NORNICKEL

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Quintessentially Copper

Market research team

E-Mail: marketing@nornik.ru

KEY TAKEAWAYS

Since reaching its peak value in May this year of almost $11.000/t, **the copper price** has started to decline. This downward trend can be attributed to several factors, including uncertainty surrounding the demand in China, which is illustrated by mixed macroeconomic indicators. Additionally, geopolitical instability on a global scale and the ongoing de-industrialisation of Europe have further contributed to the price decrease. By the end of November, the price had settled at approximately $9000/t.

As to the **copper concentrate market,** since our May issue, market participants have paid close attention to TC/RC values as historically record-low numbers remained in place throughout the year. Despite some plans announced by the Chinese smelter alliance CSPT to cut copper production, there has been no substantial reduction in their output thus far. On the contrary, smelting capacity continues to grow, even as the market faces a severe shortage of concentrate. More than 2 million tonnes in Cu units of new smelting capacities are expected to be added next year with 75% of those in China. With only around 0.6 Mt of new concentrates expected to be added to the market next year, this imbalance will continue to put downward pressure on TC/RC values, further complicating the situation for smelters.

This shortage of concentrate is expected to grow in the next couple of years, as the new mined production will be added predominantly in Africa where we are witnessing a rapid and often underestimated growth in copper mining boosted by Chinese investments. It is still not sufficient either to cover the losses caused by the closure of the Cobre Panama mine and reduced production plans from Anglo American or to meet the new demand.

Currently, spot TC values have shown some resilience, managing to emerge from the negative territory and standing now at $10/t, which is still way below our estimated Chinese copper processing industry breakeven level of ~$40/t. The 2025 benchmark TC was set at $21.25/t but it won't provide any significant relief either forcing some of the older and less efficient processors to stop production.

As for the **refined copper demand**, Europe continues to struggle with the consequences of the energy crisis that caused a significant degradation of its economic competitiveness forcing some companies to rethink their investment strategy in the region. As for China, its economic indicators are presenting a mixed picture, reflecting uneven growth dynamics. The key question here is whether government support measures will be able to revitalise the growth as so far, they have fallen short of market expectations in terms of their scale and impact. Although there have recently been some improvements in the macroeconomic indicators that have slightly outperformed forecasts, there is still a question regarding the ability of the Chinese authorities to keep the situation in the economy stable in the long run. In our view, with the extreme-low inflation, the Chinese government still has abundant tools at its disposal to stimulate the economy in 2025, such as pumping more money into the economy, providing tax incentives, and writing down debt to support construction, industrial and service sectors. However, looking at the bright side, the demand for copper in power grid applications continues to increase steadily as it is backed by rising investments in grid expansion. As discussed in our latest publication, a lot will depend on the situation with exports, meaning that the global economic growth and the scale of the widely anticipated trade restrictions will dictate the pace of the Chinese industrial production expansion in 2025.

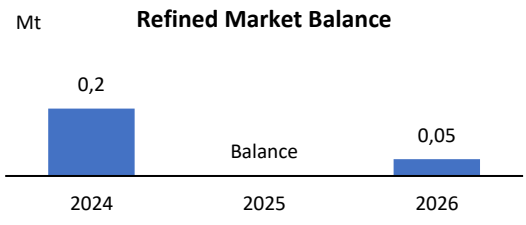
Refined copper	2024E	2025E	2026E
Demand, Mt	26.4 (+3%)	27.1 (+3%)	27.9(+3%)
Supply, Mt	26.6 (+3%)	27.1 (+2%)	27.9(+3%)

The US presidential election also added a layer of uncertainty to market sentiments on both sides of the Pacific Ocean. Concerns are growing over the potential new Trump administration's policies aimed at strengthening the US dollar as well as possible trade wars, which could have a dampening effect on copper prices, particularly in the context of high global exchange stock inventories. This combination of factors underscores the challenging and dynamic environment that the market is facing as it moves into the coming year.

However, the global trend of economic segmentation, segregation, regionalisation, protectionism, and reliance on self-sufficiency in critical industries can be seen as positive for the demand for commodities and specifically for copper since these policies require building whole new value chains from scratch, which is a very material-intensive task.

