continue to record the strongest growth among all regions, averaging 14 per cent. per annum. Latin American and North American mine production is also expected to see healthy increases, and GFMS expects output in the Americas overall to grow by an average 5 per cent. per annum over the same period. Within Asia, although GFMS expects Chinese production to increase (mainly from small scale operations), output in Indonesia may decline further due to lower output at Grasberg.

GFMS has taken a conservative view on production over the next three years, largely based on the lower than expected output of recent years. Although there is an increasing pipeline of projects, GFMS has in many cases pushed back the point of start-up from what is planned and it has assumed a longer ramp-up period than originally envisaged and, in some cases, lower than expected annual capacity. Elsewhere, it has applied a disruption allowance to African production, to reflect operational and political risk in the region. Finally, offsetting

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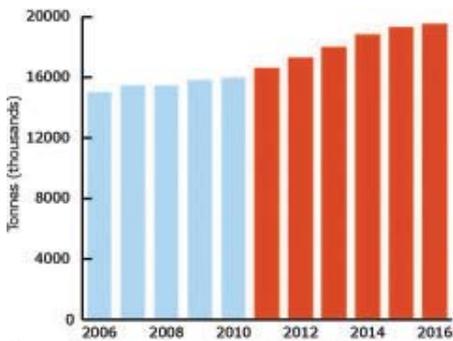
additions to capacity, there are declines as a result of falling grades or operations reaching the end of their life.

There is currently ample smelting and refining capacity in the copper market, to process mineral material as well as material from secondary sources. GFMS expects this to continue going forward and its projections for refined production during the 2011-2013 period are inherently linked to its views on mine production referred to above.

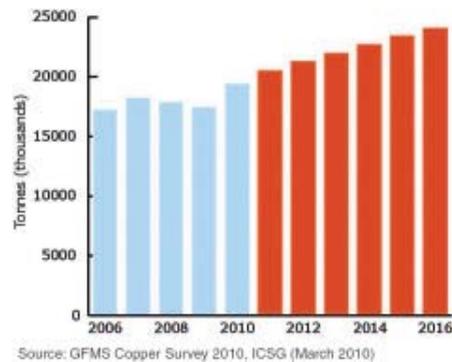
In part due to some of the projects that were expected to have come on-stream in the next three years being pushed back and also due to other planned capacity expansions, 2014 is forecast to see significantly strong growth, amounting to 4.7 per cent. year-on-year. More modest increases are forecast for the following two years, pushing global mine production to 19.5 Mt by 2016. While much of the growth in production over 2011 to 2013 is attributed to capacity expansions at “difficult” jurisdictions, “traditional” copper mining countries such as Chile, Peru and Kazakhstan are expected to account for the larger part of the growth during 2014 to 2016.

In 2010, refined production grew by 3.8 per cent. to reach 19.1 Mt. The considerably faster growth than that seen for mine production reflects strong increases in secondary production in the aftermath of 2009’s collapse in recycling, which left the market with an overhang of unprocessed material.

Graph 8: Copper Mine Production Forecast



Graph 9: Copper Refined Production Forecast



Over 2011 to 2013, GFMS expects refined production to increase by an average 4.6 per cent. per annum, ending the period at around 21.9 Mt. The strongest percentage increases are expected in Africa, whereas the largest absolute contribution to the tonnage-increase will be seen coming from Asia (the bulk of which is expected to be accounted for by China). Over the period, GFMS expects output from Kazakhstan to increase at an average annual rate of 10 per cent. in line with the setting up and expansion of a number of production facilities. The Americas are also expected to contribute significantly to the overall increase in annual production over the period. In 2014, boosted by an increase in mine production, refined output growth is expected to accelerate to 4.5 per cent. Subsequent years are expected to see growth slow somewhat, leaving global production at 23.9 Mt in 2016.

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Table 3: Major Identified Mine Capacity Expansions

Mine	Country	Owner(s)	Production	Stated Capacity at Year End (kt per annum)										Total 2009-2016 Increase
				2009	2010	2011	2012	2013	2014	2015	2016			
Oyu Tolgoi	Mongolia	66% Ivanhoe Mines Ltd (Rio Tinto 29.6%), 34% Mongolia Government	Concentrates	0	0	0	0	0	200	200	200	300	400	400
Las Bambas	Peru	Xstrata plc	Concentrates	0	0	0	0	0	400	400	400	400	400	
Andina	Chile	Codeco Chile	Concentrates	210	200	260	260	260	260	260	260	600	600	390
Los Bronces	Chile	Anglo American (100%)	Concentrates	190	190	200	430	485	490	450	430	430	240	
Kamoto (T17, Kamoto UG, KOV)	Congo	Katanga Mining	SX-EW	70	70	150	150	230	230	310	310	310	240	
Toromocho	Peru	Chinaico	Concentrates	0	0	0	0	210	210	210	210	210	210	
El Morro	Chile	Goldcorp 70%, New Gold Inc. 30%	Concentrates	0	0	0	0	100	203	203	203	203	203	
Salobo	Brazil	Vale	Concentrates	0	0	100	100	200	200	200	200	200	200	
El Galeno	Peru	Northern Peru Copper Corp (Mimetals, Jiangxi Copper)	Concentrates	0	0	0	0	100	200	200	200	200	200	
Esperanza	Chile	Antofagasta Plc (70%), Marubeni Corporation (30%)	Concentrates	0	0	191	191	191	191	191	191	191	191	
Cananea	Mexico	Grupo Mexico	Concentrates	125	125	125	125	125	125	313	313	188		
Konkola Deep	Zambia	Konkola Copper Mines (Vedanta 79.4%, ZCCM 20.6%)	Concentrates	0	50	180	180	180	180	180	180	180	180	
Mina Ministro Hales (Mansa Mina)	Chile	Codeco	Concentrates	0	0	0	0	0	163	163	163	163	163	
Antapaccay	Peru	Xstrata plc	Concentrates	0	0	0	80	160	160	160	160	160	160	
Caserones	Chile	Pan Pacific Copper Co.	Concentrates	0	0	0	0	150	150	150	150	150	150	
El Abra	Chile	Codeco (49%), Freeport-McMoRan Copper & Gold Inc. (51%)	Concentrates	0	0	30	80	100	135	135	135	135	135	
Tia Maria	Peru	Southern Copper Corp. (Grupo Mexico)	SX-EW	0	0	0	40	120	120	120	120	120	120	
Aktogay	Kazakhstan	Kazakhmys	Concentrates	0	0	0	0	0	0	100	100	100	100	
Bozshakol	Kazakhstan	Kazakhmys	Concentrates	0	0	0	0	0	100	100	100	100	100	
Toquepala	Peru	Southern Copper Corp.	Concentrates	120	120	120	220	220	220	220	220	220	100	
Rosemont	United States	Augusta Resource Corp.	Concentrates	0	0	0	0	0	100	100	100	100	100	
Cananea	Mexico	Grupo Mexico	SX-EW	55	55	55	87	87	87	137	137	82		
Andacollo	Chile	Teck Resources Ltd 90%, ENAMI 10%	concentrates	0	80	80	80	80	80	80	80	80	80	
Santa Domingo	Chile	Far Western Mining	Concentrates	0	0	0	0	0	40	80	80	80	80	
Cuajone	Peru	Grupo Mexico (54.1%), Marmon Corp. (15%), Freeport-McMoRan Copper & Gold Inc. (13.9%)	Concentrates	190	190	190	190	262	262	262	262	262	72	
Cadia Hill	Australia	McMoRan Copper & Gold Inc.	Concentrates	30	30	30	30	40	75	100	100	100	70	
Kolwezi Tailings	Congo	Newcrest Mining Ltd.	SX-EW	0	0	0	30	50	70	70	70	70	70	
Mina Justa	Peru	Contested (First Quantum Minerals Ltd vs ENRC), Gecamines, Government and Others	Concentrates	0	0	0	0	0	0	22	66	66	66	
Kinsevere Phase 2	Congo	Marcobre (China Sci-Tech Holdings Limited 70%, Korean partners 30%)	SX-EW	0	0	30	60	60	60	60	60	60	60	
Mirador	Ecuador	Anvil Mining 95%, Mining Company Katanga (MCK) 5% Corriente Resources Inc (Tongling Nonferrous Metals Group Holdings Co., Ltd. and China Railway Construction Corp. Ltd)	Concentrates	0	0	0	0	30	60	60	60	60	60	

