BASE METALS ANALYST

Copper: Raising Our Price Forecast on US-China Competition

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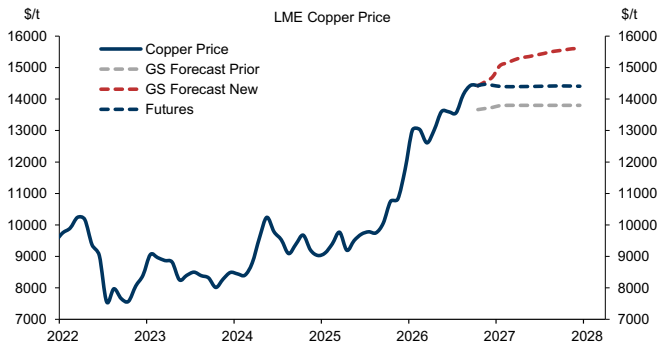
- **US-China competition for metal tightens the ex-US market**. China's shortage of scrap is increasing its need for refined copper, so far met by domestic inventory draws, just as the US continues to import and build inventory ahead of potential tariffs. With mine supply weaker than we previously expected, we now expect larger ex-US deficits of around 950kt in 2026 and 220kt in 2027 (vs. 640kt and 170kt previously). With US-China competition likely continuing to play out over the next year, combined with a higher positioning assumption, which partly reflects increased investor interest in hard assets, we raise our end-2026 copper forecast to $14,700/t from $13,735/t (vs. forwards at $14,437) and our 2027 average forecast to $15,400/t from $13,800/t (vs. forwards at $14,405).
- **China increasingly needs refined copper to do the work previously done by scrap.** While copper cathode has always been the main material used in China to produce semi-fabricated products, scrap complemented it, driving on average 15% of copper semis production. However, a growing shortage of domestic scrap supply this year owing to more stringent scrap VAT invoicing has led semi-fabricators to increase their cathode demand, ultimately tightening China's copper inventories. We expect this scrap-to-cathode substitution to extend well into next year, which we estimate adds around $945/t to our end-2026 copper price forecast and $2,985/t to our 2027 average price forecast, though that's partly offset by higher scrap use by smelters.
- **US stockbuilding continues to compete for copper, although at a slower pace.** We raise our 2026 US overbuild assumption to around 1Mt from 900kt, with ~750kt already accumulated through September. We see limited risk of refined copper tariffs before the midterms, though we assume this risk rises afterwards, with the market already pricing meaningful odds of a phased tariff from 2028. We therefore assume 400kt of overbuild in 2027 (vs. 380kt prior) under our no tariff announcement baseline. Higher US imports would add around $250/t and $385/t to our end-2026 and 2027 average copper price forecasts.
- **We also raise our positioning assumptions.** Investor interest in copper has benefited over the last few quarters from copper's exposure to the AI, electrification, energy security, and hard asset themes. We assume positioning holds around its year-to-date average of 16% of open interest in 2027 rather than reverting to neutral, adding around $775/t to our 2027 average price forecast.

Investors should consider this report as only a single factor in making their investment decision. Fo
certification and other important disclosures, see the Disclosure Appendix, or go to
www.gs.com/research/hedge.html.