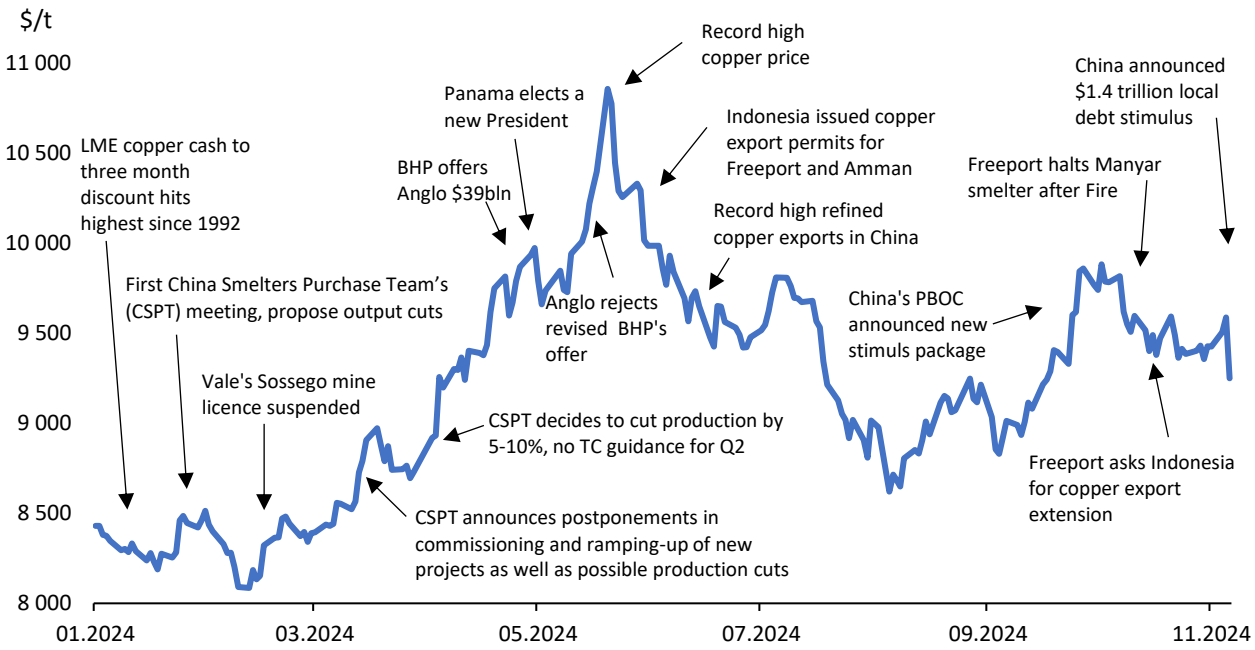
Taking all that into account, we have updated our ***refined copper market balance forecast. Currently, we project a surplus of approximately 200kt in 2024, with the market expected to be balanced in 2025.***

Long-term deficit concerns have eased amid positive production trends in Africa, driven by substantial investments from the Chinese. These businesses have demonstrated strong performance in cobalt, nickel, and lithium markets, significantly increasing metal supplies and creating surpluses in recent years. However, in the more diversified copper market, Chinese investments in Africa alone are insufficient to balance the market. We now see that Western mining giants are also stepping in and focusing on expanding their projects to address the imbalance (e.g. First Quantum, Rio Tinto, BHP, and others).



Sources: NN Analysis

MARKET SENTIMENT



Sources: LME, Reuters, NN Analysis

After reaching record-high metal prices in May, a downward trend began, driven by uncertainty surrounding the Chinese economy and consumption growth that caused the market to anticipate a surplus in 2024.

On the positive side, however, China faced a significant shortage of copper concentrates, which created a fear of a potential lack of supply in the market and supported the price. Importantly, the period of rising interest rates has ended and many countries have started to ease monetary policy, which is also beneficial for the price.

