

Copper North Mining Corp – Copper News –March 19, 2018

Weekly Highlights

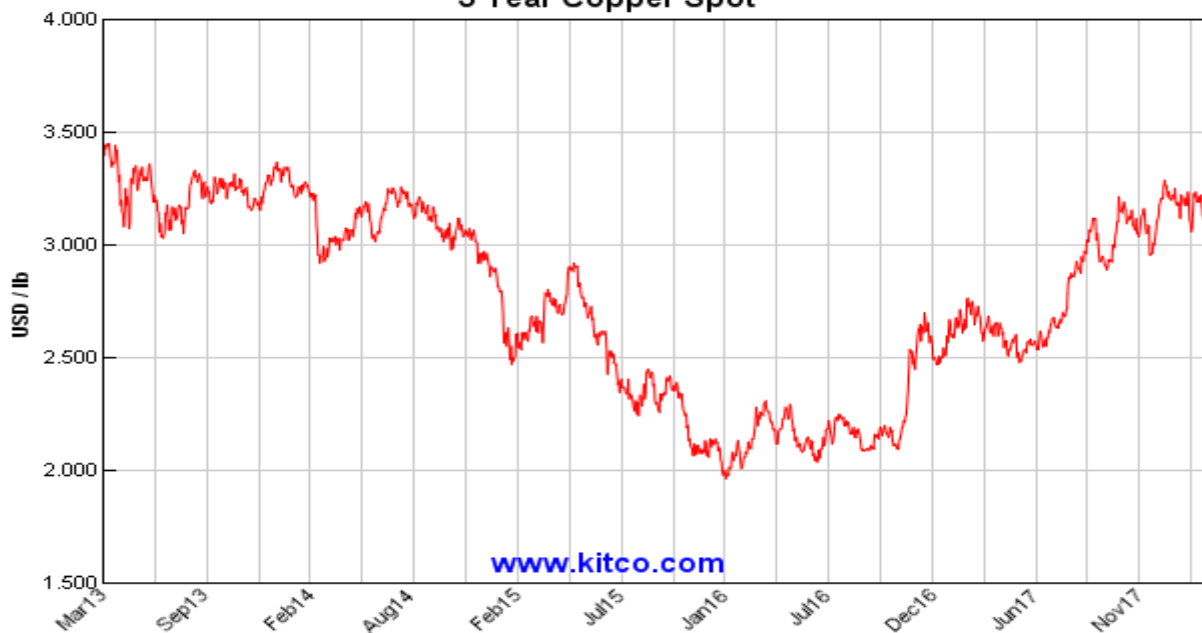
1. Antofagasta outlook for copper prices for 2018 and 2019.
2. BHP and Antofagasta ready themselves for union negotiations.
3. Decline of fees for TC/RC for concentrates upheld through Lunar New Year and demand balance as China refined output increases.

We are sourcing additional information as to supply and demand that may interest our investors. The information is taken from newsletter and other industry databases. Investors should not rely on the information provided in this Copper News; rather, they should seek advice from investment advisors.

20 Year Copper (1998 -2016)

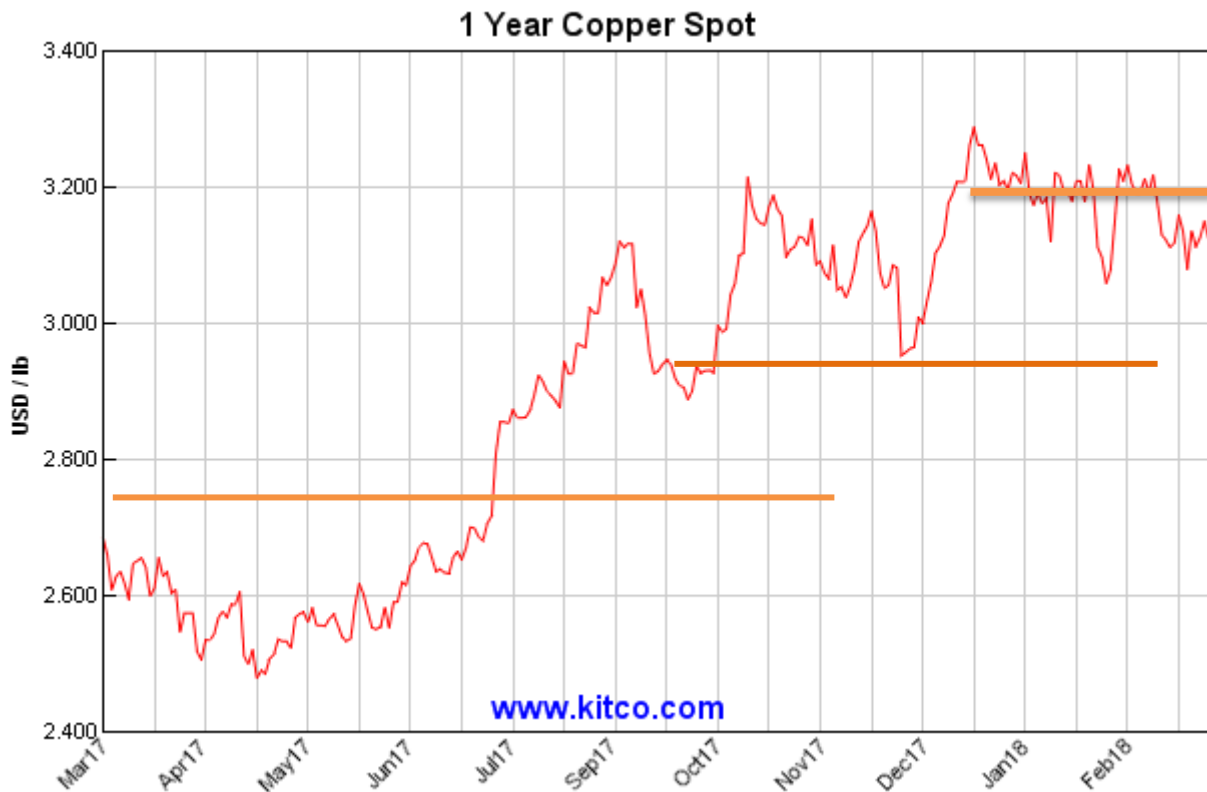
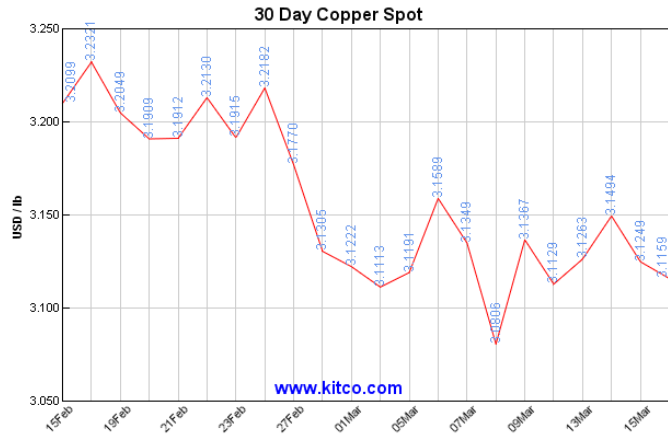
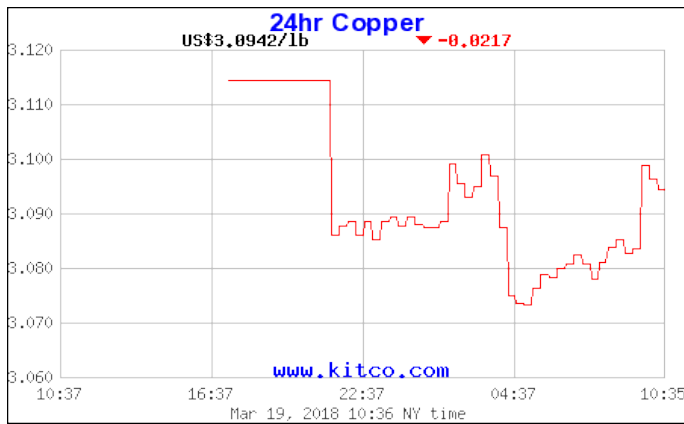