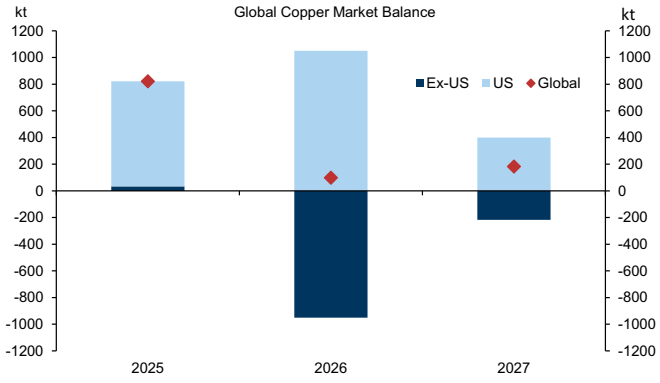
- **We see two main risks to our forecast:**
  - **Macro and positioning:** We see a potentially more hawkish Fed path and higher yields (for example if energy prices push up inflation) and a broader sell-off in equities linked to AI as the main downside risks to our copper price view, as they could trigger a reduction in investor length. We estimate that a return of positioning to neutral would take our 2027 average to around $14,600/t.
  - **US tariff policy:** We believe a potential decision to impose a phased tariff from 2028 announced ahead of time would accelerate US imports in 2027 relative to our base case, and we estimate that if US copper inventory overbuild increased to 800kt, our 2027 average price expectation would rise to around $16,350/t, all else equal. Conversely, if overbuild fell to 200kt in 2027 on lower tariff risk, we estimate our 2027 average would fall to around $14,900/t.
- **We recommend going long Dec-27 LME copper.** Persistent ex-US market tightness supports upside to forwards. Key downside risks are weaker growth, a reversal in investor positioning, and a clearer signal that refined copper tariffs will not be introduced, which would slow US imports and leave more metal available outside the US.

Exhibit 1: We Raise Our LME Copper Price Forecast to $14,700 by Year End and $15,400 on Average in 2027



Source: Bloomberg, Goldman Sachs Global Investment Research

Exhibit 2: US-China Competition Leaves the Ex-US Market in Deficit



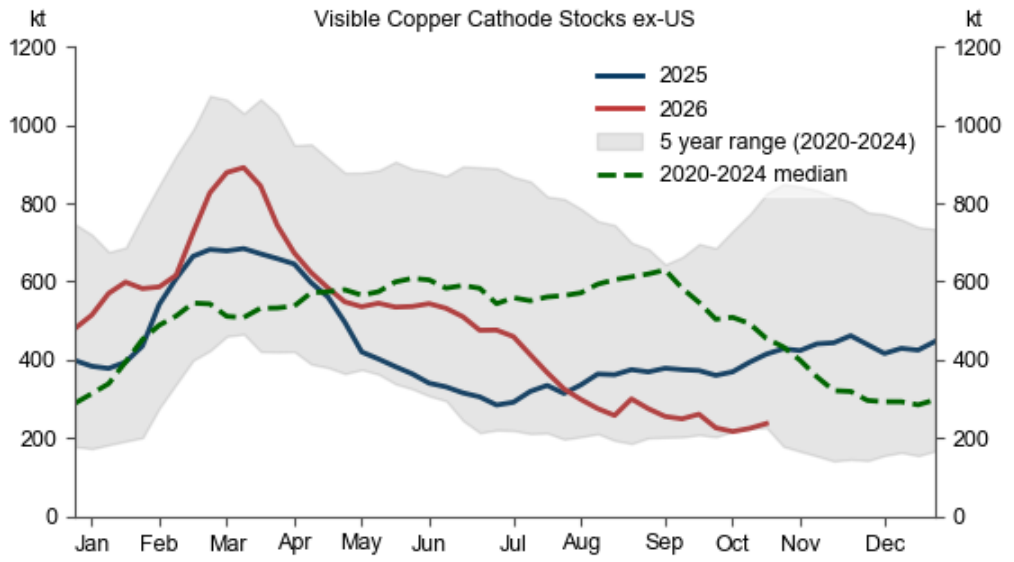
Source: CRU, Wood Mackenzie, SMM, ICSG, National Statistics, Company filings, BNEF, S&P Global Market Intelligence, Goldman Sachs Global Investment Research

Copper: Raising Our Price Forecast on US-China Competition

Copper prices have remained remarkably resilient this year. After reaching an all-time high of almost $14,900/t in September, prices corrected as US tariff expectations were repriced lower, but have since recovered on renewed Chinese buying interest and continue to trade in the $14,000-$14,500 range despite a more hawkish Fed repricing and renewed geopolitical uncertainty. We think this resilience reflects continued tightness in the physical copper market with visible ex-US copper cathode stocks at seasonal lows (Exhibit 3), increasingly driven by competition between the US and China

for a limited pool of available refined metal.