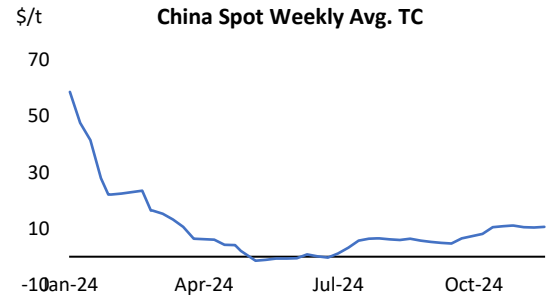
Following a record-high price in May, copper prices entered a downward trend that persisted for several months. The price fell from nearly $11 000/t to $8600/t by early August. This decline was influenced by mixed macroeconomic data from China and record exports of refined copper, signalling weak domestic demand for copper cathodes.

The price began to rebound in August due to the expectations of reduced US interest rates and some encouraging macroeconomic developments in China. In addition to this, the US Federal Reserve surprised the market by cutting interest rates by 50 basis points instead of the anticipated 25 basis points in mid-September while the Chinese government introduced new economic support measures toward the end of the month as global stockpiles of copper began to decrease. All of this supported the price recovery.

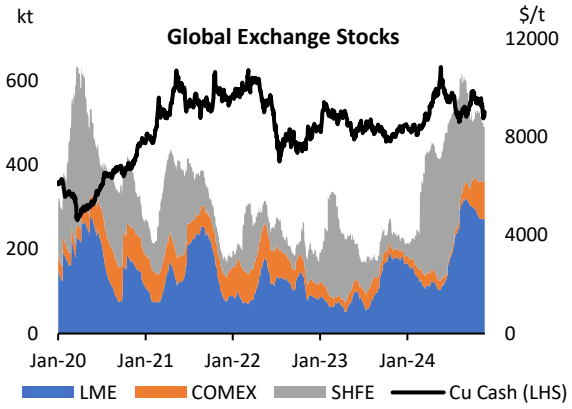
After the initial very positive reaction during the autumn holidays in China, investors and market analysts quickly changed their original views and started seeing the stimuli announced by the Chinese government as insufficient and failing to meet expectations. This perception began to weigh on copper prices in October. The limited impact of these measures underscored concerns about their ability to stimulate meaningful economic recovery or bolster demand for industrial metals like copper.

In November, the Chinese authorities unveiled another round of support measures, which fell short of directly targeting the growth once again. This new package focused primarily on restructuring local government debt and addressing financial stability issues rather than implementing policies aimed at accelerating industrial activity or infrastructure projects. Consequently, while these measures may have helped alleviate systemic financial risks, they did little to reassure the market and downward pressure on copper prices persisted.

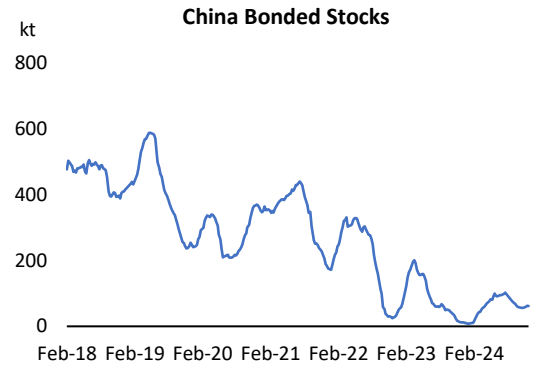
In terms of exchange stocks, from May to August, there was a noticeable rise in inventories on the LME and SHFE, reaching a peak in August when total global stocks exceeded 600kt. However, stock levels began to decrease afterwards, except for the COMEX. This decline was primarily driven by end-users restocking on low copper prices. China's bonded stock levels remain low, but they have surged by over 600% since the beginning of the year, reaching 62kt by the end of November.



Source: SMM



Source: LME, SHFE, CME



Source: SMM

DEMAND

Copper, a vital material in the global industry, has its demand closely tied to GDP growth. When the global economy expands, industrial output and infrastructure projects increase, driving higher use of copper. However, the recent slowdown in global GDP growth has placed a cap on the overall copper demand, as industries dependent on economic cycles scale back their activities.