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Mine	Country	Owner(s)	Production	Stated Capacity at Year End (kt per annum)							Total 2009-2016 Increase	
				2009	2010	2011	2012	2013	2014	2015		2016
Sarcheshmeh	Iran	National Iranian Copper Industry Co.	Concentrates	190	190	190	250	250	250	250	250	60
Jabal Sayid	Saudi Arabia	Aliujain Corp. 50%, Citadel Resource Group 50%.	Concentrates	0	0	0	60	60	60	60	60	60
Muliashi	Zambia	Luanshya Copper Mines (85% China Nonferrous Mining Corp, 15% ZCCM Investment Holdings)	SX-EW	0	0	0	60	60	60	60	60	60
Big Gossan	Indonesia	P.T. Freeport Indonesia Co.	Concentrates	0	5	30	57	57	57	57	57	57
Morenci	United States	Freeport-McMoRan Copper & Gold Inc./Sumitomo	Concentrates	0	48	57	57	57	57	57	57	57
Boleo	Mexico	Baja Mining Corp 70%, Korea Resources Group 30%	SX-EW	0	0	0	0	57	57	57	57	57
Mina Justa	Peru	Marcobre (China Sci-Tech Holdings Limited 70%, Korean partners 30%)	SX-EW	0	0	0	0	0	40	52	52	52
Collahuasi	Chile	Anglo American (44%), Xstrata plc (44%), Mitsui + Nippon (12%)	Concentrates	440	490	490	490	490	490	490	490	50
ICSG Estimate for SX-EW plants	China		SX-EW	50	80	80	100	100	100	100	100	50
Xietongmen	China	Continental Minerals Corp.	Concentrates	0	0	0	0	30	50	50	50	50
Similco (new)	Canada	Copper Mountain Mining Corp. 75%, Mitsubishi Materials Corp 25%	Concentrates	0	0	48	48	48	48	48	48	48
Sungun	Iran	National Iranian Copper Industry Co.	Concentrates	45	45	45	90	90	90	90	90	45
Konkola North	Zambia	TEAL (50% African Rainbow, 50% Vale)	Concentrates	0	0	0	0	45	45	45	45	45
Wunuketushan	China	China National Group Gold Corp.	Concentrates	7	30	30	30	50	50	50	50	43
Las Cruces	Spain	Inmet 70%, MK Gold Co. 30%	SX-EW	30	72	72	72	72	72	72	72	42
Skouries	Greece	European Goldfields	Concentrates	0	0	0	10	20	40	40	40	40
La Caridad	Mexico	Mexicana de Cobre S. A. (Grupo Mexico)	Concentrates	110	110	110	110	150	150	150	150	40
Mt. Milligan	Canada	Terrane Metals Corp.	Concentrates	0	0	0	0	37	37	37	37	37
Rio Tinto Mines	Spain	EMED Mining	Concentrates	0	0	0	37	37	37	37	37	37
Northmet Project	United States	Polymet Mining Corp.	SX-EW	0	0	0	0	36	36	36	36	36
Maun Project (Boseto)	Botswana	Discovery Metals Ltd	Concentrates	0	0	0	34	34	34	34	34	34
New Afton	Canada	New Gold Inc.	Concentrates	0	0	0	34	34	34	34	34	34
Caserones	Chile	Pan Pacific Copper Co.	SX-EW	0	0	0	0	15	30	30	30	30
Dexing	China	Jiangxi Copper Industry Co.	Concentrates	130	140	160	160	160	160	160	160	30
Jia Ma Copper Mine	China	China National Gold Corp.	Concentrates	0	10	30	30	30	30	30	30	30
Tenke Fungurume	Congo	Gecamines (17.5%), Tenke Mining Corp. (24.75%), Freeport-McMoRan Copper & Gold Inc. 57.75%	SX-EW	100	130	130	130	130	130	130	130	30
Pueblo Viejo	Dominican Republic	Barrick Gold Corp. 60%, Goldcorp 40%	Concentrates	0	0	0	20	30	30	30	30	30
Antamina	Peru	BHP Billiton (33.75%), Teck (22.5%), Xstrata plc (33.75%), Mitsubishi (10%)	Concentrates	320	320	320	350	350	350	350	350	30
Duobaoshan Copper	China	Zijin Mining Co. 51%, Heilongjiang Heilong Mining Co. 37%	Concentrates	2	2	10	30	30	30	30	30	28

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Mine	Country	Owner(s)	Production	Stated Capacity at Year End (kt per annum)											Total 2009-2016 Increase
				2009	2010	2011	2012	2013	2014	2015	2016				
Yulong	China	Quinghai Western Mining 41%, Fujian Zijin Mining 39%	SX-EW	3	3	3	5	10	30	30	30	30	30	27	
Roseby	Australia	Altona Mining Ltd	Concentrates	0	0	0	0	0	26	26	26	26	26	26	
Franko	Chile	Quadra Mining Ltd	SX-EW	7	20	20	30	30	30	30	30	30	30	23	
Bisha	Eritrea	Newsun	Concentrates	0	0	0	0	81	81	81	81	81	81	22	
Aitik	Sweden	Boliden Minerals AB	Concentrates	68	75	78	81	85	90	90	90	90	90	22	
Benkala	Kazakhstan	KazCopper LLP 50% (Frontier Mining Ltd 50%), Coville Intercorp Ltd 50%	SX-EW	0	0	3	7	20	21	21	21	21	21	21	
Boddington Gold	Australia	Newmont Mining	Concentrates	10	30	30	30	30	30	30	30	30	30	20	
Los Pelambres	Chile	Antofagasta Plc (60%), Nippon Mining (25%), Mitsubishi Materials (15%)	Concentrates	360	410	410	410	410	410	410	410	410	380	20	
Ruashi II	Congo	Metorex 80%, Gecamines 20%	SX-EW	25	45	45	45	45	45	45	45	45	45	20	
Ernest Henry	Australia	Xstrata plc	Concentrates	115	90	90	90	50	50	50	50	50	50	-65*	
Underground															
Chingola Refractory Ore (CRO)	Zambia	Konkola Copper Mines (Vedanta 51%, Zambia Copper Investments Ltd. (ZCI) 28.4%, ZCCM 20.6%)	SX-EW	0	0	0	0	25	50	TBC—currently	ICSG data	TBC	TBC	TBC	
Nkana Slag Dumps/Chambishi Cobalt Plant	Zambia	Eurasian Natural Resources Corporation PLC (ENRC) 90%, ZCCM Investments Holdings PLC 10%	SX-EW	25	25	25	40	55	55	TBC—currently	ICSG data	TBC	TBC	TBC	
Total identified capacity for above operations/projects				3,002	3,455	4,222	5,290	6,960	8,238	8,815	9,190	9,190	6,188		
Total yoy increase ('000 tonnes)				453	767	1,068	1,670	1,278	577	375	6,188	6,188	6,188		

Source: GFMS, ownership information & some Chinese projects' capacity from ICSG
 NB Excludes projects amounting to a capacity increase of less than 20 ktpa

*Capacity decline at the open pit mine partly offset by commissioning of underground project over 2011-2013

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Copper Cost Trends

The copper industry experienced increasing cost pressures in 2010 and the GFMS world average C1 cash cost increased by 11 per cent. to 112c/lb. Average C1 costs exceeded 100c/lb on the back of stronger currencies and inflation in sharp contrast to the reductions in input costs and weaker currencies relative to the US dollar reported in 2009.

The steepening of the cost curve in 2010 was due in part to higher revenues from by-product metals, which benefitted those operations with significant production from gold and molybdenum and that generally occupy the lower end of the cost curve. Those mines higher up the curve with only minor by-product contributions were unable to leverage off the higher prices for other metals and offset the impact of cost pressures. There has also been a sharp recovery in the copper price during 2010, encouraging a number of mines to restart production which in the environment of late 2008 and early 2009 may have been considered uneconomical.