Exhibit 3: Ex-US Visible Copper Inventories Have Fallen to Seasonal Lows as Metal Continues to Flow in the US



Source: Bloomberg, SMM, WIND, Goldman Sachs Global Investment Research

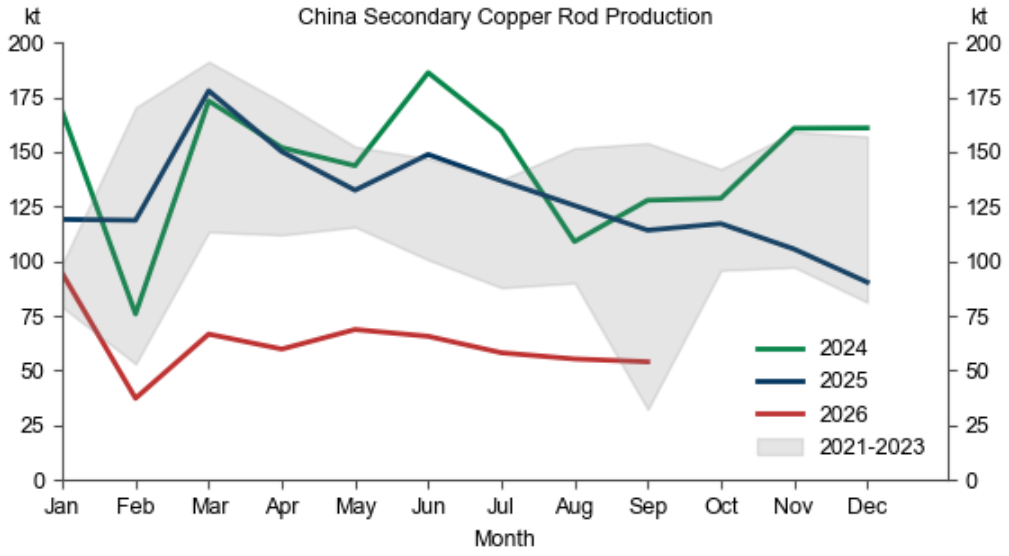
China scrap: tighter VAT enforcement has disrupted the domestic collection chain and supports cathode demand

China's scrap disruption, the main tightening driver of our 2026/27 balances, began in early 2026, when tighter enforcement of VAT invoicing requirements disrupted the flow of material through the country's highly fragmented scrap collection chain. Much of China's domestic scrap is collected by individuals and small traders who cannot issue VAT invoices themselves, making it difficult for recycling companies to obtain the documentation needed to reclaim VAT on their purchases. To address this problem, China introduced *reverse invoicing* in 2024, allowing qualified recycling companies to issue invoices on behalf of these sellers. However, stricter enforcement aimed at preventing invoice abuse, together with higher compliance costs and concerns over historical tax records, has made parts of the traditional collection model uneconomic. As a result, physical scrap may still be available, but it has become increasingly difficult and expensive for processors to source material with the required invoices[1]. Because scrap has typically met around 15% of fabricators' copper needs, the resulting shortfall has increased China's reliance on refined copper.

Scrap consumption in processing has fallen 29% YoY YTD, with the impact concentrated in copper rod, the largest semi-finished copper product, used mainly in wire and cable, which can be made either from scrap (secondary rod) or from refined cathode. Secondary rod producers have struggled to source properly invoiced scrap at viable prices, and their output fell by around 660kt (−54%) YoY in January–September (Exhibit 4).

[1] Under the reverse-invoicing framework, individual sellers are limited to RMB5mn of sales over a rolling 12-month period, equivalent to around 50t of copper scrap at prevailing prices. Above this threshold, sellers generally need to register as businesses and issue invoices themselves.