In 2024, the world's leading economies faced complex macroeconomic shifts driven by geopolitical tensions in Europe and the Middle East, supply chain disruptions, and escalating trade conflicts. As per the IMF projections, global growth is expected to reach 3.23% this year, which is a slight decline from 2023, while some improvements are expected in the next couple of years with a 3.24% GDP growth rate in 2025 and 3.26% in 2026.

Despite this, there is a notable upside stemming from certain sectors that are expanding at a faster pace than the broader economy. Grid expansion, renewable energy initiatives, the 'green transition' and the shift towards electrified transport are examples of copper-intensive industries that continue to grow robustly. The shift to green energy, including solar and wind power, requires a significant amount of copper for wiring, transformers, and other infrastructure. Similarly, the electrification of transport, such as electric vehicles and charging stations, heavily depends on copper for motors, batteries, chargers, and connectors.

These structural trends offset some of the demand growth slowdown caused by a weaker global economic expansion. As nations prioritise sustainability and energy transition, these sectors are likely to remain resilient, providing a steady and growing base for copper demand in the long term. These dynamics highlight copper's dual role as both a barometer of economic health and a critical resource for the industries of the future.

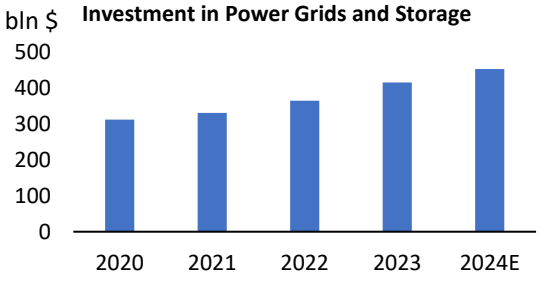
Also, the global shift towards segregated self-isolated economies through trade restrictions and nation-centred incentives for domestic production is playing a significant role in driving the demand for commodities, copper in particular. As countries like the United States and the EU member-states strive to build self-reliant isolated industrial ecosystems, their policies are creating a new wave of material-intensive projects that require substantial amounts of raw materials, including copper.

Historically, global supply chains have been optimised for cost efficiency on a worldwide scale, with regions like China dominating the production of critical components and raw material processing. However, rising geopolitical tensions and a push for economic isolationism have led Western nations to reconsider. For example, the US Inflation Reduction Act and the EU Green Deal Industrial Plan incentivise domestic production in key sectors such as renewable energy, semiconductors, and electric vehicles. These industries are copper-intensive by nature, relying heavily on the metal for wiring, motors, and infrastructure.

Building entire value chains domestically instead of relying on imports dramatically increases the need for raw materials. Copper is essential for nearly every step of this process from constructing factories, grid expansions, and renewable energy projects to manufacturing electric vehicles and their charging networks. Unlike the post-WW2 globalised model where components were produced and assembled at relatively few resource-optimised hubs across the globe, regionalisation and self-isolationism involve replicating processes and infrastructure in multiple locations, which boosts the demand for construction materials and metals significantly.

Based on that, we expect global refined usage to grow to 26.4 Mt in 2024, reflecting a 3% year-on-year increase. This upward trend is likely to continue into 2025 and 2026 reaching 27.1 Mt and 27.9 Mt respectively, maintaining a consistent annual growth rate of 3%.

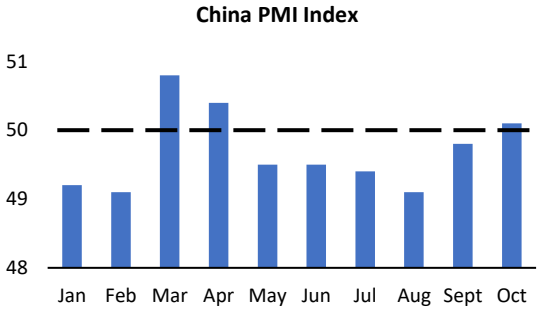
We remain confident that ***renewable energy and transport*** electrification, which developed countries are steadily adopting, is the primary driver of the growth in copper use. ***In 2024, we expect approximately 4 Mt of copper will be used in this sector, marking a 19% year-on-year increase. We expect this growth to persist with projections of an 18% rise in 2025 to 4.8 Mt and a 14% increase in 2026, reaching 5.4 Mt.***