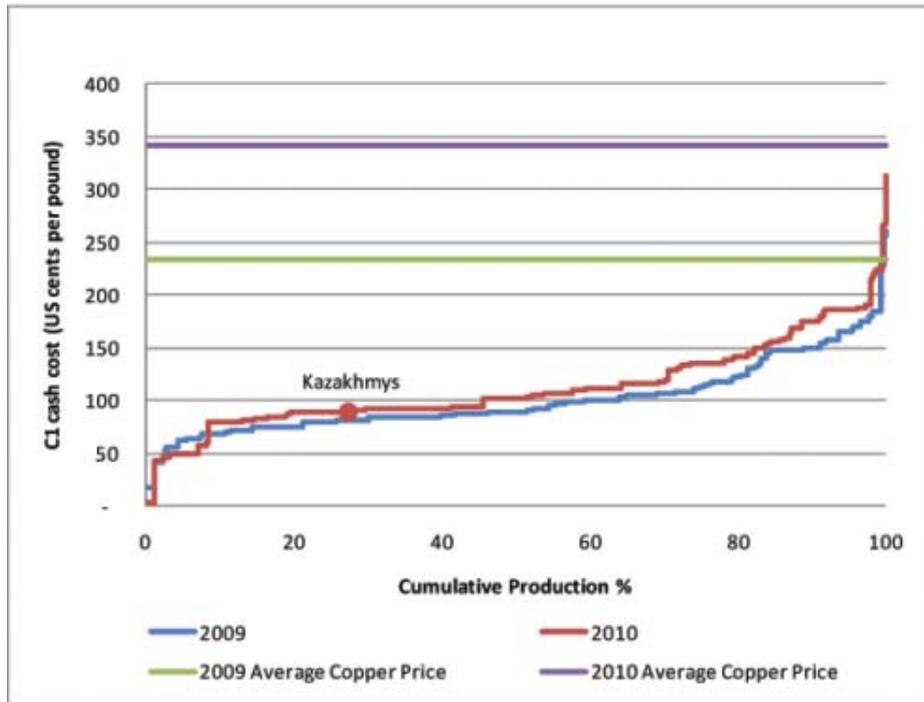
The main drivers of cost increases in 2010 were stronger domestic currencies in producing countries and higher costs for raw material inputs, labour and energy. This was partly offset by stronger prices in by-product metals, as mentioned above. Gold enjoyed continued high prices averaging US\$1,225/oz during 2010, a 26 per cent. increase on 2009. Meanwhile, industrial related by-products such as molybdenum and cobalt enjoyed a rebound, with average prices up 39 per cent. and 18 per cent., respectively. "Real" cost reductions were reported by some companies as producers continued to achieve improvements to productivity and refinements to procurement activities, but overall not sufficient to offset inflation of prices for key inputs.

The 90th percentile of C1 costs now sits at 187 USc/lb, significantly below the 2010 average copper price for the year of 342 USc/lb with much of the industry earning considerable profits. With the average 2010 price 83 per cent. higher than marginal cost of production, the incentive price for new production is a low hurdle to overcome, even for potentially top quartile projects looking to make a return. Given this dynamic, a supply response would seem inevitable, implying a copper price that is much lower longer term.

The copper "floor price" will be limited to an extent by an upward shift in the cost curve. Lower grades, rising capital intensity and the development of projects in regions with higher geo-political risk are all likely to contribute to higher average costs and an increase in the copper price required to incentivise new production. These are all structural drivers, outside the impact of real inflation and limit the fall in copper price over long-term to some 10-15 per cent. above the current marginal cost of production.

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Graph 10: World Copper Cost Curve



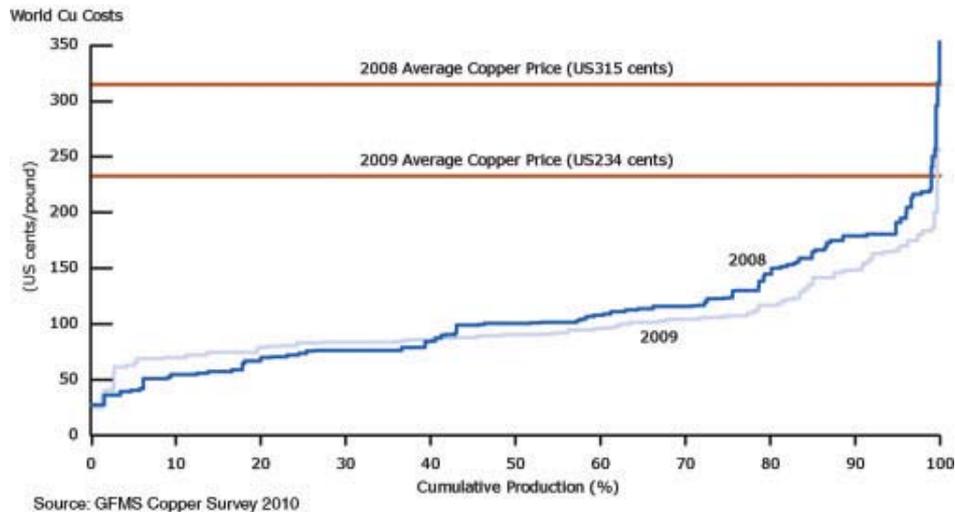
Source: GFMS Mine Economics (March 2010)

The GFMS copper industry cost curve captures approximately 80 per cent. of total world copper production and 90 per cent. of western world production. C1 cost is a direct cash cost measure, expressed in U.S. cents per pound of paid metal produced. It includes mine-site mining, processing and general administration costs, plus concentrate freight costs, smelting and refining charges and marketing costs where applicable.

The cost curve presented above is a composite of both by-product and co-product costing methods. As per the methodology adopted by GFMS, co-product costs are derived by multiplying the total cash cost by the percentage revenue contribution from copper. This is in contrast to by-product costing whereby revenue from metals other than copper are netted off against the total cash cost. GFMS use the co-product method when revenue from copper is approximately less than 65 per cent. of the total mine revenue. For primary copper mines (those generating most of their revenue from copper), C1 cost is expressed net of by-product credits. For by-product copper mines (where copper is not the primary source of revenue), copper is treated as a co-product and C1 costs are reported on a copper equivalent basis. Depreciation costs and royalties are not included in the C1 cost.

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Graph 11: Copper Mine Production Costs



Global Copper Reserves and Resources

According to the most recent data by the USGS, global copper reserves stood at 630Mt at end-2010, equivalent to more than 39 years' mine production at 2010 levels. Global copper reserves grew by 290Mt over the last decade, despite cumulative mine production of 148Mt over the period (based on a combination of GFMS and ICSG statistics), reflecting the discovery of new deposits and higher price levels as well as other factors rendering the exploitation of known ones economical.

Chilean reserves as of 2010, at 150Mt, accounted for 24 per cent. of the global total. Peru and Australia accounted for 14 per cent. and 13 per cent. of global reserves respectively. Finally, Kazakhstan's reserves in 2010 amounted to 18Mt according to the USGS. As at 1 June 2010, IMC Consulting reported Cuatro's copper reserves amounted to 11.95Mt, equivalent to 66 per cent. of Kazakhstan's total reserves and 1.9 per cent. of global reserves, based on USGS' estimates.

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Global copper reserves by country

kt	<u>Reserves at end-2000</u>	<u>Reserves at end-2010</u>
United States	45,000	35,000
Australia	9,000	80,000
Canada	10,000	8,000
Chile	88,000	150,000
China	18,000	30,000
Indonesia	19,000	30,000
Kazakhstan	14,000	18,000
Mexico	15,000	38,000
Peru	19,000	90,000
Poland	20,000	26,000
Russia	20,000	30,000
Zambia	12,000	20,000
Other countries	50,000	80,000
World total (rounded)	340,000	630,000

Source: USGS

For more information, please visit <http://minerals.usgs.gov>

COPPER PRODUCTION IN KAZAKHSTAN

According to GFMS data, Kazakhstan was the tenth largest mine producer in the world and the sixteenth largest refined producer in 2010. Moreover, Kazakhstan is by far the largest copper producer in Central Asia (Uzbekistan being the second largest, producing less than 20 per cent. of Kazakhstan's annual output) and the second largest producer among the CIS region (after Russia).