5 Year Copper Spot



Copper breaks 5 year decline trend in October 2016 at US\$2.30. Copper broke the five year down trend in late December 2017 when it reached US\$3.28/lb at year end.

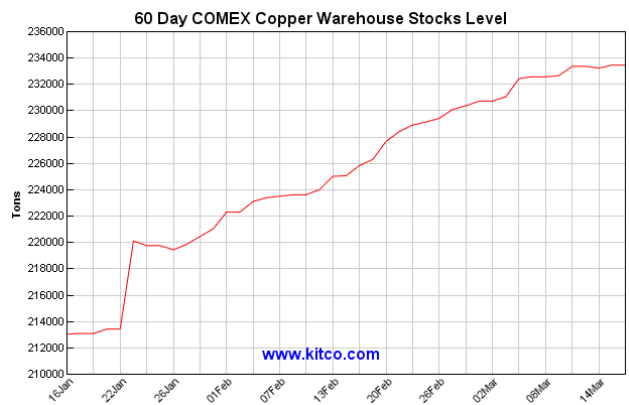
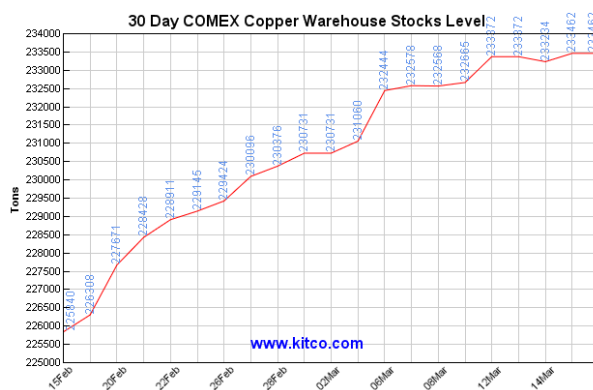
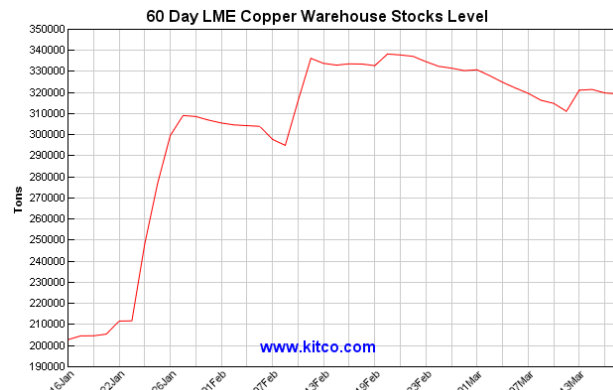
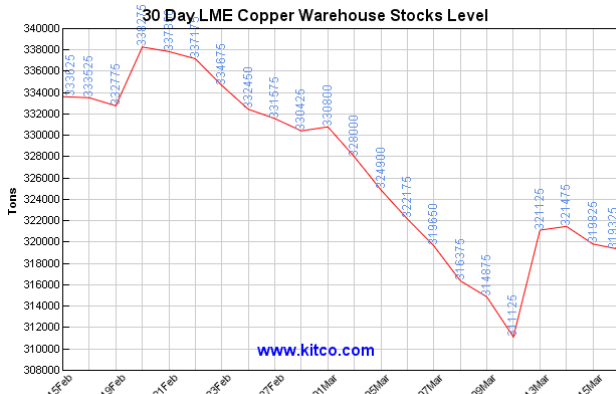
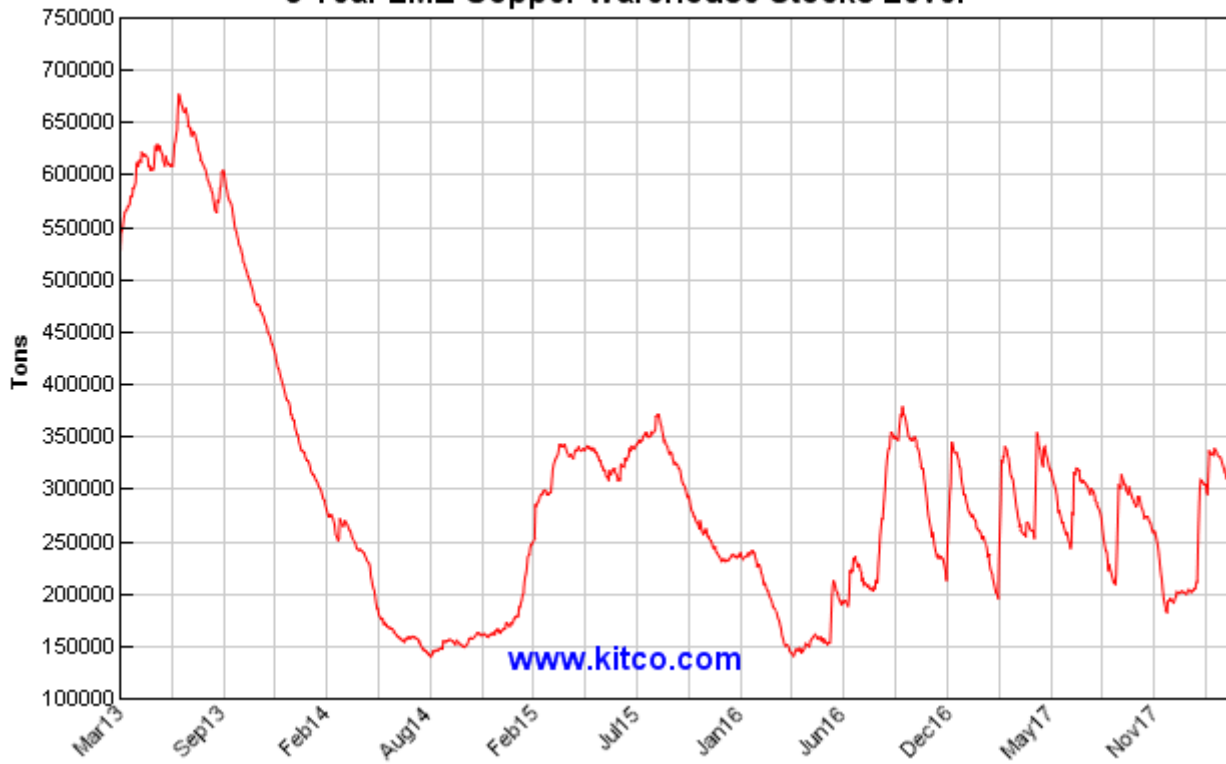
Daily Spot, Six Month and One Year Copper Price and LME and COMEX Copper Inventories



Copper Inventory Adjustments (Note: table does not include private stocks of smelters, governments, etc.)