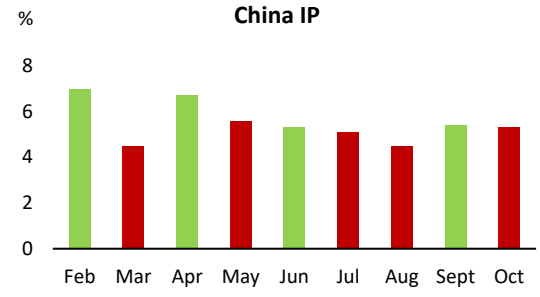
Source: IEA

As we take a closer look at the situation in major economies, we can see that ***China's*** **macro data** shows mixed dynamics in their PMI and industrial production (IP) throughout the year. In October 2024, PMI increased to 50.1, marking a shift back into the growth territory after several months of decline. This improvement came on the heels of the stimulus initiatives introduced by the Chinese government in September.

The situation with IP shows similar constraints. October's data revealed a growth rate of 5.3%, slightly under market forecasts. This shortfall reflects ongoing challenges from subdued domestic demand and persistent global uncertainties, which continue to weigh on the Chinese manufacturing sector.



Source: investing.com



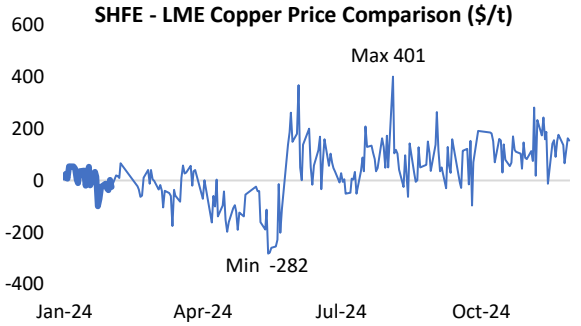
Source: investing.com; Red- lower than forecast, Green – higher than forecast

To mitigate the challenges posed by increasing pressure from the EU and the US on China's exports, which affect the steady growth of future orders, and to address significant downward trends in domestic areas such as consumption, investment, employment, and the capital market, the Chinese government introduced a series of stimulus measures at the end of September. The government implemented several monetary easing measures, which included reducing the reserve requirement ratio (RRR) by 0.5% and injecting approximately CNY 1 trillion of long-term liquidity into the financial market. It also lowered the policy interest rate, cutting the 7-day reverse repo rate by 0.2%, from 1.7% to 1.5%. Additionally, commercial banks were instructed to reduce interest rates on existing housing loans by 0.5%, while the minimum down payment ratio for second-home loans was decreased from 25% to 15%. Furthermore, the central bank increased its funding support for a special CNY 300 billion affordable housing loan programme from 60% to 100%. All that combined may lead to a rise in copper use as it is also aimed to achieve the GDP growth rate target of 5% % in 2024. China's GDP growth rate in Q3 stood at 4.6% YoY, slightly below the 4.7% recorded in Q2 and lower than the 5.3% in Q1 2024, marking the slowest pace since Q1 2023. The IMF forecasts that ongoing challenges, including deflation, issues in the construction sector, and possible trade wars, will result in GDP growth rates of 4.82% in 2024 and 4.48% in 2025.

China's CNY 10 trillion ($1.4 trillion) package unveiled in November 2024 is designed to ease financial pressure on the local governments rather than act as a direct stimulus for the economy. The initiative focuses on restructuring the "hidden debt" from local government financing vehicles (LGFVs) into formal, manageable liabilities. This marks a departure from previous strategies, which prioritised heavy infrastructure investment to drive growth. Although the plan could help alleviate fiscal constraints and curb deflationary trends in the near term, its limited emphasis on direct economic stimuli raises doubts about its ability to boost growth significantly.