Graphs 12 and 13 feature annual mine and refined production statistics, based on GFMS and ICSG data. The small difference between the two graphs is illustrative of the high degree of integration of production in the country and this in large part reflects the vertical integration of the country's dominant producer, Kazakhmys. The company used to control substantially all of the local production, with KazZinc, a major integrated zinc producer, producing only marginal quantities until the early 2000s. Rising output from KazZinc as well as the entry of two other players, namely Polymetal and the Russian Copper Company, have seen Kazakhmys' share of local production decline. However, the company continues to account for the bulk of local production, for instance amounting to more than 70 per cent. in 2010.

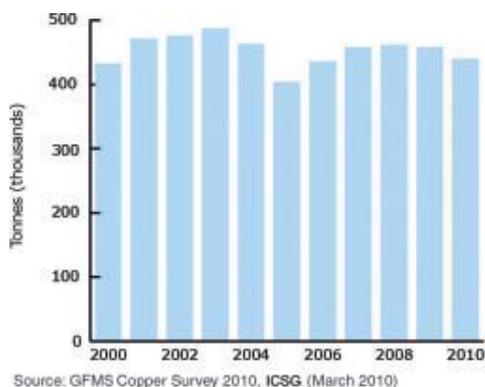
With the exception of two wire-rod plants (one owned by Kazakhmys) and a brass mill, downstream copper production capacity in Kazakhstan consists of small-scale operations. As such, only a fraction of copper production, amounting to less than 60 kt in 2010, is consumed within the country with the balance being exported. Traditionally, copper exports from Kazakhstan were overwhelmingly in the form of copper cathode, although in recent years, concentrate exports have grown considerably. In 2009, according to official data, Kazakhstan exported over 272 kt of refined copper, 95 per cent. of which went to Europe and China.

Going forward, declining ore grades at some operations (which is an issue that has been affecting mines worldwide) is likely to see output in the next few years fall short of the

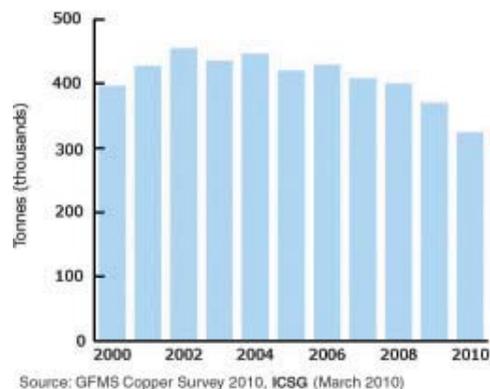
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2008 peak. However, looking further ahead, there are two major copper projects on the horizon that could boost output in the country, namely Bozshakol and Aktogay. Both are currently being explored and evaluated by Kazakhmys.

Graph 12: Mine Production in Kazakhstan



Graph 13: Refined Production in Kazakhstan



MARKET OUTLOOK

After the supply surpluses of 2008 and 2009, GFMS estimates the global copper market swung into deficit in 2010, as consumption growth was almost three times stronger (in percentage terms) than the increase in refined output over the year. The improvement in the market's supply-demand conditions and, importantly, expectations of further tightness compounded the already positive environment for copper investment (given low interest rates, problematic conditions for both the U.S. Dollar and the Euro and inflationary expectations), resulted in prices rising to record-high levels towards the end of the year.

In the first half of 2011, GFMS expects supply-demand conditions to deteriorate. Generally, in the first quarter, both production and demand take a seasonal hit, owing to holidays around the Chinese New Year. Combined with an environment of high prices resulting in the output of copper products falling short of levels that genuine end-use demand would otherwise lead to, GFMS expects that the market deficit over the first and second quarters of 2011 will fall to a fraction of those seen over the final months of 2010. Thereafter, consumption is expected to accelerate in the second half of the year and more than outpace the growth in supply, in spite of the latter growing at rates well-above trend. In the third and last quarter of the year, GFMS projects the market deficits to widen, resulting in an overall deficit of 370 kt.

Whilst maintaining a positive outlook regarding copper prices in general, GFMS is of the view that prices close to, or above, US\$/t 10,000 seem to have already accounted for the copper market being in deficit for the foreseeable future. GFMS' near-term expectations therefore are for prices to post a correction, triggered by an expected liquidation or the selling off of long investment positions across all pro-cyclical asset classes i.e. assets whose prices move in line with the business cycles. However, the recent price performance of copper suggests that corrections in the price are seen as buying opportunities by both investment funds and physical consumers. As a result, investors and consumers are expected to cushion

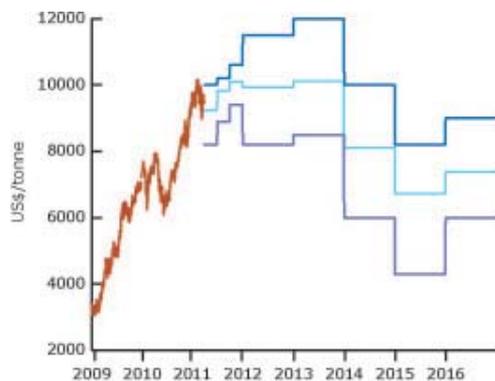
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the drop and GFMS expects prices will keep above US\$/t 8,000. As conditions improve in the second half of 2011, copper prices are expected to resume their rally, averaging comfortably above US\$/t 9,000 and peaking in the mid-US\$/t 10,000 level before the end of that year. Overall, spot prices are expected to average US\$/t 9,730 in 2011, rising by 29.1 per cent. on a year-on-year basis.

Supply deficit is expected to be maintained throughout the next two years until 2013. Specifically, GFMS sees supply falling 263 kt and 70 kt short of demand in the two years, respectively. Given the current, relatively low, levels of inventories, the projected deficits should provide support to prices in 2012 and 2013. Coupled with strong investor interest being maintained throughout the period, the deficit conditions are expected to fuel strong increases in copper prices. Specifically, GFMS forecasts prices to average US\$/t 9,930 and US\$/t 10,110 (and rise by 2.1 per cent. and 1.8 per cent.) in 2012 and 2013, respectively. Despite the positive fundamentals of the market, GFMS continues to see the upside from current levels as being limited. Moreover, GFMS believes that if prices materially and on a sustainable basis breach the upper end of its trading range that GFMS have forecast, the supply-demand dynamics would change and this would precipitate a correction.

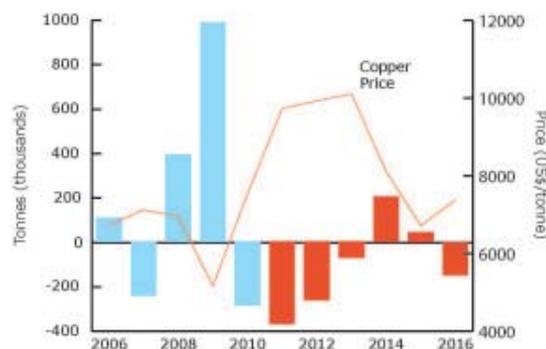
The market is likely to react to the three-year period (between 2011 and 2013) of significantly high prices, as a strong increase in production pushes the market into surplus supply over 2014 and 2015. As the supply deficit decreases, investors are likely to lose some of their bullish sentiment and to some extent look for value in other commodities and other asset classes.

**Graph 14: Quarterly/Annual Forecast
Average, Low & High**



Source: GFMS Copper Survey 2010, LME (March 2010)

**Graph 15: Global Market
Deficit/Surplus & Annual Copper Price**



Source: GFMS Copper Survey 2010, LME (March 2010)

Prices are expected to fall considerably and GFMS would not rule out a decrease to the US\$/t 4,000 levels. GFMS expects that even at their lowest, prices will avoid falling below marginal costs of production on a sustainable basis. Primarily this reflects the expectation from GFMS that, while some players will liquidate their long positions and even go short on copper, overall, investors will maintain a long bias on the metal, partly through holdings in passive instruments being maintained and partly due to fresh purchases prompted by the lower prices. In 2016, GFMS expects that the market will return to a supply deficit, which will stimulate a 9.8 per cent. price rebound in that year.