Exhibit 4: China's Secondary Copper Rod Output Has Roughly Halved This Year

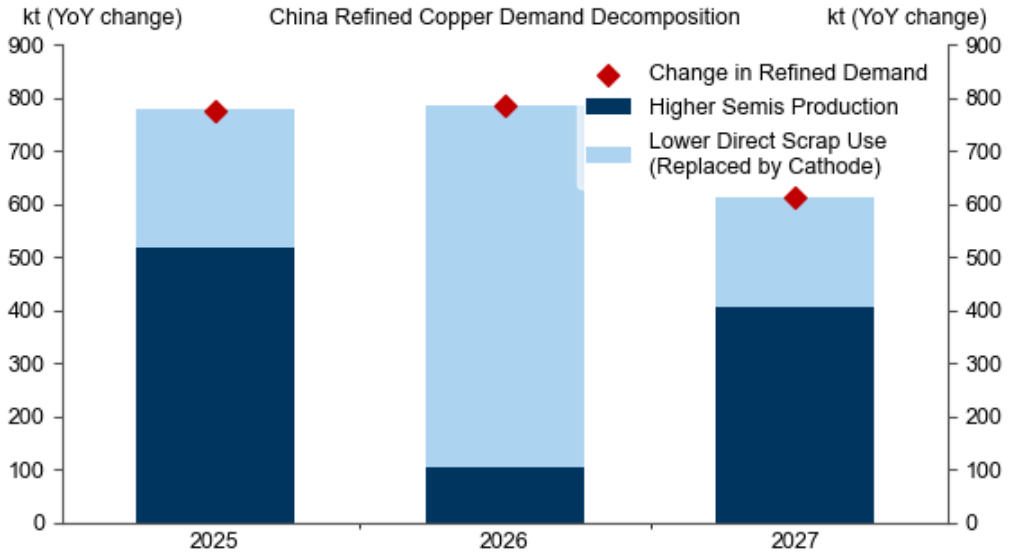


Source: SMM, Goldman Sachs Global Investment Research

However, cathode-based rod output rose by around 305kt (+4%), offsetting around half of the decline, while total rod output is down only around 4% YTD. Higher cathode use therefore raises refined copper requirements without implying stronger underlying consumption: lower direct scrap use accounts for almost all of the increase in China's refined copper demand this year (Exhibit 5).

We expect the disruption to persist into 2027, with direct-use scrap consumption falling 27% in 2026 and declining further next year. Recent fieldwork from our China equity research team suggests that roughly 500kt of annual domestic scrap flow (around 18% of normal domestic scrap supply) may currently be impaired, with risks of further deterioration in 2027. Resolving the underlying invoicing bottleneck is likely to require a broader restructuring of the collection chain, away from small, single-metal operators towards larger and more diversified recycling platforms.

Exhibit 5: Lower Scrap Use, Not Stronger End Demand, Drives Most of China's Refined Copper Demand Growth in 2026