Copper trade in China. In 10M 2024, China's refined copper net imports remained flat at 2.6 Mt, consistent with the same period in 2023. Notably, in June 2024, China exported a record-breaking 157.75kt of refined copper, which was driven by a weak domestic environment, and opened the LME-SHFE arbitrage window on the back of elevated investment demand in the Western world.

However, imports of copper concentrates and scrap showed significant growth in 10M 2024. Concentrate imports rose by 16% to 23.5 Mt, driven by a feed shortage for copper smelters, while scrap imports increased by 4%, reaching 1.9 Mt.



Source: NN Analysis

We expect China's refined copper use to reach approximately 15.3 Mt (+4% YoY) in 2024. Demand is expected to grow further, reaching 15.7 Mt in 2025, a 3% increase, and 16 Mt in 2026, reflecting an additional 2% rise. Together with scrap, China's total copper use was at 17.4 Mt in 2024 and is expected to rise to 18 Mt in 2025 (+3%) and 18.4 Mt (+3%) in 2026.

Looking ahead to 2025, China's imports of copper concentrates are expected to grow further, fuelled by the expansion of smelting capacities. Scrap imports are also likely to rise, supported by sustained high copper prices, which make recycled materials more economically viable. And as for refined copper, we expect imports to remain flat at around 3.5 Mt.

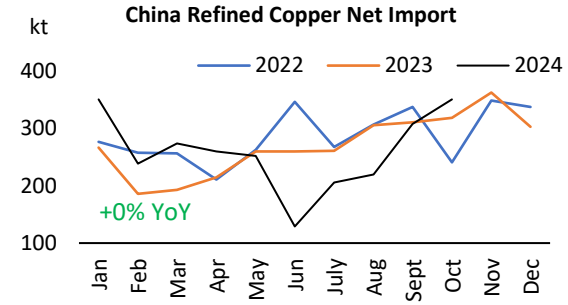
In ***Asia***, excluding China, copper use is projected to grow by approximately 3% in 2024, reaching 5.3 Mt. India remains the region's key growth driver with their use rising to nearly 0.9 Mt, an 8% YoY increase.

Looking ahead to 2025 and 2026, copper usage in the region is expected to continue growing, reaching 5.4 Mt in 2025 and 5.6 Mt in 2026, representing a 3% YoY increase annually. India is forecasted to lead this growth, with refined copper demand anticipated to climb to 0.95 Mt in 2025 and surpass 1 Mt in 2026. This expansion is fuelled by significant construction projects, the accelerated adoption of green energy technologies, and the ongoing development of power grid distribution networks. Adani Enterprises is also launching a copper smelter with an annual capacity of 500 kt to meet the rising domestic demand. Regarding GDP growth, the IMF projects that India's GDP will grow by 7% in 2024 and 6.46% in 2025.

European copper demand in 2024 remained subdued due to high energy costs and a weak construction sector. Demand is projected to decline by 2% to 3.1 Mt this year. However, the outlook for 2025 and 2026 appears more positive as the anticipated easing of monetary policy is expected to support a recovery in usage. Demand is forecasted to grow by 2% in 2025 to 3.16 Mt and by 3% in 2026, reaching 3.25 Mt. In the EU, the GDP growth is expected to rise from 1.12% in 2024 to 1.58% in 2025.

In ***Russia***, as reported earlier, the first use holds steady at 400 kt. Currently, despite the rising demand in the military sector, the monetary policy — specifically, the ongoing rise in interest rates — is hindering domestic production growth. Projections indicate a further tightening of monetary policy as interest rates are expected to exceed 21% in the coming months further straining industrial expansion and impacting the broader economy. Amid high interest rates and slowing GDP growth, the IMF forecasts growth to decline from 3.62% in 2024 to 1.34% and 1.2% in 2025 and 2026 respectively, demand in Russia is expected to be flat at 2024 levels for the next few years.

In ***North America***, copper demand is projected to rise by 2% to 2.2 Mt in 2024. In the US, refined copper use rose to 1.5Mt in 2024, reflecting a 2% year-on-year increase. With the Federal Reserve's easing monetary policy, industrial production is projected to grow next year, despite expectations for a slower GDP growth of 2.15%, compared to 2.76% in 2024. The US is anticipated to use around 1.6Mt of refined copper in 2025 and 1.65Mt in 2026. Looking ahead, the demand is expected to keep growing at an annual rate of 4%, reaching 2.25 Mt in 2025 and 2.3 Mt in 2026.