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Table 4: GFMS Average Annual Price Forecast to 2016

	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>
Price (US\$/t)	7,539	9,730	9,930	10,110	8,110	6,720	7,380
YOY Per cent. Change	46.0	29.1	2.1	1.8	-19.8	-17.1	9.8

Source: GFMS Copper Survey 2010

ZINC MARKET OVERVIEW

The vast majority of zinc is utilised in the form of Special High Grade zinc, which has zinc content of 99.995 per cent. (see below for details of the LME contract). The industry is characterised by relatively low levels of vertical integration because mining is often undertaken by companies that do not undertake smelting of the Zinc concentrate to refined metal. Zinc ores typically contain 5-15 per cent. zinc. To concentrate the ore it is first crushed and then ground to enable optimal separation from the other minerals. A zinc concentrate normally contains about 55 per cent. of zinc with some copper, lead and iron. Refined zinc, which is produced via an electrolytic process. The deposited zinc is stripped off, dried, melted and cast into ingots. The zinc ingots may have different grades: High Grade (HG) 99.95 per cent. and Special High Grade (SHG) 99.99 per cent. of zinc. Refined zinc is normally priced based on the official cash price quoted on the LME, plus a physical premium to delivery to a consumer. This premium varies in line with underlying market conditions and specific conditions in regional markets.

The LME zinc contract (special high grade) specification is 99.995 per cent. zinc. The price during 2010 has rallied sharply with the LME cash quote increasing from a low of US\$/t 1,595 to finish the year at US\$/t 2,433. The main impetus came from external factors: dollar weakness and increased fund activity (in part due to zinc's earlier underperformance compared to most of the other LME-traded metals) rather than due to own fundamentals.

The increase in prices came ahead of an improvement in the underlying fundamentals. Reported LME inventories increased by 212 kt during 2010. Although the rate of inventory accumulation has slowed, inventories remain high compared to prior years. The oversupply in the zinc market is most clearly demonstrated by the level of LME inventories. In early 2011, they stand at just over 710 kt compared to slightly less than 500 kt at the start of 2010 and are the highest level since 2004.

Kazakhmys is a relatively small supplier of zinc. Production during 2010 was 167 kt compared to the total market of around 12.3 Mt. Zinc mine output in Kazakhstan, however, during 2010, was approximately 490,000 tonnes and the country is a significant exporter of both zinc concentrate and refined zinc. The barriers to entry to the zinc market are essentially similar to those described above relating to the copper industry. High capital costs and the lack of large low-cost mines that are in the production pipeline have discouraged mining companies from undertaking investments in the sector. Smelting companies are increasingly looking to integrate into mine supply. However, this normally reflects the acquisition of existing operations rather than the development of new projects and therefore does not usually involve any significant change to underlying mining capacity.

Zinc demand in common with the other base metals rallied strongly in 2010 rising by an estimated 11.6 per cent. This reflected the low base in 2009 and a restocking phase as

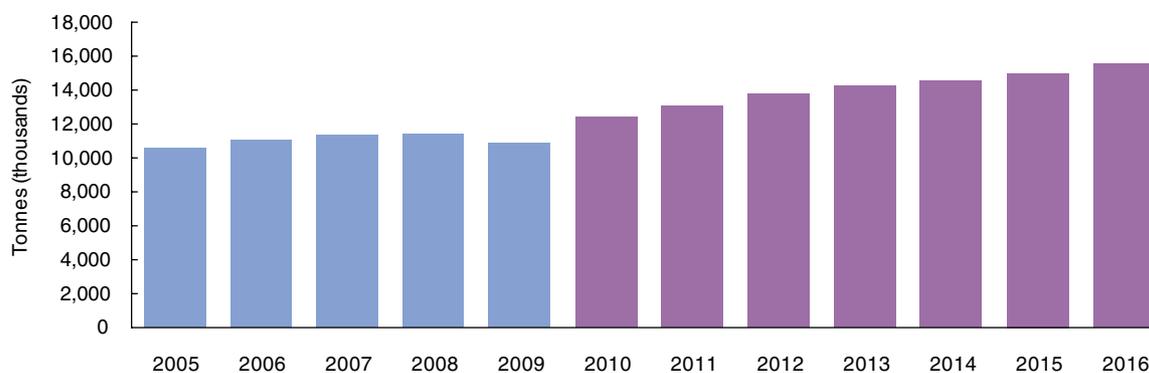
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growth accelerated and more importantly as zinc prices started to rise. Reflecting these factors, growth was particularly strong in the mature economies. Nevertheless, GFMS expects that the main driver over the forecast period to 2013 will be the emerging economies with again China as a major consumer. Zinc demand within the country continues to be driven by sharply higher galvanised steel output, which increased by an estimated 50 per cent. in 2010.

In turn, the Chinese galvanised steel market is being supported by sharply higher vehicle output and ongoing expenditure in infrastructure. Fixed asset investment continues to expand by in excess of 20 per cent. on a year-on-year basis. Chinese output of galvanised sheet has exceeded forecast levels in 2010. Notably, monthly galvanised sheet production has remained above 2.0 Mt since the beginning of 2010. Output reached a record high of 27 Mt in 2010. Given the investment in new higher value-added downstream galvanising lines, GFMS expects further significant advances in China's galvanised steel output.

GFMS also forecasts a strong demand growth for zinc from areas such as India, the ASEAN countries, Turkey and Brazil. From an end-use basis, GFMS expects the galvanised steel sector to remain the main source of growth. Zinc's use in die-castings and brass and chemicals has shown little growth in recent years, in part, due to substitution pressures. GFMS forecasts that over the period 2011 to 2013, global zinc consumption will increase at an average annual rate of 2.9 per cent.

Graph 16: Zinc Consumption (Historical and Forecast)

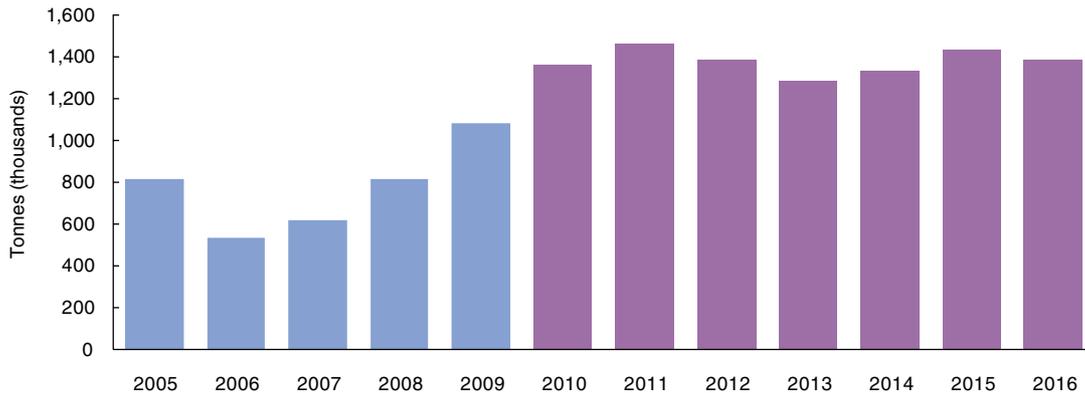


Source: GFMS (2010) & International Lead and Zinc Study Group (2010)

The main reason for the relatively high level of inventories is the high levels of production. GFMS estimates that concentrate output increased by 9.9 per cent. in 2010. The vast majority of the increase came from China, where output was significantly raised by the myriad of small and medium-sized mines in response to high prices and the attractive treatment charges. GFMS estimates that Chinese output increased by 24 per cent. in 2010. Other sources of growth were Australia (where output rebounded in 2010 from a number of technical problems in 2009) and Mexico (where again production recovered from a series of technical and labour problems experienced in 2009).