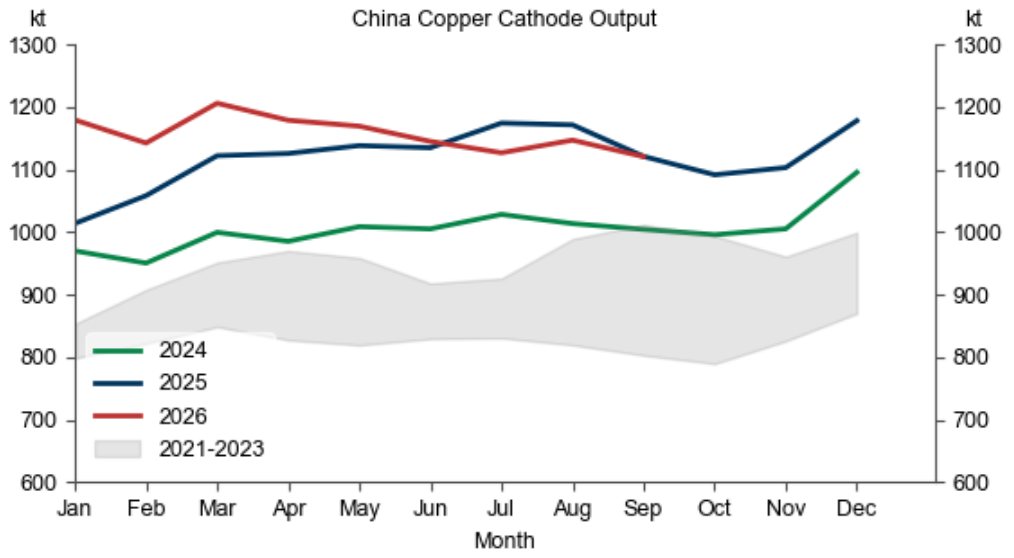


Source: SMM, Goldman Sachs Global Investment Research

Smelters, by contrast, have continued to compete strongly for available secondary feed, with scrap use in smelting up 19% YoY YTD, as exceptionally tight concentrate supply and deeply negative spot treatment charges (TCs)[2] increase the incentive to substitute towards scrap and scrap-derived anode. Smelters have also been relatively less affected by the VAT invoicing disruption, as they tend to source material through larger, more formalised suppliers. More recently, however, tightness in scrap-derived anode and other secondary feed has also begun to constrain the smelting chain, contributing to weaker refined copper output (Exhibit 6). In price terms, lower scrap availability in China adds $945/t to our end-2026 forecast and $2,985/t to our 2027 forecast, partly offset by higher scrap use by smelters, mainly outside China, where higher prices support collection (–$825/t and –$2,730/t).

[2] Treatment charges are fees paid by miners to smelters for processing copper concentrate. Tight concentrate availability relative to smelting capacity has intensified competition for feedstock, pushing spot treatment charges below zero, meaning smelters effectively pay a premium to secure concentrate.

Exhibit 6: China Refined Copper Output Has Slowed on Smelter Maintenance and Feedstock Tightness



Source: SMM, Goldman Sachs Global Investment Research

US stockbuilding continues to compete for copper, although we expect the pace to slow into 2027

Near-term tariff risk has diminished following a September media report suggesting that the White House had yet to reach a decision on refined copper tariffs amid concerns that higher copper prices could increase US manufacturing costs, particularly with affordability in focus ahead of the midterm elections. While a White House official confirmed that the Commerce Department had submitted its update by the June 30 deadline, no final tariff decision had been made. The report prompted a sharp narrowing in the COMEX-LME premium, consistent with reduced expectations of near-term tariff action (Exhibit 7).

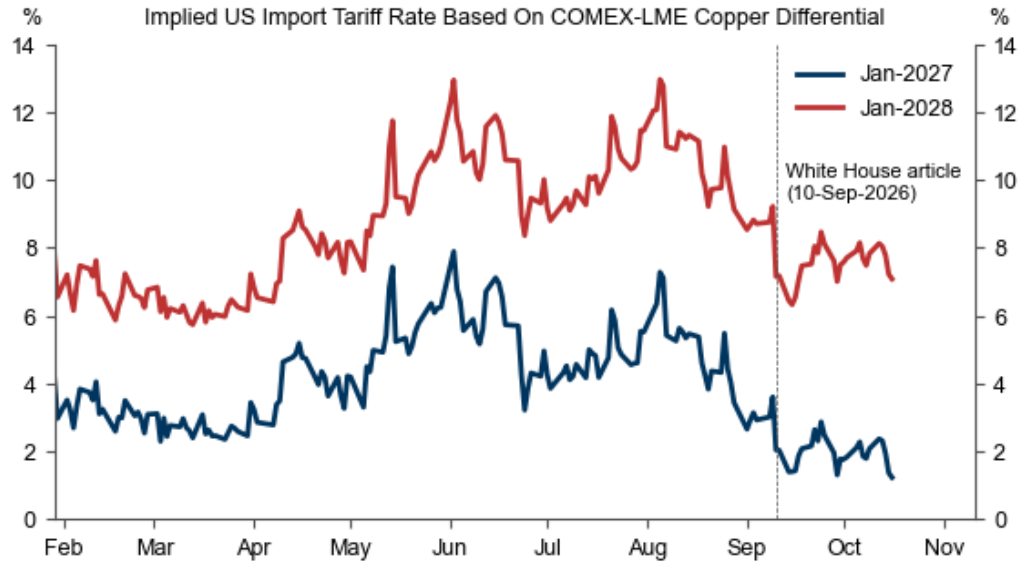
Nevertheless, we expect US imports to remain elevated through year-end as deferred arbitrage trades locked in earlier this year continue to arrive. Shipping data still point to seaborne imports running at around 170–200kt/month, well above the roughly 60kt/month pace seen before tariff-driven stockbuilding began (Exhibit 8). We therefore raise our 2026 US overbuild assumption[3] to around 1Mt from 900kt, with ~750kt already accumulated through September.

