

Coppers growing importance in a changing world

Saxo Bank · 2026-09-23 · English original

Key Points:

- Copper is trading near record highs, supported by structural demand from electrification, power grids, AI and data centres, defence and reindustrialisation.
- Friedland's supply arithmetic highlights the scale of the challenge: the world may need to mine as much copper during the next 18 years as throughout history, even before fully accounting for electrification and AI.
- Declining ore grades and lengthy development timelines constrain supply, requiring more energy, water and capital while limiting how quickly higher prices can bring new production.
- The long-term outlook remains supportive, but near-term risks are significant, including a reversal of US stockpiling, slower AI and data-centre investment, weaker demand and elevated speculative positioning that could amplify corrections.

The energy transition and the rapid expansion of AI are two themes attracting considerable interest. Both are highly commodity-intensive developments, raising an increasingly important question: can the old world of mining and energy production supply what the modern world needs and demands?

Across the commodity complex, one metal sits increasingly at the centre of this transition: copper.

The timing of that question is particularly relevant, with copper trading at record highs, with the latest peak having been reached earlier in the week when the New York listed high grade contract reached USD 6.9285 per pound, a year-to-date increase of 20%, and more than a three-fold increase since 2020 Covid recession low. London copper meanwhile trades around 1% below its August record high, currently around USD 14,700 per tons.

In my current presentation slide deck, I highlight some of the structural forces that could justify talking about another commodity supercycle. If that ultimately proves correct, it would be only the third such cycle in my admittedly long lifetime. Population growth and urbanisation, rising power consumption, energy storage, decarbonisation, defence priorities and deglobalisation all require physical resources. What is particularly striking is how many of these themes depend, directly or indirectly, on copper.

I was therefore interested to listen to a recent Odd Lots podcast featuring Ivanhoe Mines founder Robert Friedland, arguably one of the most knowledgeable voices on copper mining and the challenges facing the industry. His observations provide a useful perspective on why meeting expected demand growth is not simply a question of higher copper prices. The constraints include geology, declining grades, energy, water, permitting, capital intensity, infrastructure and geopolitics - and, perhaps most importantly, time.

One number in particular stands out. Friedland says humanity has mined roughly 700 million tonnes of copper throughout history. Based on eight billion people and around 3% annual global economic growth, he argues the world may need to produce another 700 million tonnes during the next 18 years.

Importantly, his calculation excludes the additional requirements from electrification, electric vehicles and data centres.

Whether the precise number proves correct is less important than the scale of the challenge it illustrates.

More rock for less copper

One of the biggest structural problems is declining ore grades. Many of today's major copper mines were discovered decades ago, with operators naturally exploiting the highest-quality and most accessible sections of an ore body first.

Friedland uses Escondida in Chile, the world's largest copper mine, to illustrate the problem. He says grades were close to 2% when the deposit was originally developed, compared with around 0.8% today, with the grade potentially declining towards 0.4%.

The mathematics are unforgiving. At a theoretical 2% grade, producing one tonne of contained copper requires around 50 tonnes of ore. At 0.4%, it requires around 250 tonnes. In simple terms, five times as much material must be processed to obtain the same amount of contained copper.

That means more rock movement, more crushing and grinding, more energy and water, and ultimately higher capital and operating costs. Friedland estimates that crushing and grinding rock across the mining industry already consumes around 4–5% of global energy production.

This creates one of the great paradoxes of the energy transition: copper is essential to electrification and decarbonisation, but producing the incremental copper required to deliver that transition becomes increasingly energy intensive as grades decline.

Water, power and capital

Water adds another layer of complexity. Many of the world's major copper deposits are situated in dry regions, notably Chile and Peru. At Escondida, high in Chile's Atacama Desert, the answer has increasingly been desalinated seawater. But desalination does not eliminate the constraint; it transforms it into an infrastructure and energy challenge.

Friedland cites around USD 4 billion of desalination infrastructure associated with Escondida, with water having to be pumped from the Pacific coast to a mine roughly 12,000 feet above sea level. He estimates the electricity required to pump that water costs around USD 1 million per day.

Meanwhile, BHP and Rio Tinto are, according to Friedland, looking at USD 10–12 billion of investment at Escondida while production still declines. That illustrates an important distinction when considering future copper supply. Billions of dollars of capital expenditure do not necessarily translate into billions of dollars of additional production. An increasing share may simply be required to offset declining grades and maintain ageing operations.

Higher prices cannot manufacture time

Discovering a copper deposit is merely the beginning. Exploration must be followed by resource definition, feasibility studies, environmental assessments, permitting, financing, engineering, construction, commissioning and ramp-up. These processes can take many years and, in some jurisdictions, decades.

Copper therefore has a much weaker short-term supply response to price than many investors might assume. Higher prices can encourage exploration and improve project economics, but they cannot

compress geology, engineering, permitting and construction into a couple of years.

The scarcity of major new discoveries makes this timing problem even more acute. According to a recent chart from Apollo's Chief Economist, the number of major copper discoveries - defined as deposits containing at least 500,000 tonnes of copper - has fallen sharply. Annual discoveries regularly reached double digits during the 1990s and 2000s, compared with just one or two in most recent years and none in 2025.

This creates a striking mismatch between the demand and supply timelines. The energy transition and AI infrastructure need additional copper now, while a major deposit discovered today may not produce its first tonne of copper until the late 2030s or even later. In other words, the supply needed to satisfy today's emerging demand increasingly depends on mines that have either already been discovered or are already somewhere along the lengthy development pipeline.

Friedland also highlights less obvious dependencies such as sulphuric acid, which is used to leach copper from certain ores and is involved in roughly a quarter of global copper production by his estimate. Sulphur is closely linked to hydrocarbon processing and refining, creating an unexpected connection between energy markets and copper supply. Recent Middle East disruptions have contributed to sharply higher sulphur and sulphuric acid prices, illustrating how problems in one commodity supply chain can migrate into another.

The old world meets the new

The modern economy wants more electricity, data centres, renewable generation, storage, defence capacity and secure supply chains, while emerging economies continue to require more infrastructure and power. Much of this requires copper, yet the mining industry supplying it faces declining grades, ageing assets, rising capital intensity, water and energy constraints, lengthy permitting and increasing geopolitical fragmentation.

These structural challenges support the long-term outlook, but they do not mean copper prices must rise continuously, particularly after the recent surge to record highs. One near-term risk comes from US trade policy, with large volumes of copper having been drawn into the US ahead of potential tariffs. If tariffs on refined copper are delayed or ultimately not imposed, some of these stocks could be re-exported, easing tightness elsewhere. Demand expectations could also disappoint if the rapid AI and data-centre build-out slows, while weaker Chinese demand, substitution, recycling and demand destruction at elevated prices remain additional risks.

Positioning may amplify any correction. Copper's structural story has attracted elevated interest from investors and speculators looking beyond shorter-term challenges. Crowded positioning can therefore leave the market vulnerable if the fundamentals temporarily fail to confirm expectations. A change in the tariff outlook, weaker economic data or broader risk reduction could trigger long liquidation, producing a deeper and faster correction than changes in the underlying physical market might otherwise warrant.

The central question for copper is therefore not whether the metal exists underground. It does. The challenge is how quickly, economically and politically the world can turn increasingly difficult rock into usable metal. If demand continues to grow faster than the old world can supply it, copper's importance will only increase, potentially making it one of the defining commodities of the next supercycle.

- Ole S Hansen's articles on Saxo
- For market commentary and insights - not trading advice - follow me and join the conversation on

Source: <https://www.home.saxo/content/articles/commodities/coppers-growing-importance-in-a-changing-world-23092026>