In the period from June 2014 to April 2016, several falls to 150,000 tonnes and runups to 350,000 tonnes occurred. More recently, inventories in LME warehouses have entered a period of rapid up and down. The ragged decline of LME inventories over the last two years, appear to mark further declines of LME warehouses. News releases are forecasting supply decline globally and is likely to continue in putting upward pressure on copper price.

5 Year LME Copper Warehouse Stocks Level



After LME runup LME declined down to 259,725 tonnes in April until the run up of 94,925 tonnes to 354,650 LME tonnes in early May 2017 before a further decline. The past week LME inventories decreased to 321,450 tonnes; Shanghai inventories increased in commenced in January, and NYMEX inventories rise slowly to 233,462 tonnes.

Weekly Inventories LME, Shanghai and NYMEX Warehouses.

Week Of	LME (65%)	Shanghai (23%)	NYMEX (11.5%)
Mar12, 2018	+10,325 tonnes	+28,899 tonnes	+916 tonnes
Mar 5, 2018	-13,775	+7,808	+1,456
Feb 26, 2018	-7,550	+41,755	+4,331
Feb 19, 2018	-325	+20,773	-2,574
Feb 12, 2018	-3,450	+11,627	+ 2,436
Feb 5, 2018	+31,900	+13,537	+591
Jan 29, 2018	-4,800	+8,289	+3,199
Jan 22, 2018	+97,475	-12,027	+5,460
Jan 15, 2018	+7,525	+8,805	+455
Jan 8, 2018	+275	+6,988	+1,919
Jan 2, 2018	+2,125	+9,952	-328
Dec 27, 2017	+6,400	-1918	+1,921
Dec 18, 2017	+50	-16,016	+515
Dec 4, 2017	+11,625	-10,842	-436
Nov 27, 2017	-34,100	+2,013	+ 45
Nov 14, 2017	-12,450	+17,230	+1,348
Nov 13, 2017	-10,250	+18,198	+1,464
Nov 3, 2017	-2,225	+19,381	-583

Production cut-backs, decline of mine head grades, reduced treatment and refining charges, and falling inventories, all suggest copper supply shortfalls in the making? Volatility largely reflects exchange rate fluctuation, hedge positions, and country supply risk.

HM Visagie Daily Notes (Clips)

March 19, 2018

- According to MB, Cu smelters in China and elsewhere have returned to the spot market for large tonnages, lowering their bids from more than \$80 /dmt/\$0.08/lb Cu to settle deals in the mid-\$70/\$0.07 range. Meanwhile, traders locked in Q218 parcels at prices in the mid-\$60/\$0.06 range, although Cu concentrates are being priced lower for H218 because of uncertainty about supplies. The MB Cu concentrates index on Mar1518 was \$68.60 /dmt/\$6.86/lb Cu. This was only \$0.20 /dmt/\$0.02/lb Cu lower than two weeks ago.
- China's refined Cu output stood at 1.48 M t in 2M18, up 7.4% yoy, according to NBS customs data. Iron ore production during the two-month period amounted to 123.46 M t, down 2.5% yoy; Pb production stood at 845,000 t, up 16.1% yoy; and Zn output was 957,000 t, up 2.5% yoy.
- China is the biggest consumer of Cu, accounting for around 50% of the global demand for the metal. Although Chinese imports of the metal declined slightly in Feb18 on a monthly basis, it rose on a yoy basis. In the first two months of 2018, China's unwrought Cu imports increased 10.4% from the same period last year. Moreover, Cu concentrate imports rose 14.5% yoy.

March 15, 2018

- **BHP's** Escondida Cu mine in Chile, the world's largest, said on Wednesday that it has invited its powerful workers' union to start early talks on a new collective labor contract. Last year, a more than month-long strike at Escondida ended with workers opting to extend their previous contract through Jul3117 instead of replacing it.
- Spot treatment and refining charges for imported Cu concentrates for Chinese smelters rose to \$70-\$81/t and 7-8.1 cents/lb last week, up \$1.50/t and \$0.15 cents/lb respectively from the week before, Chinese industry sources said Wednesday. Although some Chinese smelters needed to replenish concentrate stocks after the Lunar New Year holiday, the major smelters did not, as the current fees were less than their target of more than \$80/t, it added.

March 14, 2018

- **First Quantum Minerals Ltd. (FM.T)** reported that the Cobre Panama project is currently experiencing industrial action which has reduced the level of work being performed on the project. This action was started by a small number of personnel and their outside union leadership on Mar0918. The dominant union, which represents the majority of workers, is not involved in the action. Currently, development activity is continuing in two of the four main construction areas. Further updates will be provided as warranted.

March 13, 2018

- **Antofagasta (ANTO.L)** reported a sharp rise in full-year earnings on Tuesday thanks to higher Cu prices and said it would raise its dividend by 177%. Its 2017 EBITDA rose 59% to \$2.6 B, and ANTO raised its annual dividend to 50.9 cents/sh. Highlights include;
 - ANTO expected the global Cu market to tighten and warned that rising Cu prices could stoke labour unrest in the region and disrupt supply. Benchmark Cu on the LME jumped 31% in 2017 to a 4-year high in late December, partly driven by concerns that labour disputes this year could curb mine output.
 - ANTO estimates its Cu production would rise to between 705,000-740,000 t this year from 704,300 t in 2017, in line with previous guidance, while net cash costs would increase to \$1.35/lb from \$1.25 in 2017.Antofagasta said. "The Cu market is expected to tighten in H218 and to be in balance or in a slight deficit for the full year. From 2019 the likelihood of the market being in deficit is expected to increase. With the backdrop of stronger Cu prices, employee expectations may be raised which could result in some supply disruptions in the region."