Source: TDM

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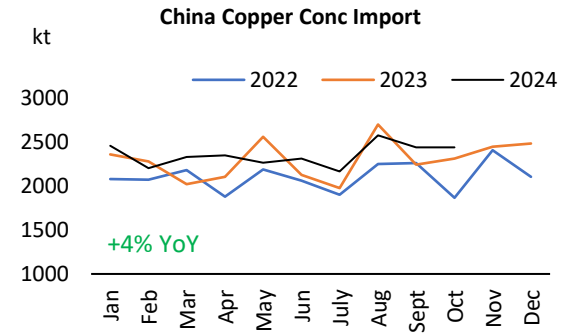


Source: TDM

SUPPLY

Although our latest issue projected a 1% decline in mined copper production, we have revised our forecast and now anticipate a ***modest increase in 2024, reaching 22.7 Mt, or approximately +1%, followed by a +2% rise in 2025 to 23.2 Mt and another +4% in 2026 to 24.1 Mt. As to the refined copper production, we estimate that the 2024 output will reach 26.7 Mt, reflecting a 3% YoY increase, and expect further growth to 27.1 Mt in 2025 and 27.9 Mt in 2026.*** Key producers managed to boost their output this year. However, the sustained decline in ore grades creates a scenario where, without significant investment in new mines, a substantial supply deficit is likely to emerge in the medium term.

Chile. The world's leading producer is expected to mine approximately 5.4 Mt in 2024 with an expected increase to 5.5 Mt (+2%) in 2025, followed by stable production levels in 2026. Meanwhile, Chilean refined copper production is projected to remain flat at around 2 Mt annually from 2024 to 2026.

The world's leading copper producer has faced challenges in increasing output after experiencing record-low production levels over the past two years. Codelco has

revised its production target for this year to a range of 1.325 Mt to 1.352 Mt, down from its earlier projection of up to 1.39 Mt due to mining accidents, declining ore grades, and management missteps.

The Democratic Republic of the Congo rose to the status of the second-largest global copper producer in 2024. The DRC increased its mined copper production to 3.1 Mt in 2024 (+10% YoY) while its refined production stood at 2.4 Mt.

Kamoa-Kakula's Phase 3 concentrator was completed nearly six months ahead of schedule, significantly boosting its output capacity to over 600 kt of copper annually once fully operational. This expansion solidifies Kamoa-Kakula as the world's third-largest copper mining complex, behind only Escondida in Chile and Grasberg in Indonesia. It is also the largest copper operation in Africa. Plans are underway for a Phase 4 concentrator to be built near Phase 3, with a processing capacity of 5 Mt per year.

Chinese companies, including Zijin, CMOC, and CNMC, are heavily investing in Africa's copper mining sector as part of China's broader strategy to secure critical minerals for industries like renewable energy and electric vehicles. These investments are reshaping the global copper market by ensuring a steady and expanding supply from Africa. This influx of capital from the Chinese is helping to meet the growing global demand for copper.

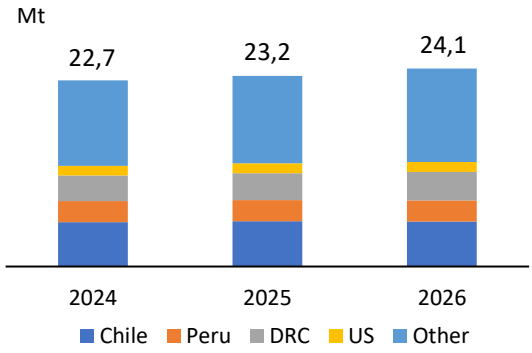
We anticipate the DRC will experience growth in both mined and refined copper production in the near term. By 2025, Congolese mined production is expected to reach 3.3 Mt (+5% YoY), while their refined production is expected to increase to 2.5 Mt (+3% YoY). Looking ahead to 2026, Congolese mined production is expected to grow further to 3.4 Mt (+5% YoY) with refined output rising to 2.6 Mt (+4% YoY).

