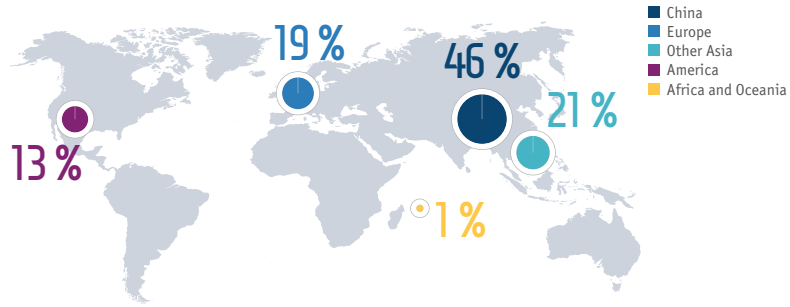
Copper

REFINED COPPER CONSUMPTION BY REGION



KEY TRENDS IN THE COPPER MARKET

In early 2015, the copper price decreased due to the expected surplus growth and concerns regarding the slowdown of economic growth in China. As these concerns began subsiding in February and production started trending downwards, the price showed some recovery in Q2. In 2H 2015, on the back of the drop in prices for oil and other commodities and amid investor outflow, the copper price started to decline again.

The average copper price stood at USD 5,494 per tonne in 2015, a 20% decrease against 2014.

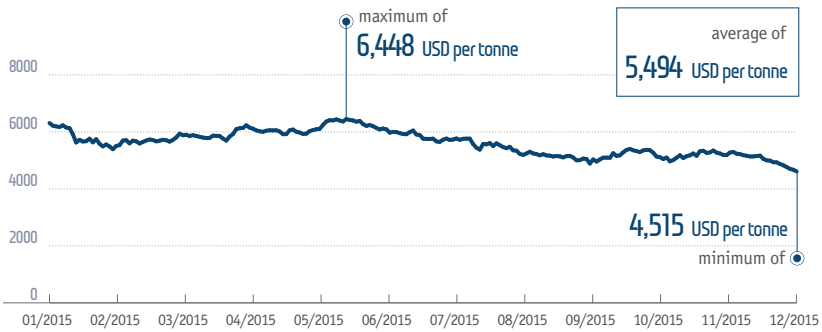
One of the key factors was a number of major US and European investment banks leaving the commodities market after the regulatory authorities imposed restrictions on banks with regard to metal trading in the physical market.

MARKET BALANCE

In 2015, the refined copper market was slightly oversupplied. The surplus was about 1% of the total market volume, or 270 kt, up 90 kt as compared to 2014.

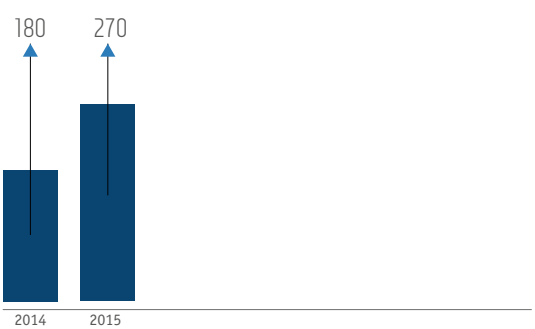
During the year, total exchange warehouse stocks increased from 307 to 483 kt (or from 5 to 8 days of consumption), while off-exchange inventories declined, both in and outside of China, in major traders' warehouses.