March 12, 2018

Hurdles To Develop Mines Could Exacerbate Cu Deficit

- The Cu market has for years experienced declining ore grades at major mines, and this combined with consistent demand growth could lead to deficits in the coming years, according to analysts at Goldman Sachs, who see prices reaching \$8,000 /t this year.
- A predicted deficit in the Cu concentrates market could be exacerbated, with mining companies facing ever greater hurdles to bring new projects on stream, according to panelists at the MB Cu Conference. Mining companies are finding it more difficult to bring projects through from exploration to commercial production. Modern projects need to pay closer attention to community liaison and water availability at a time of increasing scarcity.
- Codelco Commercial VP Rodrigo Toro said, "To build a large volume project from the outset until production is at least ten years, so the capacity today for the mining industry to react to increased demand is not as it was before."
- Mining development permits for projects in Australia that used to take 18 months to obtain, now take around four to five years, according to Deloitte partner Tim Briggs. Briggs said, "These requirements are good for the world in general, but for miners it has meant that the go/no-go factor is so much bigger. It takes so much longer so the obvious consequence is that many [Cu mines] are not being made."
- Cu mining companies are slowly coming back to the idea of raising capital expenditure after Cu prices dropped below \$2/lb [\$4,400 /t] as recently as Jan16. Current Cu prices are \$3.10/lb Cu. Mining companies have had their hands burned on large-scale investments in recent years, heightening the reluctance to make similar investments. This week executives from companies such as Glencore, Randgold Resources and Ivanhoe are in the DRC attempting to dissuade the country from bringing in higher taxes on raw material mining.

- Unionized workers at **Antofagasta's (ANTO.L)** Los Pelambres Copper mine in Chile voted to strike Friday after rejecting ANTO's latest offer for a collective labour agreement. The stoppage will be the first strike ever to hit Antofagasta. Los Pelambres recently received environmental approval for a \$1.1 B expansion plan, which will add 55,000 t of Cu a year once in full operation. The mine produced 356,300 t Cu in 2017.
- DRC President Joseph Kabila signed into law on Friday a new mining code that raises royalties and taxes on operators. The law, passed by parliament in late Jan18, replaces an earlier code from 2002. It raises royalties on minerals across the board and removes a clause that protected miners from changes to the fiscal and customs regime for 10 years. Royalties on Co, a vital component in electric car batteries, could increase fivefold to 10% if the government designates the metal a "strategic substance". The law also introduces a windfall profits tax.
- Executives from **Glencore, Randgold, China Molybdenum and Ivanhoe** failed to convince Kabila during a 6-hour meeting on Wednesday to re-open negotiations over the code, which they say will deter investment and violate existing agreements. The two sides agreed, however, to open negotiations next week over measures to implement the code, and Mines Minister Martin Kabwelulu said the companies' concerns would be considered on a case-by-case basis.

March 9, 2018

- **Codelco** has received environmental approval this week to build a \$1 B desalination plant to supply water to its operations in the country's northern region. The go-ahead from the Antofagasta region's environmental regulator will allow the company to expand its Radomiro Tomic mine and advance with an ambitious investment plan in its water-intensive mining operations in one of the driest deserts in the world. The plant would be the second-largest desalination plant in Chile, behind the one supplying BHP's Escondida Cu mine, the largest in the world. Chile is the world's No. 1 Cu exporter.

March 8, 2018

- China's imports of Cu fell 20% in Feb18 from Jan18. The GAC reported that imports of anode, refined, alloy and semi-finished Cu products were 352,000 t down from 440,000 t in Jan18 but up from 340,000 t in Feb17. China's Feb18 Cu concentrate imports came in at 1.45 M t, down from 1.62 M t in Jan18 and 1.43 M t in Feb17.

March 1, 2018:

- The Metal Bulletin Cu concentrate TC/RC index dropped to \$68.80 /dmt /6.88 cents/lb Cu from \$69.50/6.95 cents a fortnight ago. Deals to Chinese market were reported as smelters there returned from the Lunar New Year holidays, but by and large the market remained quiet.

Feb 26, 2018

- China's imports of Cu, Ni and Zn grew strongly in Jan18. Cu imports rose 13% to 314,525 t, refined Ni imports doubled to 26,691 t and refined Zn imports surged 287% to 67,111 t.
- China will make manufacturers of electric vehicles (EV) responsible for setting up facilities to collect and recycle spent batteries, as part of its efforts to tackle mounting waste in the sector, say new rules published on Monday. China, which began promoting electric cars in 2009, aims to become a dominant global producer as it bids to curb vehicle emissions, boost energy security and promote high-tech industries. But with Li battery production already up by half in 2017 and waste set to hit as much as 170,000 t in 2018, the government is racing to improve its recycling capabilities and stamp out what could become a growing source of pollution.
- **Glencore (GLEN.L)** expects global supply challenges amid growing electric vehicle (EV) demand because of ageing mine infrastructure and a lack of prospective new projects. GLEN expects a structural shift in demand, away from infrastructure development in markets as EV adoption "is forecast to unlock new sources of demand for the enabling underlying commodities including Cu, Ni and Co." A study commissioned by GLEN that considered the possibility of 30% of the world's vehicles being electric by 2030 found that an additional annual demand of 4.1 M t Cu, 1.1 M t Ni and 314,000 t Co supply would be required.

Refined Copper Market Surplus Declined Modestly in 2017

- The World Bureau of Metal Statistics (WBMS) indicates that the worldwide Cu market ended in marginal surplus during 2017. The global Cu market recorded marginal surplus of 58,000 t during 2017 down from a surplus of 141,000 t in 2016.
- The world Cu mine production during 2017 totaled 20.66 M t, modestly higher by 6.9% from the 19.3 M t in 2016.
- The global refined production edged higher marginally by 2.1% over the previous year to total 23.46 M t. This was mainly on the back of production gains in China. The Chinese refined output surged higher by 476 kt. Also, refined output by Spain was up marginally by 14 kt. On the other hand, Chilean output dropped during the year.
- The global Cu demand during 2017 totaled 23.40 M t, slightly higher when compared with 22.83 M t during 2016. The Chinese apparent consumption rose by 289 kt to total 11.642 M t. China continued to remain as the world's largest Cu consumer, accounting for just under 50% of the world-wide demand during the previous year. Also, EU-28 apparent consumption recorded marginal increase by 3.2% to total 3.443 kt when compared with the 2016 levels.

According to the WBMS report, reported stocks of the metal rose slightly during Dec17 to close at around 59.1 kt higher than Dec16 levels.

Chinese Customs - Import and Export Data for Base Metals in Jan18 (unit: t)

	Jan.	YoY (%)
Imports:		
Refined Copper	314,525	13.04

Feb 23, 2018

- Record high stocks of Cu in land-locked Arizona and Utah are a reflection of soaring transport costs in the United States and weak demand for the industrial metal produced in the Americas, Cu industry sources say. Trading sources added that stocks in these two locations are likely to keep rising until prices are high enough to offset costs of transporting the Cu.

Feb 22, 2018

- **Southern Copper Corporation (SCCO.N)** has won the public bidding process for the Michiquillay project in Cajamarca, Peru, as announced by ProInversion, the government's investment agency. Michiquillay is indisputably a world-class mining project: with Resources of 1,150 M t and a Cu grade of 0.63%, and is planned to produce 225,000 t/y Cu (along with such by-products as molybdenum, Au and Ag) for an initial mine life of more than

25 years, at a very competitive cash-cost. The estimated capital investment hovers around \$2.5 B. Michiquillay will start production in 2025 to become one of the largest Cu mines in Peru.