Peru is now the world's third-largest copper producer losing its second position to the Congo after a year marked by severe challenges, including blockades (Las Bambas mine), lower ore grades, and adverse weather. In 2024, Peru's copper output is expected at approximately 2.6 Mt, a 4% decline YoY, and their production is expected to remain flat for the following two years. Refined copper production is projected at 400kt annually from 2024 to 2026.

Conversely, the Peruvian government expects their national copper production to reach approximately 2.8 Mt in 2024. However, we doubt that the country will be able to mine such an amount of copper.

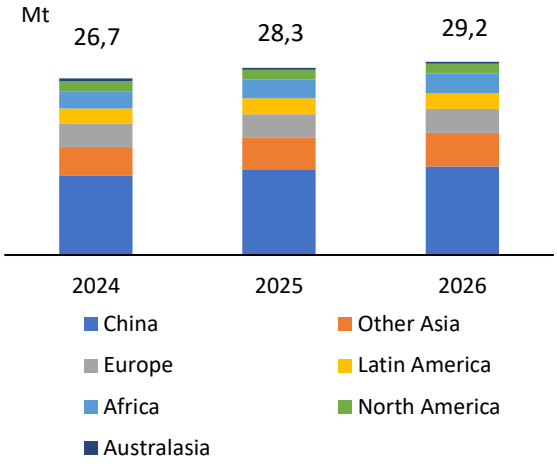
The United States produced approximately 1.16 Mt of mined copper and 0.8 Mt of refined copper in 2024. Mined copper output is expected to grow to 1.2 Mt (+6% YoY) in 2025 and to remain at that level in 2026 while their refined production is expected to rise by 6% in 2025, reaching 830kt, and then 850kt (+2% YoY) in 2026.

Mined Copper Production



Source: NN Analysis, CRU

Refined Copper Production



Source: NN Analysis, CRU

In 2024, Asia's mined production is projected to reach 4.8 Mt, a 3% YoY increase. Of this total, China is expected to contribute 1.9 Mt (+3% YoY), while Indonesia is forecasted to produce 1 Mt, marking a 12% YoY growth. Refined production in Asia is also expected to rise to 16.4 Mt (+6% YoY), with Japan maintaining a steady output of 1.5 Mt and China increasing its production to 12 Mt.

Looking ahead to 2025 and 2026, Asia's mined production is expected to grow by 6% YoY, reaching 4.8 Mt and adding 1% to 4.9 Mt respectively while their refined production is expected to reach 17.8 Mt in 2025 (+9% YoY) and 18.5 Mt in 2026 (+4% YoY).

Mined production in ***Russia*** is estimated at around 1 Mt in 2024, reflecting a 13% increase due to Udokan's full-year production and increased production of major producers of copper. Refined copper production in Russia remains flat, hovering around 1 Mt. Norilsk Nickel boosted its copper production in 9M 2024, achieving a 7% increase to 326kt. The company is projected to end 2024 with its production on the upper edge of the annual guidance, while the 2025 guidance is due to be released in January. One might expect some growth next year after a major furnace rebuild conducted in 2024.

Regarding other projects in Russia, there have been no substantive changes since our latest issue. Udokan is producing semi-products equal to 70-80 kt in copper units. Malmyzh, with a capacity of 150kt, is set to launch next year. Meanwhile, the Ak-Sug mine was acquired by a Rostec subsidiary from Intergeo. The mine is expected to begin operations by 2027 at the earliest, reaching the full production capacity of around 500kt copper-molybdenum concentrate. As for UMMC, we presume that the company plans to boost its copper production to achieve full self-sufficiency in raw materials for the production of copper cathodes.

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GLOSSARY OF TERMS

Abbreviation	Term
kt	Thousand tonnes
Mt	Million tonnes
ktpa	Thousand tonnes per year
IP	Industrial Producton
PMI	Purchasing managers' index
GDP	Gross Domestic Product
YoY	Year-on-year
TC	Treatment charge