As these trades roll off, we expect imports and the pace of inventory accumulation to slow into early 2027. We see limited risk of a copper tariff before the midterms. While our base case remains that the administration holds off on a copper tariff into 2027 given the effective build out of US inventories under a no-announcement approach, the US government may have greater flexibility to pursue additional trade policy measures after the midterms, potentially renewing market concerns around a later copper tariff. We therefore assume 400kt of overbuild in 2027 (vs. 380kt prior), increasingly weighted towards the second half as buyers position ahead of the proposed step up to a 30% duty

[3] US unreported copper cathode inventories increase/decrease when monthly US seaborne cathode imports are above/below the pre-tariff average of 60kt/month (based on 2024 imports), adjusted for changes in reported US exchange inventories (COMEX and LME).

in January 2028. Upward revisions to our US imports assumption add around $250/t and $385/t to our end-2026 and 2027 average copper price forecasts.

Exhibit 7: The COMEX-LME Premium Has Narrowed as Near-Term Tariff Expectations Have Receded



The implied US import tariff rate is the percentage difference between the COMEX and LME copper prices for the same contract month.

Source: Bloomberg, Goldman Sachs Global Investment Research

Exhibit 8: We Expect US Copper Imports to Slow Into Next Year



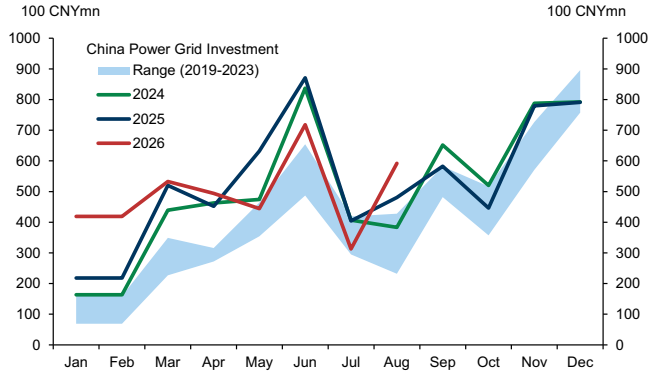
Source: Bloomberg, Kpler, Goldman Sachs Global Investment Research

Weaker end-use demand, partly offset by higher datacenter demand

We now expect slower global copper demand growth (refined plus direct-use scrap) of 1.3% in 2026, vs 1.8% previously. In China, we forecast broadly flat end-use demand in 2026 (+0.1%, vs 1.3% prev.). The main source of the downgrade is grid and power infrastructure. After a strong start to the year, grid investment fell 18–30% yoy in May–July, leaving January–August up only 4% yoy (Exhibit 9). We now assume grid and power