Feb 21, 2018

- **Southern Copper Corp (SCCO.N)** won a tender to develop Peru's Michiquillay Cu mine with a proposal to transfer \$400 M to the government and pay 3% royalties. SCCO beat out local miner Compania Minera Milpo SAA, which proposed a \$250 M transfer with royalties of 1.875%. Ten companies had delivered pre-registration documents for the tender, but only SCCO and Milpo presented bids.
- **Zambian Cu output** increased by 1.6% to 786,731 t last year, the central bank said on Wednesday. "We are expecting to have a further increase in 2018 due to improved power supply," Bank of Zambia Director of Economics Francis Chipimo told reporters.

Feb 20, 2018

- Peru will accept bids and award a contract to develop the estimated \$2 B Michiquillay Cu mine on Tuesday in the first major auction from the world's No. 2 Cu producer in at least a decade. The auction was delayed twice last year, in part due to political turmoil in Peru. The bids will be a gauge of investor confidence in President Pedro Pablo Kuczynski, a former Wall Street banker who was nearly impeached in December. Peru has seen private investment fall as companies steer away from infrastructure projects due to corruption investigations. The country plans to tender some 15 projects that would cost up to \$10.35 B in 2018, according to Proinversion.

Feb 15, 2018

- **Antofagasta (ANTO.L)** received environmental approval for a major \$1.1 B revamp of its Los Pelambres Cu mine, the regional government of Coquimbo said on Wednesday. The three-stage infrastructure upgrade, unveiled in 2016, seeks to maintain the mine's Cu output at approximately 400,000 t of Cu annually. The project includes a desalination plant at its port facility in Los Vilos, and new ore mills and related infrastructure at the mine itself. ANTO requires additional permits and final approval from its Board before it can start work. Los Pelambres produced 343,800 t Cu in 2017.
- Indonesia is 'still evaluating' a proposed extension of Cu concentrate exports by local unit of **Freeport McMoRan Inc (FCX.N)**, a mining ministry official said on Thursday. FCX's current export permit is due to expire on Feb 16 2018. Any delay in approval unlikely to impact shipments from FCX's Grasberg mine, Coal and Minerals Director General Bambang Gatot told reporters on Thursday.

Feb 13, 2018

- Spot TC/RCs for imported Cu concentrate for Chinese smelters were at \$73-83/t and 7.3-8.3 cents/lb last week--down from \$74-86/t and 7.4-8.6 cents/lb in the preceding week, as trading picked up, industry sources said Monday.
- China's mined Cu demand in 2018 is forecast at 6.15 M t--up 6% from 2017, data from state-owned metals consultancy Beijing Antaika showed. The country's imports of mined Cu (25% metal contained in ore and concentrates) are forecast to rise to 4.8 M t in 2018--up 6.7% from last year, while domestic mined output is seen at 1.72 M t this year--up 4.2% from 2017. China is forecast to have a mined Cu surplus of 370,000 t in 2018, compared with a surplus of 350,000 t last year, Antaika data showed.

Feb 9, 2018

- Cu bulls who are betting on labour strife this year due to a full calendar of contract talks may be disappointed if early wage deals at 2 Cu mines (Andina and Lomas Bayas) are a signpost for further agreements with mine workers. Benchmark Cu prices rallied 12% in December, partly due to fear of shortages if workers go on strike since many major operations in top producers Chile and Peru have contracts expiring this year, including at top mine Escondida.

Feb 8, 2018

- In Jan 18, China imported 443,000 t of unwrought Cu and Cu-fabricated products, up 16.1% from Jan 17. However, this was down from 450,000 t in Dec 17, marking a decline for 2 consecutive months. This is due to limited construction activities in the winter season as well as a high output rate at home. China imported 1.62 M t Cu concentrates in Jan 18, up 24.9% yoy. This compared with 1.65 M t recorded in Dec 17.

Feb 7, 2018

- DRC's Cu production, Africa's top producer, rose 6.9% in 2017 to 1.09 M t, while output of Co surged 15.5% to 73,940 t. Au production rose 2.7% to 23,270 kg.

Feb 2, 2018

- The environment for investing in commodities is the best since 2004-2008, Goldman Sachs said on Thursday, saying it expects returns of 15% over the next six months and of 10% over the next year. Less supply, more demand and lower-than-expected commodity inventories should help prices trend higher until later this year, Goldman said, as it maintained its "overweight" recommendation on commodities.
- Goldman sees Cu enjoying double digit gains to top \$8,000/ t (\$3.63/lb) over the next 12 months. For Cu that constitutes a 12% jump from today's price. The last time Cu traded at \$8,000 was at the beginning of 2013. The forecast establishes Goldman as one of the most bullish Wall Street banks. Citigroup sees Cu averaging \$7,125/t this year and Deutsche Bank at \$7,175, according to data compiled by Bloomberg.
- The powerful union at **BHP's** Escondida Cu mine, the world's largest, on Wednesday cast doubt on chances of starting talks on a new labor agreement with the company before formal negotiations scheduled for Jun18. The 2,500-member Union 1, which held a strike for 43 days last year and cost BHP Billiton an estimated \$1 B, also questioned in a letter to members the legal rights of a newly formed competing union at the mine.

Jan 29, 2018

- Zambia's Cu production has hit 850,000 t, representing an increase of 100,000 in last year's output. According to the CSO bulletin for Dec17, Zambia exported and produced about 852,608.7 from 774,000 t recorded in 2016.
- SMM's assessment of imported Cu concentrate TCs stood at \$74-86/t as of Jan2618, down \$1/t from a week ago. We expect spot TCs to remain stable at the \$80/t level ahead of Chinese New Year (Feb1618) with sluggish trading activity as smelters have mostly finished their restocking.

Jan 26, 2018

- In 2017, China imported 3.2 M t Cu Metal--down 10.6% on 2016; 798,845 t Cu Anodes--up 13% on 2016; 65,485 t Cu Alloy--up 13% on 2016; 3,557,160 t Cu Scrap--up 6.24% on 2016; and 17,349,646 t Cu Concentrate--up 2.31% on 2016.
- China on Friday outlined its ambitions to extend President Xi Jinping's signature Belt and Road Initiative to the Arctic by developing shipping lanes opened up by global warming. Releasing its first official Arctic policy white paper, China said it would encourage enterprises to build infrastructure and conduct commercial trial voyages, paving the way for Arctic shipping routes that would form a 'Polar Silk Road'. China's Belt and Road initiative aims to connect China to Europe, the Middle East and beyond via massive infrastructure projects across dozens of countries, reflecting Xi's desire for China to take on a more prominent global leadership role.
- **Freeport-McMoRan Inc. (FCX.N)** is closer to a permit deal with Indonesia for its massive Grasberg mine, but FCX cautioned that it has not yet struck any formal agreements. There has been little sign of progress since last Aug17, when FCX promised to divest a 51% stake in Grasberg, the world's second-biggest copper mine, to the Indonesian government, in exchange for long-term operating rights. Grasberg produced 1 B t Cu in 2017.