■ Copper price in 2015, **USD/t**



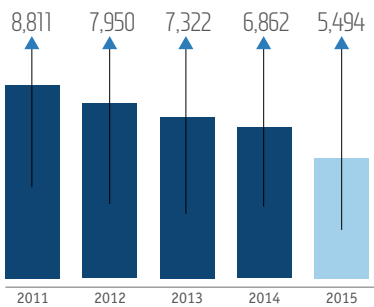
Source: *LME (settlement)*

■ Refined copper surplus, **kt**



Source: *Company data*

■ Average copper prices over the past five years, **USD/t**



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Source: *LME (settlement)*

Metals Market Overview

CONSUMPTION

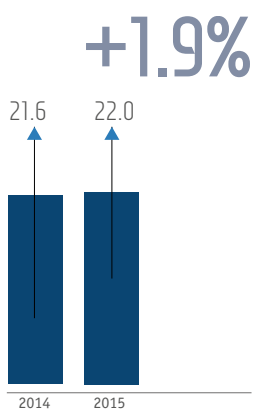
Given its high electrical conductivity, thermal conductivity, ductility and corrosion resistance, copper is widely used in various industries. About three quarters of total global copper production is used for manufacturing electrical conductors, including various kinds of cable and wire. Key copper-consuming industries include construction, electrical and electronic equipment manufacturing, transport, engineering, machine building and consumer goods production.

In 2015, global consumption of refined copper totalled 22.0 mt, up by 1.9% (or 0.4 mt) as compared to 2014, primarily due to stronger demand from cable and wire manufacturers. Figures for rolled products and billets saw no major growth, and consumption in the pipe production segment was moderately down.

In general, global copper consumption in 2015 was slightly below the levels projected at the beginning of the year.

China, despite the economic slowdown, remains the key consumer, with its market share reaching 46%. Market concerns about the potential decline in China's copper consumption due to the economic downturn did not materialise. Copper imports in 2015 remained flat as compared to 2014 and totalled 4.8 mt, while copper concentrate imports rose by 12%, enabling China to meet its growing needs with local metal production. In 2015, demand for copper in developed economies increased moderately: by 1.6% in Europe (the Company's key market for copper cathodes), 0.7% in America, and 3% in Asia (excluding China). In Russia, apparent copper cathode consumption in 2015 dropped by about 20% due to changes in the exports structure, with copper rolled wire volumes partially substituted by copper cathode exports.

■ Refined copper consumption in 2014–2015, **mt**



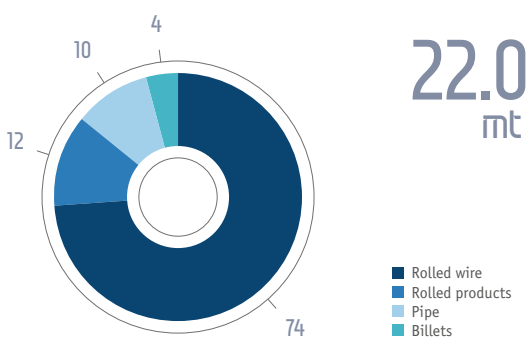
Source: *Company data, Wood Mackenzie*

■ Refined copper consumption in 2015 vs 2014 by industry

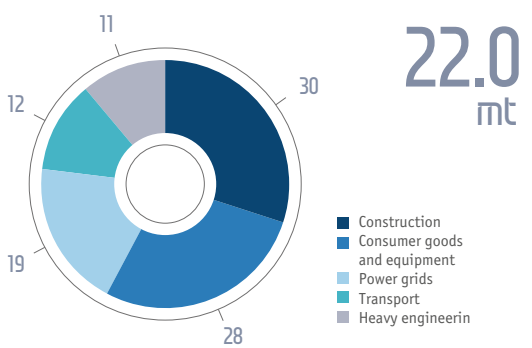
INDUSTRY	2015 VS 2014
Rolled wire production	+0.41 mt (+2.5%)
Pipe production	-0.07 mt (-3%)
Production of flat rolled products	+0.05 mt (+2%)
Production of billets and sections	+0.01 mt (+1%)
TOTAL	**+0.40 mt (+1.9%)**

Source: *Company data, CRU*

■ Refined copper consumption by industry, **%**



Conversion product



End product

Source: *Company data, Wood Mackenzie, CRU*

PRODUCTION

In 2015, global production of refined copper increased by 2.3% (0.5 mt) compared to 2014 and totalled 22.3 mt. China remains the leader in refined copper production, with its 2015 output increasing by 3% to 7.1 mt, which makes up 32% of global production. Only one quarter of Chinese production is local extraction, with three quarters coming from imported copper concentrates and scrap. In the rest of Asia (excluding China), production growth was as low as 0.4%. In Europe, production went up by 2.4%, and in North and South Americas, the increase was 7% and 1% respectively. Africa, following a significant rise in refined copper production in 2014, saw decline of 4% for 2015. In Russia, according to preliminary estimates, the 2015 copper production was up by 1.5%.