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Graph 17: Total Zinc Inventories (Historical and Forecast)

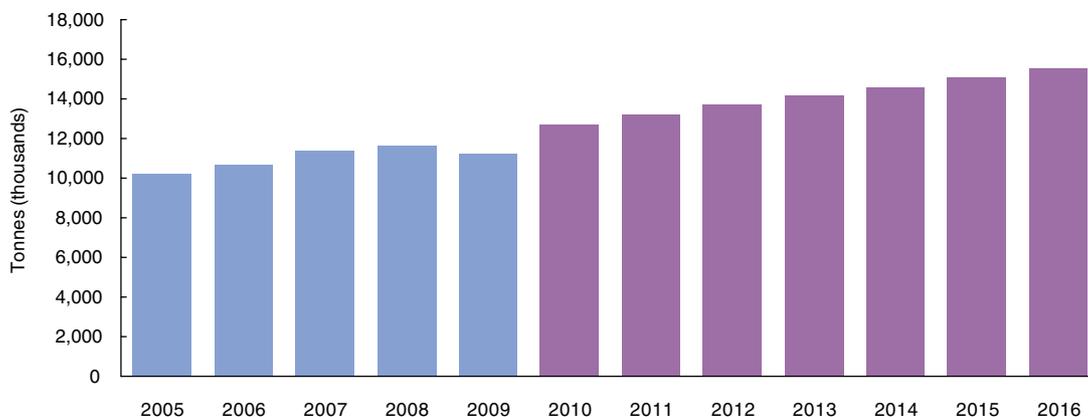


Source: GFMS (2010) & International Lead and Zinc Study Group (2010)

The key feature of the supply side of the zinc market over the forecast period is the lack of new large-scale mines coming onstream. As a result, GFMS expects that mine production growth will slow down over the forecast period. Although there is no shortage of zinc smelting capacity in GFMS' view, the shortage of concentrate will limit the increase in refined zinc production.

Following a surplus of 280 kt in 2010, GFMS is projecting a return to approximate balance in 2011. Thereafter the key features highlighted above, strong demand growth within the emerging economies and limited supply growth, should see the market return to a supply deficit position. However, given the overhang of the inventory that has been built up over 2007 to 2010, further increases in the zinc price in 2011 are likely to be limited. Moreover, with price levels in excess of US\$/t 2,300 in late 2010, the market has already partially "priced in" future improvements in zinc's fundamentals. It is forecast by GFMS that the LME zinc cash price will remain around US\$/t 2,000 on an average basis over the period 2011 to 2013. Thereafter an increase in supply is likely to put average annual prices under pressure and GFMS expects an annual average price of around US\$/t 1,750 during the period 2014 to 2016.

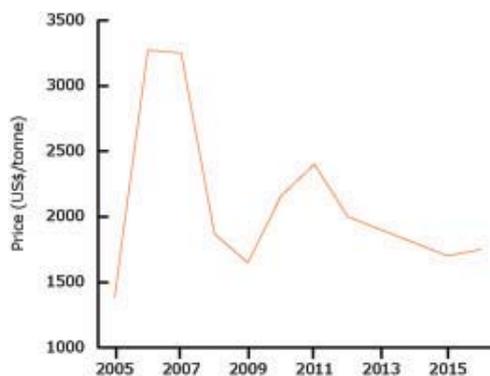
Graph 18: Zinc Refined Output (Historical and Forecast)



Source: GFMS (2010) & International Lead and Zinc Study Group (2010)

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Graph 19: Annual Average Zinc Price



Source: GFMS, LME (March 2010)

GOLD MARKET OVERVIEW

Gold has been used as a store of value and also to produce jewellery and other adornment items since ancient times and until the 1970s the metal provided the basis for the global monetary system. The metal continues to be a popular investment vehicle. This appeal to investors is what makes gold, as well as other precious metals to an extent, different from the majority of other commodities, the bulk of demand for which tends to come from the relevant end-use industries. Gold primarily trades in the over-the-counter market and the largest pool of liquidity is the London Bullion Market, represented by the LBMA. The Association publishes daily “fix” prices, which are widely accepted as the benchmark for the market, twice daily, in the morning and afternoon. Gold futures are also listed on a number of exchanges, such as the Comex, Tocom and the Shanghai Gold Exchange.

World Gold Supply and Demand

	<u>2005</u>	<u>2006</u>	<u>2007</u> <i>(tonnes)</i>	<u>2008</u>	<u>2009</u>
Supply					
Mine production	2,549	2,483	2,473	2,409	2,572
Official sector sales	663	365	484	232	41
Old gold scrap	902	1,133	982	1,316	1,674
Total Supply	4,115	3,981	3,939	3,957	4,287
Demand					
Fabrication					
Jewellery	2,718	2,298	2,417	2,193	1,759
Other	581	650	672	696	658
Total Fabrication	3,299	2,948	3,089	2,889	2,417
Bar hoarding	264	235	236	386	187
Net producer de-hedging	92	434	444	352	254
Implied net investment	459	365	169	330	1,429
Total Demand	4,115	3,981	3,939	3,957	4,287
Gold Price (London PM, US\$/oz)	444.45	603.77	695.39	871.96	972.35

Source: GFMS 2010 Gold Survey

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Jewellery accounts for the biggest segment of gold fabrication demand, traditionally amounting to more than 80 per cent. of the global total. Within jewellery, India is the largest consumer of the metal and in recent years China has grown to become a not too distant second. Elsewhere, due to its properties of malleability, ductility, reflectivity, its resistance to corrosion and its thermal and electrical conductivity, gold is extensively used in a variety of industrial and medical applications. Finally, gold is used in decorative applications, in leaf or liquid/paste form.

The overwhelming importance of jewellery to gold fabrication demand and the large portion of the value of the finished product the metal accounts for (in contrast to, for instance, consumer electronics), render gold fabrication particularly sensitive to price fluctuations. This is boosted further by the fact that in some of the most important jewellery markets, jewellery mark-ups (defined as the difference between the price of the item and the price of the raw material contained) are particularly low and the purchase of jewellery serves both adornment and investment purposes. During the bear market of the 1990s, jeweller demand grew by an average of 8 per cent. per annum. In contrast, during the 2000 to 2010, as prices rocketed from the levels of around US\$200/oz during 2000 and 2001 to the recent peak of above US\$1,400/oz, global jewellery demand has trended downwards. The second largest segment of gold fabrication, electronic demand, tends to be less price sensitive, although higher prices have led to efforts to use the metal more efficiently there too. Based on GFMS' expectations that prices will remain strong over the next few years, it believes that negative growth in fabrication demand will likely remain in place.

Due to its predominantly adornment rather than utilitarian uses, the substitution pressures experienced by gold are different in nature from those faced by industrial commodities, such as copper. Gold jewellery faces competition from other types of adornment products as well as other types of discretionary consumption and this has undoubtedly affected consumption over the years. Examples of products and services that have diverted spending away from gold jewellery include silver and non-precious jewellery and accessories, branded or non-branded consumer electronics and even leisure travel.

Supply of gold comes from mine production, which represents the majority of gold supply, as well as, the mobilisation of above-ground stocks. The production of gold involves the extraction of gold bearing ores from either hard rock or alluvial sources. These are then processed, commonly using cyanidation, and smelted at the mine site into a crude gold bearing alloy known as doré. This is then flown to a refinery where it is further refined into bullion. As of 2009, the largest gold producing countries were China, Australia, South Africa, the United States and Russia, together accounting for a little less than half of the global gold mine production. According to GFMS' Gold Survey 2010, Kazakhstan accounted for less than 1 per cent. of the global gold mine production in 2009.

Kazakhmys's gold production provides the company with a by-product revenue stream and is accretive to the economics of the company's operations. At the same time, the impact of Kazakhmys's gold production on the global market is negligible. In 2010 Kazakhmys produced 126.5 koz of gold from its mining operations and anode slimes from own and purchased concentrate. GFMS estimates that this corresponds to 14 per cent. of Kazakh and 0.1 per cent. of global production.