Jan 23, 2018

- China's imports of scrap Cu fell 19.8% in Dec17 from Dec16, customs data showed on Tuesday, as the country continues a clampdown on taking foreign waste. The world's top Cu consumer imported 260,000 t of Cu scrap last month, which was also down 4.1% from 271,000 t in Nov17. Imports for 2017 were 3.56 M t--up 6.2% from 2016.

Jan 19, 2018

- Cu prices are expected to rise, overall, in 2018 despite current declines. This is in line with expectations from financial institutes such as Deutsche Bank, Société Générale and the Chilean state Cu commission, Cochilco. All three have raised their price expectations in anticipation of tighter supply. SMM believes that, as investors cash out at year-end, downstream demand is likely to rebound as prices dip.

Jan 17, 2018

- Chile's state Cu commission, Cochilco, on Wednesday raised its estimated 2018 average price for Cu to \$3.06/lb from its previous forecast of \$2.95/lb, pointing to the potential for global supply disruptions in the coming year. Cochilco Vice President Sergio Hernandez cited a "perception of vulnerability" that he attributed to the large number of anticipated labor negotiations in Chile, the world's top Cu producer, and in neighboring Peru.
- **Turquoise Hill Resources (TRQ.T)** said that Oyu Tolgoi, a Cu and Au mine in the southern Gobi Desert, has declared force majeure in connection with customer contracts for concentrate due to a protest by Chinese coal

transporters in the Ganqimaodu Border Zone. Protesters used vehicles to obstruct the main access road in China leading to the Chinese-Mongolian border, resulting in Oyu Tolgoi convoys being unable to deliver concentrates to customers.

Jan 10, 2018

- Chile's state-run **Codelco**, the world's largest Cu producer, presented on Tuesday a \$250 M plan to move its Andina mine away from glaciers. Codelco said in a statement the changes, which will take 36 months to implement once an EIS is improved, would not change expected output or the mine's lifespan.
- **Mongolian Copper Corporation (MCC)** will fight a decision by the Mongolian government to repurchase its stake in one of Asia's biggest Cu mines for about \$400 M after a failed attempt to nationalize it. On Tuesday, the government passed a resolution to buy the 49% holding, giving Mongolia full state control of the Erdenet mine, following a ruling by the country's Supreme Court in Dec17 against the nationalization decided by parliament in Feb17.

Jan 5, 2018

- Cu concentrate treatment charges (TCs) have come down to \$76-85/t over the past week, below the floor price at \$87/t set by China Smelters Purchase Team (CSPT) for Q118. SMM understood that most transactions were done by small to medium-sized smelters with sellers giving pressure to buyers. SMM believes the lower TCs were due to lower 2018 benchmark and better confidence among traders. In addition, smaller smelters did not stock up enough Cu concentrate before the New Year. Larger ones did much of their restocking in Sep17 and Oct17 when TCs were higher and some have stocks that can last them until end of Feb18.
- Labor negotiations at several of the world's leading Cu mines will increase supply risk in 2018 and could provide support to prices, market analysts said. More than 30 labor contracts are due to be renegotiated next year - the largest number since 2010. This means that nearly 40% of global Cu production - or more than 7 M t - could be subject to disruption due to industrial action next year, according to Barclays.

Dec 29, 2017 **Summary**

ICSG Estimates Decline In Cu Mine Production

- ICSG for 9M17 estimated that global Cu mine production declined by around 2.5%, with concentrate production declining by 1.7% and SX-EW declining by around 5%.
 - The decline in global Cu mine production was mainly due to a 4% decline in production in Chile due to a strike at the Escondida mine and lower output from Codelco's mines.
 - There was a decline in Argentina, Canada and Mongolia concentrates production of 52%, 18% and 18%, respectively, mainly due to lower grades in planned mining sequencing and Argentina's Alumbrera mine approaching end of life.
 - A 18% decline in Indonesian concentrate production as output was constrained by a temporary ban on concentrate exports that started in January and ended in April.
 - A 11% decline in production in the United States mainly due to lower ore grades, reduced mining rates and unfavorable weather conditions at the beginning of the year.
 - The reductions in output were partially offset by 34% and 4% increases in Kazakhstan and Peruvian concentrate output, respectively, with both countries benefitting from new and expanded capacity that was not yet fully available in 9M16.
 - Brazil, Mexico, Myanmar, Spain and Sweden also contributed to world growth.

On a regional basis, mine production is estimated to have declined in Africa by 1.5%, in the Americas by 3.5%, in Asia by 2% and in Oceania by 2% while increasing in Europe (including Russia) by 2.5%.

- Chile state Cu commission Cochilco forecasts Chilean Cu production will increase 13.9% or 771,000 t over 2016 levels to 6.32 M t Cu by 2028. Cochilco based its projection on the state of current and anticipated mining investments in the world's top Cu producer, which it said would counter a drop in ore grades and the exhaustion of existing mines.

Dec 28, 2017

- China will extend a tax rebate on purchases of so-called new-energy vehicles (NEV) until the end of 2020, a boost for hybrid and electric car makers amid a shift by policy-makers away from the traditional internal combustion engine. China's auto market, the world's largest, has slowed sharply this year, but new-energy vehicles has been a bright spot. NEV sales in 11M17 jumped 51.4% and are on track to hit a target of 700,000 NEV sales this year.

Dec 27, 2017 - Outlook

- Chinese customs data released on Tuesday showed that the country's refined Cu imports leapt 19 % in Nov17 from a year earlier.
- London Cu rose to its highest in nearly 3 ½ years on expectations of stronger demand from top consumer China in 2018.
- China's industrial output is likely to grow around 6% in 2018, the country's industry ministry said on Monday. The nation's industrial output is also expected to rise about 6.5% in 2017, which would be the first gain in the growth rate since 2010, the Ministry of Industry and Information Technology said.
- **Pan Pacific Copper (PPC)**, Japan's biggest copper smelter, expects Cu prices to rise more than a quarter over the next 2 years as global demand continues to grow and outpaces supply, its senior executive said on Monday. Pan Pacific expects Cu prices to average \$7,280/t in 2018 and \$7,720/t in 2019, against \$6,100/t this year, EO Satoshi Arai, told a news conference.
- SMM forecast the global nickel market to remain in a deficit in 2018 with 50,000 t of shortage. Prices wise, SMM expect LME nickel to average at \$11,000-11,500/t next year with a trading range of \$9,000-14,500/t.
- **Bougainville Copper Ltd (BSL.ASX)** shares fell on Wednesday following a report that the government of the Pacific island of Bougainville plans to impose a moratorium on mining or exploration at Panguna, once one of the world's biggest copper mines. BSL has been working to restart the mine, which was shut by a civil war in 1989.
- China's leading Cu smelter Tongling Nonferrous Metals Group has agreed with **Freeport-McMoRan Inc (FCX.N)** for TC/RCs at \$82.25 /t and \$0.08225/lb as the 2018 benchmark according to sources. The terms are 11% lower than the 2017 annual benchmarks of \$92.50 /t and \$0.092/lb.