Production expansion at the existing mines (Grasberg in Indonesia, Cerro Verde in Peru, Morenci in the US, and Buenavista in Mexico), combined with the launch and development of new projects (Batu Hijau in Indonesia, Toromocho and Constancia in Peru, Ministro Hales, Caserones and Sierra Gorda in Chile, Salobo in Brazil, Oyu Tolgoi in Mongolia, and Sentinel in Zambia) have compensated for lower copper concentration in ores from older fields and for disruptions caused by technical issues (on such mines as Bingham Canyon in the US, Olympic Dam in Australia, Alumbrera in Argentina, El Teniente, Chuquicamata, Escondida and Andina in Chile, Katanga in the Democratic Republic of the Congo, and Mopani in Zambia). As a result, global copper production in 2015 increased by 3.5% to 19.3 mt. In addition to that, approximately 3 mt of refined copper (down 5% compared to 2014) was produced from scrap and concentrate stockpiles.

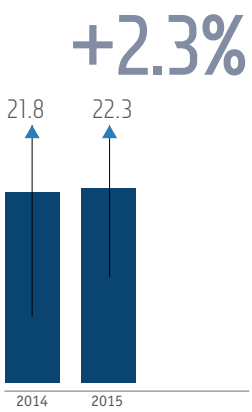
The strong increase in copper production in Indonesia (51%) was driven by the recovery of production at the Grasberg mine, which declined in the previous year on the back of the state-imposed ban on concentrates export. In Mongolia, production went up by 26% following the new Oyu Tolgoi mine development. Peru and Brazil saw their output improve by 24% and 16% respectively as a range of new projects were put on stream. Production in Chile, the world`s leading copper producer, rose by 0.3%, and in the US, by 1.3%. Chinese production was down by 1.5%.

While a lot of mines showed low margins as a result of the copper price drop, leading mining companies were unwilling to reduce output and remained focused on launching and developing new projects. In Q4 2015, only Glencore announced suspending the operations of its African mines (Katanga in the Democratic Republic of the Congo and Mopani in Zambia) for 18 months starting Q4 2015, and Freeport said it would cut production at a number of mines in the US and Chile.

Over the past few years, actual growth in copper production has consistently lagged behind expectations. This is due to delays in the commissioning of new projects owing to cost overruns, engineering and occasionally political issues, as well as incidents leading to suspension of some assets, such as the Grasberg mine in Indonesia and the Bingham Canyon mine in the US. In 2015, the environment was broadly similar, with the market surplus staying below the projected levels.

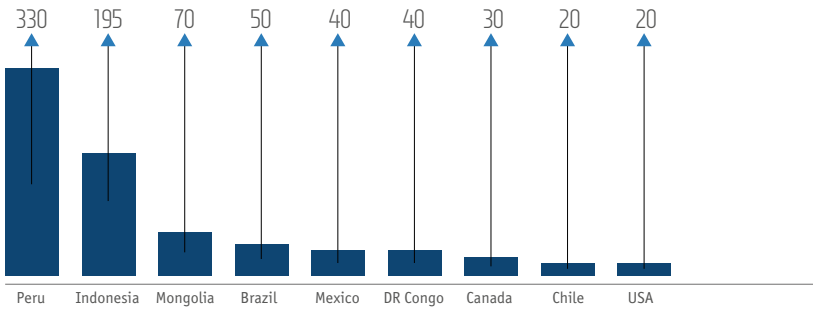
As a result of the decline in copper prices, many mining producers began revising their investment plans for the expansion of existing mines and development of new projects. This could result in a considerable reduction in global copper production over the next few years compared to the current estimates.

■ Refined copper production in 2014–2015, **mt**



Source:
Company data;
Wood Mackenzie

■ Increase in copper production in 2015 by country, **mt**



Source: *Company data; Wood Mackenzie*

■ Estimated and actual copper output in 2010–2015, **mt**