INDUSTRY OVERVIEW

Although the gold mining industry has seen a lot of consolidation during the bull market experienced during the last ten years, it remains relatively fragmented. Output from the ten largest producing companies, for instance, has accounted for less than 40 per cent. of global production in recent years.

The bulk of historical gold production, whether in fabricated end-product form or in bullion stockpiles, is potentially available to the market, given the extremely long-lasting nature of the metal. This supply from above-ground stocks comprises sales from bullion inventories, held by both private individuals and the official sector, and supply from the recycling of old jewellery and other products containing gold. The latter, described as supply from scrap, tends to be price-elastic. Historically, scrap supply has tended to come from regions where jewellery mark-ups are low, such as the Asian and the Middle Eastern countries, although in recent years high prices have seen increased recycling in mature markets.

Following the bear market of the 1990s and early 2000s, prices began to rise in 2002 and have continued to do so until the November peak of US\$1,421/oz (based on the LBMA afternoon fix). The gold price rally has been fuelled by a sharp increase in investor interest. Some of the factors that have made the investor case for gold attractive include the loss of faith by many in fiat currencies, concerns relating to the respective government's fiscal imbalances in major economies, exceptionally low interest rates and the more general growth of commodity investments.

GFMS retains a positive outlook on prices over the next few years based on its expectation that the economic environment will continue to be positive for investments in gold. Its assumptions include the extension of loose monetary policy in most major markets and this implies considerable inflationary pressures. Also, GFMS expects government fiscal imbalances, both in Europe and North America, to remain an issue, further boosting the appeal of gold.

Graph 20: Historical Gold Price



Source: GFMS 2010 Gold Survey

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SILVER MARKET OVERVIEW

Silver is a precious metal with unique anti-bacterial qualities, good corrosion resistance, malleability, ductility, reflectivity and excellent conductivity. Owing to these properties, silver is used in a variety of industrial applications, such as electrical and electronics applications, soldering and brazing and for certain catalysts. Industrial fabrication has commonly accounted for more than 50 per cent. of global demand in recent years. Jewellery and silverware also account for a considerable portion of silver demand. Historically, silver use in photographic applications used to be another major source of demand, but the shift to digital technology has seen this area suffer a gradual demise over the years. Mature economies have traditionally accounted for the bulk of global silver fabrication demand and even in recent years, despite China's growth, Europe, North America and Japan have taken up more than half of global fabrication.

Similarly to gold, silver is primarily traded on an international over-the-counter market and the largest pool of liquidity for silver is also in the London market. A daily benchmark "fix" price is published by the LBMA and is also widely accepted as a reference price. In addition (again, similarly to gold), silver futures are listed on a number of commodity exchanges, including the Comex, Tocom and Shanghai Gold Exchange.

World Silver Supply and Demand

	2005	2006	2007 (tonnes)	2008	2009
Supply					
Mine Production	19,805	19,935	20,665	21,297	22,072
Net Government Sales	2,051	2,433	1,322	858	426
Old Silver Scrap	5,786	5,849	5,654	5,476	5,155
Producer Hedging	859	—	—	—	—
Total Supply	28,501	28,216	27,642	27,631	27,652
Demand					
Fabrication					
Industrial Applications	12,659	13,282	14,187	13,790	10,955
Photography	4,987	4,428	3,881	3,263	2,577
Jewelry	5,406	5,172	5,084	4,922	4,870
Silverware	2,101	1,896	1,816	1,769	1,851
Coins & Medals	1,246	1,237	1,235	2,028	2,447
Total Fabrication	26,398	26,015	26,203	25,773	22,700
Producer De-Hedging	—	211	753	360	694
Implied Net Investment	2,103	1,990	685	1,498	4,258
Total Demand	28,501	28,216	27,642	27,631	27,652
Silver Price (London US\$/oz)	7.3	11.5	13.4	15.0	14.7

Source: GFMS 2010 Silver Survey

Silver fabrication demand over the last decade has been moved by two main forces: the secular rise of industrial applications and silver coin demand, which has been offset by falling photographic and silverware demand. The growth in industrial demand has reflected global industrial production growth whereas increases in coin fabrication relate to growth in silver investment demand. GFMS expects demand to trend upwards going forward, over the next few years.

INDUSTRY OVERVIEW

High precious metal prices have, in broad measure, benefited silver, in terms of substitution in favour of silver. This trend has in fact emerged in the jewellery sector and in western markets, such as the U.S. and the U.K. in particular, where record gold prices have resulted in the retail sector substituting away from carat gold jewellery, in favour of less expensive sterling silver products. In relation to the industrial sector (by far the largest end-use category for silver fabrication) high silver prices have led to only a limited amount of substitution away from silver. To a large extent, this reflects silver's technical properties but also the considerable time required to develop and qualify an alternative technology. High silver prices have, for some areas of industrial demand, created difficulties in terms of companies being unable to finance work-in-progress materials or secure sufficient credit lines. As a result, there has been a broad trend towards just-in-time ordering, given both the higher cost of maintaining finished inventories and the uncertain economic outlook (itself a reflection of the potential for a slowdown in global economic growth in 2011).

In contrast to gold, copper and zinc, the bulk of silver mine production comes as a by-product of other minerals, with less than a third coming from primary silver mines. Silver is mainly produced at lead/zinc, gold and copper mines. The production of silver involves the extraction of silver bearing ores, commonly associated with several other economic metals. Silver can either be recovered as doré when associated with gold, or processed on the mine site into a concentrate when associated with base metals such as copper, lead and zinc. The enriched concentrates are then shipped to a base metal refinery where the metals are separated and the silver smelted into bullion. The biggest silver producing countries are Peru and Mexico, with China and Australia taking the following two places. According to GFMS' World Silver Survey 2010, Kazakhstan accounted for 3 per cent. of global silver mine production in 2009. Similar to gold, supply of silver is not limited to mine production only and scrap recycling commonly accounts for a significant portion of annual supply. Elsewhere, the mobilisation of silver bullion stocks can also contribute to supply. During 2000 to 2010, sales from government stockpiles were a consistent source of supply, while for the most of the decade private stockpiles absorbed material from the market on a net basis.

The share of global silver production accounted for by Kazakhmys's output is significantly higher than its share of global gold production. In 2010, the company's silver production, from its operations, anode slimes and purchased concentrate, amounted to 14.1 Moz, equivalent to 2 per cent. of global silver mine production. Within Kazakhstan, Kazakhmys was the largest producer, accounting for just under 80 per cent. of total output.

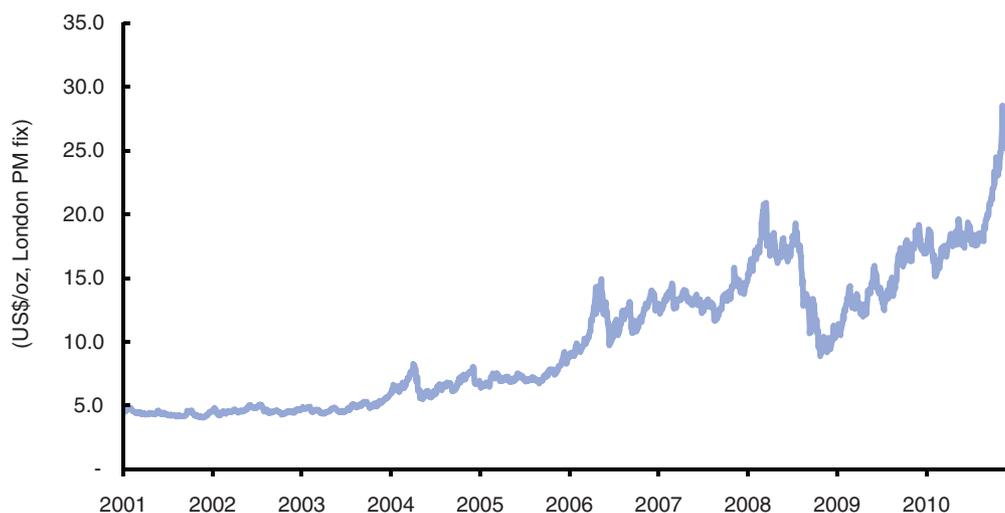
The global silver mining industry is even more fragmented than the gold mining industry. The top-ten largest producers' output has accounted for less than 35 per cent. of the global total in recent years.