Dec 18, 2017

- In 11M17, China's smelters produced 8.1 M t Cu (up 6.8%), 4.52 M t Pb (up 4.9%), and 5.65 M t Zn (down 1.3%). Iron ore production was 1.16 B t (up 6.5%).

Dec 15, 2017

- **Jiangxi Cu Corp** said that China is expected to add 400,000 t of mined Cu to demand in 2018 with the support of commissioning of new Cu smelting projects next year. China was forecast to put into use a total of 2.5 M t/y new blister Cu output capacity over 2017-20, with an estimated 440,000 t/y year blister Cu capacity to be commissioned in 2018. Some of the blister capacity might be commissioned in H218, thus delaying demand for concentrate. Chinese demand for Cu concentrate was expected to rise further in 2019.
- China's mined Cu output growth could not meet all smelters' needs, with an estimated of just 80,000 t new mined Cu output in China in 2018, so pressuring down treatment and refining charges. It said the negative impact on TC/RCs was expected by H218.

Dec 14, 2017

- Cu production in Chile rose 15.1% YOY to 510,400 t in Oct17, the highest monthly rate since Dec16, state Cu commission Cochilco said in its latest monthly report. Compared sequentially, Cu was 7.1% higher from the 476,500 t seen in Oct17. Output for the first 10 months of the year was down 2.1% to 4.47 M t

- In 2018, **Rio Tinto (RIO.L)** expects to produce 510,000-610,000 t Cu and 225,000-265,000 t refined Cu, the Company said on Thursday. RIO expects to produce between 460,000-480,000 t Cu in 2017 and 185,000 to 225,000 t refined Cu.
- Zambia's 2017 Cu output is expected to increase to between 800,000-850,000 t from 774,290 t in last year, mines minister Christopher Yaluma on Thursday. Zambia's Cu production is next year likely to increase further to reach 1 M t, Yaluma said, citing improved power generation and higher prices.

Dec 08, 2017

- China's unwrought Cu imports rose by more than 40% in Nov17 from Oct17, in a sign that winter production restrictions at the world's top Cu consuming country are driving up shipments of overseas metal. Arrivals of unwrought Cu, which includes anode, refined, and semi-finished Cu products stood at 470,000 t last month, the GAC said Friday, the highest level since Dec16.

Nov 23, 2017

- **Codelco** may see a boost in investment cash regardless of who wins next month's presidential runoff in Chile, as both candidates have vowed to end the state-run firm's funding of the military. Conservative front-runner Sebastian Pinera and his center-left rival Alejandro Guillier, set to face off in the Dec1717 vote, have both pledged to overturn the dictatorship-era law that transfers to the military 10% of Codelco's export sales, worth \$866 M last year.
- Workers for the 2 largest unions at **Southern Copper Corp (SCCO.N)** in Peru said on Wednesday they had started an indefinite strike, demanding a fair share of mining profits, while the Company said the stoppage had not affected operations. The unions, which together comprise more than 3,000 members, said workers at the Company's Cuajone and Toquepala mines and Ilo refinery in southern Peru laid down their tools on Tuesday.

Nov 2, 2017

- President of operations at BHP's Minerals Americas, Danny Malchuk, said, exploration not acquisition is the best way for BHP to meet any rise in Cu demand from electric vehicles. The Cu sector faces huge challenges as the ore quality in existing mines deteriorates, while electric vehicles will require high volumes of the metal.
- BHP estimates that electric cars add up to roughly 1 M, out of a global vehicle fleet of close to 1.1 B. BHP believes that figure could rise to 140 M electric vehicles, or 8% of the global fleet, by 2035
- Peru aims to simplify mining permits to attract new investment while high metals prices are expected to help spur \$10 B of new mining projects next year, Mining Minister Cayetana Aljovin said on Wednesday. Aljovin said some of the

Oct 19, 2017 (Electrics)

- China's electric vehicle (EV) production could touch 1 M units next year and 3 M units by 2020, said Xu Heyi, Chairman of carmaker BAIC Group, on Wednesday, likely exceeding a government-set target.
- Chile State Cu commission Cochilco forecasted on Wednesday an average global Cu price of \$2.95/lb in 2018, a sharp upward revision from its mid-year estimate of \$2.68/lb, due to greater demand in China. For 2017, Cochilco predicted an average Cu price of \$2.77/lb, markedly higher than its previous estimate of \$2.64/lb.
- A considerable amount of motive batteries will be scrapped in China by the year 2020. The volume of motive batteries to be scrapped will exceed 248,000 t by 2020--20-fold of those in 2016. How to recycle such a large amount of scrapped batteries will become an important problem.
- The year of 2017 looks set to be the "tipping point" for electric vehicles, Arnoud Balhuizen, CCO at BHP, said on Tuesday. The impact will be felt strongly in Cu market, and its supply will fall short of demand as no new big Cu mines have been discovered in the last 20 years. The impact, however, may have been underestimated by the market, Arnoud Balhuizen said, as fully electric cars need 4 times as much Cu as cars powered by combustion engines.
- China imported 254,672 t of Cu cathode in Aug17--up 9.77% on a YOY, according to China Customs. The imports for 8M17 totaled 2,081,683 t--down 18.68% YOY. In Aug17, China exported 31,468 t of Cu cathode--down 45.04% YOY, and the exports for 8M17 were off 35.15% YoY to 217,565 t.

Thomson Reuters Production of top 10 countries and producers (4 companies gained and 6 lost)!

TOP-10 COPPER PRODUCING COUNTRIES

Rank			Production (000 t)	
	2014	2015	2014	2015
1	1	Chile	5,750	5,764
2	2	China	1,694	1,659
4	3	Peru	1,339	1,654
3	4	United States	1,391	1,408
5	5	Australia	969	960
6	6	DR Congo	915	918
7	7	Russia	740	741
9	8	Zambia	693	705
8	9	Canada	694	690
13	10	Indonesia	379	587

Source: GFMS, Thomson Reuters

TOP-10 COPPER MINE PRODUCERS*

Rank			Production (000 t)	
	2014	2015	Company	2014
1	1	Codelco	1,839	1,893
2	2	Freeport-McMoRan	1,470	1,547
3	3	Glencore	1,296	1,259
4	4	BHP Billiton	1,203	1,178
5	5	Southern Copper	665	745
7	6	KGHM Polska Miedz	506	562
6	7	Rio Tinto PLC	636	555
8	8	Anglo American	504	472
9	9	Antofagasta	455	400
10	10	First Quantum Minerals	380	366