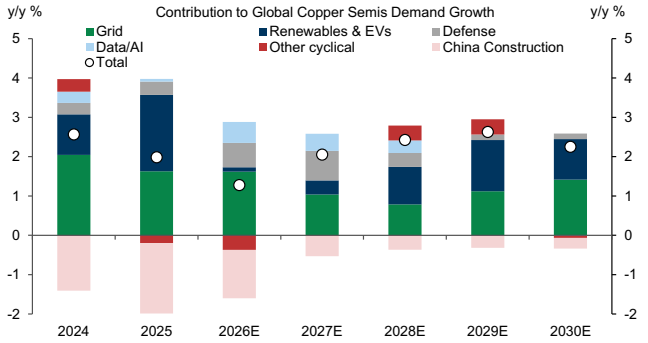
infrastructure demand grows around 7% this year (vs ~10% prev.). Growth is also held back by continued weakness in property and by renewables demand falling from last year's record installations. We expect growth in China end-use demand to recover to ~1% in 2027 as these drags ease. A bright spot is data centers, where we raise our demand forecast across our forecast horizon, offsetting weakness elsewhere (Exhibit 10).

Exhibit 9: China Grid Investment Has Slowed Sharply Since May After a Strong Start of the Year



Source: Wind, Goldman Sachs Global Investment Research

Exhibit 10: Global Copper Demand Slows in 2026, Partly Offset by Higher Datacenter Demand



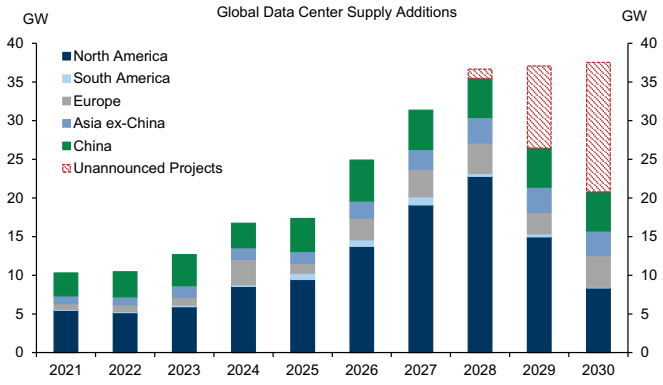
"Other cyclical" includes construction outside China, consumer and industrial applications, cooling, ICE vehicles and other transport (excluding EVs), among others.

Source: CRU, Wood Mackenzie, BNEF, Goldman Sachs Global Investment Research

We raise our global datacenter copper demand forecast by around 125kt in 2026 and 180kt in 2027, to around 550kt and 700kt respectively. This reflects higher global capacity estimates from our US equity research team, combined with regional forecasts for China and broader regional coverage (ASEAN, Australia). Our equity analysts see capacity estimates as potentially conservative relative to expected investment, with AI/cloud company capex projected to reach around $1.2tn by 2030.

Beyond 2027, visibility over new projects is more limited, and announced capacity additions decline towards the end of the decade. We therefore supplement the announced project pipeline with an allowance for unannounced capacity, informed by the GS datacenter capex tracker. We incorporate only half the gap between announced additions and the path implied by capex growth, reflecting uncertainty over the conversion of spending into capacity and constraints on power, equipment and permitting. On this basis, annual datacenter copper demand reaches around 820kt in 2028 before easing to around 800kt in 2030, still double its 2025 level.

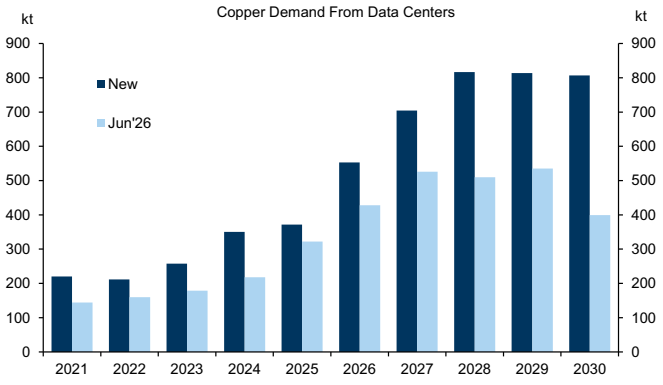
Exhibit 11: We Expect Data Center Capacity Additions to Remain Elevated Beyond 2027



Unannounced projects reflect 50-70% of the gap between our announced capacity additions and the additions implied by applying the GS data center capex tracker growth rates to our 2027 estimate, from 2028 onwards.