The last decade has seen silver prices also stage a remarkable rally, rising from levels just over US\$4/oz in 2001 to a peak just short of US\$30/oz in late 2010. The rally in silver prices has been driven by investor demand, fuelled by factors similar to those discussed earlier for gold, and in part due to the fact that the two metals are often traded together by investors. Elsewhere, silver's appeal to investors has also been boosted by the industrialisation of developing countries, given that silver is primarily used in industrial applications.

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Going forward, given GFMS' positive outlook for gold as well as the industrial metals complex, silver should benefit from both of these trends. Fuelled by the ongoing strength of investment demand, on the back of low interest rates, healthy industrial production growth in developing countries and troubled sovereign debt markets, GFMS envisages prices will be close to recent peaks for 2011 and 2012.

Graph 21: Historical Silver Prices



Source: GEMS 2010 Silver Survey

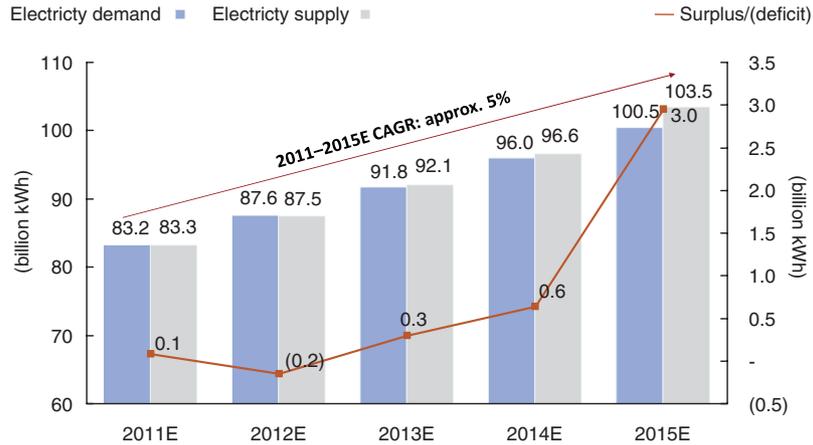
KAZAKHSTAN POWER SECTOR OVERVIEW

Kazakhstan's power generation industry accounts for approximately one-tenth of the country's total industrial output, with an estimated market size of US\$1,016 million in 2008. Robust economic growth since 2000 has helped boost power generation to a peak of 80 billion kilowatt-hours in 2008. With the global economic downturn in 2009, electricity consumption in Kazakhstan decreased to 78 billion kilowatt-hours, down 3.5 per cent. year-on-year. Recovery in demand for electricity in Kazakhstan began in Q3 2009; and in 2010, the total electricity consumption was 83.8 billion kilowatt-hours, up 7.4 per cent. year-on-year.

Historically, energy demand and supply in Kazakhstan has been broadly in balance. However, electricity is required to be imported in southern Kazakhstan as the power generation capacity is concentrated in the northern part of the country and there has been insufficient grid transmission capacity to transfer the excess electricity to southern Kazakhstan. Going forward, the electricity market is expected to remain in balance, with both electricity demand and supply forecast to grow at compound annual growth rate of about 5 per cent. from 2010 to 2015.

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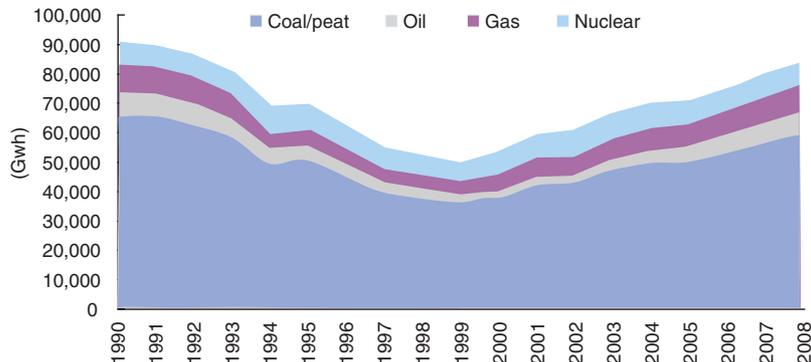
Graph 22: Forecast Kazakhstan electricity demand and supply



Source: KazEnergy (2009)

Based on estimates by the Energy Information Administration, coal constitutes the major source of energy, consistently accounting for more than half of Kazakhstan's energy consumption.

Graph 23: Kazakhstan electricity generation by fuel type



Source: International Energy Agency (2010)

As the majority of the currently installed capacity in Kazakhstan was established during the times of the Soviet Union prior to 1990, the profile of the power generating facilities in Kazakhstan is ageing, therefore requiring further investment to maintain or increase the generating capacity as well as upgrading the infrastructure. In order to meet the rising demand for electricity in Kazakhstan, the Ministry of Energy and Mineral Resources in 2007 proposed the Action Plan for Development of Electric Power Industry of the Republic of Kazakhstan for the period from 2007 to 2015. The plan outlines the facilities that are proposed and anticipated to be constructed, renovated, or expanded by the end of the period to 2015 and also outlines the measures to implement the plan, which include the following:

- Develop the forecast of the energy supply and demand balance for the period from 2007 to 2015;
- Enhance investment attractiveness of the electricity sector;

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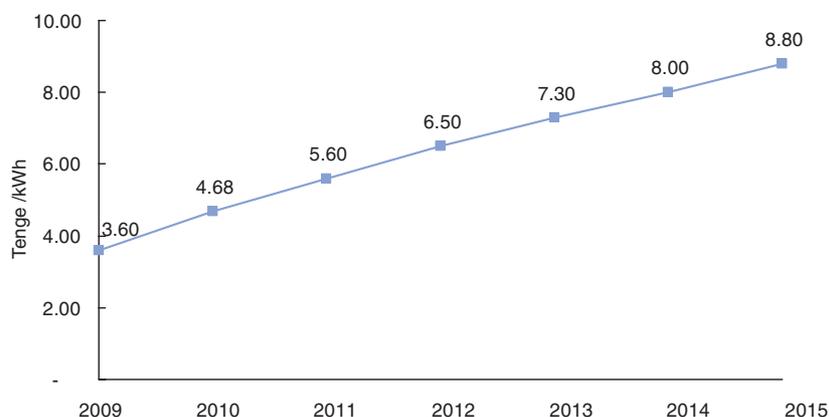
- Estimate the price levels for production, transportation, and supply of electricity;
- Promote energy saving technologies and sustainable energy resources management;
- Develop the use of renewable energy in the country's power balance; and
- Establish the basis for, and identification of the main trends for the nuclear energy development.

The key investment projects aim to enhance overall power capacity and enlarge and upgrade the existing electricity grid and transmission system. The construction of power unit number 3 at Ekibastuz GRES-2 and the Balkhash Thermal Power Station are included in the identified key investment projects. The Action Plan's total forecast investment is US\$21 billion. To further enhance power generation capacity, the Government is planning to continue to undertake large-scale modernisation of the existing facilities and construct new facilities from 2015 to 2030.

The power sector in Kazakhstan is regulated by both the Ministry of Industry and New Technologies and the Natural Monopolies Agency. The wholesale electricity tariffs are regulated by MINT, whilst the retail electricity prices are overseen by the Natural Monopolies Agency.

The intention of the regulation of electricity tariffs is to balance the price increases paid by consumers whilst providing an environment for power generators to earn a return on investment in generating capacity. The Natural Monopolies Agency states that the purpose of the decree is to attract foreign investment by guaranteeing a stable, long-term tariff environment for power companies. For additional information regarding regulation of the power industry in Kazakhstan, see "Laws and Regulations Relating to the Industry—Power Industry Regulation".

Graph 24: Kazakhstan electricity price ceilings for generating group including Ekibastuz



Source: Government of Kazakhstan

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