*Attributable basis – totals may differ from company reports

Source: GFMS, Thomson Reuters

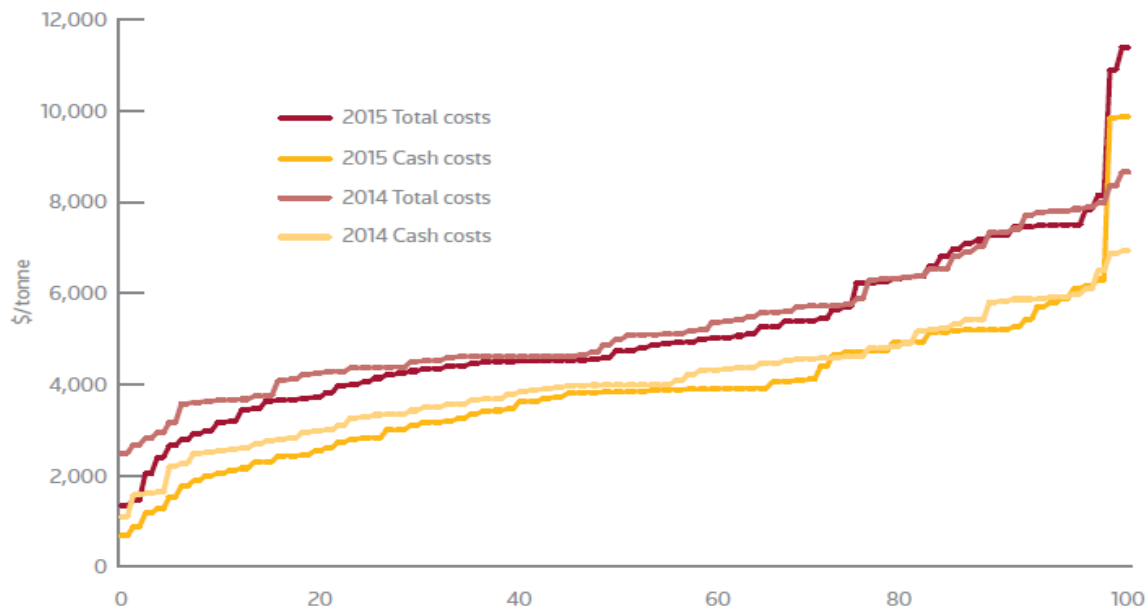
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The following table illustrates development projects. The capex estimates and timelines are an indicator of future mine development necessary to meet future global mine supply. Most of the projects are large capex and long timelines for production.

Thomson Reuters notes that the 2015 copper incentive price required to meet new mine supply demand is US\$3.14 per pound of copper. Wood Mackenzie long term pricing, US\$3.30/lb Cu to sustain supply, at current exchange rate 2019-2020.

COST CURVES 2014 AND 2015



Source: GFMS, Thomson Reuters

Note Carmacks capex to be revised downwards

MAJOR COPPER PROJECTS

Project	Company	Location	Process	Type	Capacity	Capex*	Start Date
Ajax	KGHM	Canada	Conc	New Project	50	795	2019
Agua Rica	Yamana	Argentina	conc	New Project	150	2,122	2021?
Aktogay	KAZ Minerals	Kazakhstan	SX-EW/Conc	New Project	104	2,300	Q4 2015/17
Andina	Codelco	Chile	Conc	Expansion	na	1,400	2022
Aynak	MCC	Afghanistan	Conc	New Project	200	3,000	Post-2020
Bozshakol	KAZ Minerals	Kazakhstan	Conc	New Project	75	2,150	Q1 2016
Bytrinsky	Norilsk Nickel	Russia	Conc	New Project	66	1,700	End-2017
Carrapateena	Oz Minerals	Australia	Concs	New Project	40	555	2019
Carmacks	Copper North	Canada	SX-EW	New Project	14	225	Q2 2018
Chuquicamata UG	Codelco	Chile	Conc	Expansion	367	4,000	2018
Cobre de Panama	First Quantum	Panama	Conc	New Project	320	5,950	End-2017
Collahuasi	Anglo American/Glencore	Chile	Conc	Expansion	496	6,500	na
El Arco	Southern Copper	Mexico	Conc/SX-EW	New Project	190	2,600	2020
El Pachon	Glencore	Argentina	Conc	New Project	280	4,100	na
El Pilar	Southern Copper	Mexico	SX-EW	New Project	35	300	2018
El Teniente new mine level	Codelco	Chile	Conc	Expansion	432	5,100	2020/21
El Tesoro (Encuentro Oxidos)	Antofagasta	Chile	SX-EW	Expansion	50	636	Q4 2016
Esperanza (2nd concentrator)	Antofagasta	Chile	Conc	Expansion	140	2,700	Post-2019
Frieda River	Guangdong Rising Asset Mgmt	Papua New Guinea	Conc	New Project	125	1,700	na
Galore Creek	Teck/Novagold	Canada	Conc	New Project	154	na	na
Golpu (Stage 1)	Harmony (50%)	Papua New Guinea	Conc	New Project	80	2,600	2023
Haquira	First Quantum	Peru	Conc	New Project	190	na	na
Inca de Oro	Guangdong Rising Asset Mgmt/Codelco	Chile	Conc	New Project	50	na	na
Koksay	KAZ Minerals	Kazakhstan	Conc	New Project	80	na	na
Los Pelambres	Antofagasta	Chile	Conc	Expansion	95	1,600	Post-2019
Michiquillay	na	Peru	Conc	New Project	155	700	na
Olympic Dam	BHP Billiton	Australia	Conc/SX-EW	Expansion	225	na	2025
Oyu Tolgoi Underground	Rio Tinto	Mongolia	Conc	Expansion	250	4,400	2021
Project Corridor	Goldcorp/Teck	Chile	Conc	New Project	190	3,600	na
Pumpkin Hollow	Nevada Copper	United States	Conc	New Project	125	1,000	2019
Quebrada Blanca Phase II	Teck	Chile	Conc	Expansion	200	5,600	na
Quellaveco	Anglo American	Peru	Conc	New Project	225	na	na
Radomiro Tomic Sulphides	Codelco	Chile	Conc	Expansion	354	5,400	Post-2020
Roseby (Little Eva)	Sichuan R'way Invstmt/ Altona	Australia	Conc	New Project	39	232	2019
Rosemont	HudBay	United States	Conc	New Project	110	1,226	2020?
Schaft Creek	Teck/Copper Fox Metals	Canada	Canada	New Project	105	3,257	na
Sierra Gorda Phase II	KGHM/Sumitomo	Chile	Conc	Expansion	100	na	2020
Serrote	Aura Minerals	Brazil	Conc	New Project	30	420	na
Taca Taca	First Quantum	Argentina	Conc	New Project	244	3,000	na
Tampakan	Indophil Resources	Philippines	Conc	New Project	375	5,900	na
Tia Maria	Southern Copper	Peru	SX-EW	New Project	120	1,400	na
Toquepala concentrator	Southern Copper	Peru	Conc	Expansion	100	1,200	Q1 2018
Toromocho	Chinalco	Peru	Conc	Expansion	75	1,320	na
Twin Metals	Antofagasta	United States	Conc	New Project	82	na	Post-2020
Victoria	KGHM	Canada	Conc	New Project	15	na	2021
Zafranal	Teck 50%/AQM Copper	Peru	Conc	New Project	54	na	na
Zone 5	Cupric Canyon Capital	Botswana	Conc	New Project	50	350	H1 2018

*Recent CAPEX figures not yet available for some operations.

Source: GFMS, Thomson Reuters