Source: Goldman Sachs Global Investment Research

Exhibit 12: We Raise Our Data Center Copper Demand Forecast to 550kt in 2026 and 700kt in 2027



Source: Goldman Sachs Global Investment Research

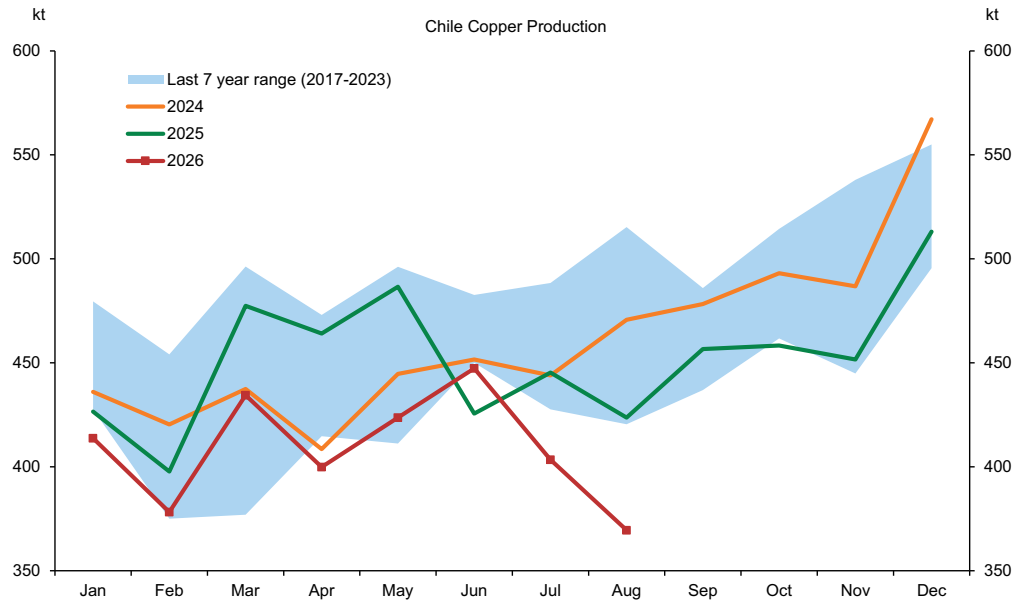
Mine supply weakens further in 2026, with a recovery expected in 2027

We lower our 2026 mine supply forecast by a further 100kt relative to our prior estimates and now expect a 0.8% year-on-year decline. The revision mainly reflects weaker output in Chile, where we now expect production to fall 7% (vs 6% previously). This adds to the outages at Grasberg in Indonesia and Kamoa-Kakula in the Democratic Republic of Congo (DRC), which together accounted for around 60% of our earlier 2026 350kt mine supply downgrade and remain the main drivers of this year's global decline.

We expect production at both operations to recover gradually in 2027, but neither to return to full capacity until 2028. Chilean production fell 13% year-on-year in August, taking the year-to-date year-over-year decline to 8% (Exhibit 13). Lower grades and deferred maintenance have weighed on output, while severe winter storms disrupted operations and power infrastructure, prompting guidance cuts at Los Pelambres and Caserones. We expect the immediate weather effects to be temporary, but labour negotiations and further weather disruption remain downside risks. A super El Niño could extend weather disruption in Chile and bring heavy rains to Peru in early 2027, while a return to dry conditions in southern Africa could constrain hydropower availability and copper production.

We expect global mine supply to recover by 2.3% in 2027. Recoveries at Grasberg and Kamoa-Kakula would support this growth, partly offset by a slower assumed restart at Cobre Panama, where we now forecast around 70kt of supply (including copper from processing stockpiled ore). The recovery therefore remains dependent on the timing and pace of ramp-ups at a handful of assets.

Exhibit 13: Chilean Copper Production Fell 13% YoY in August as Severe Winter Storms Added to Supply Disruptions

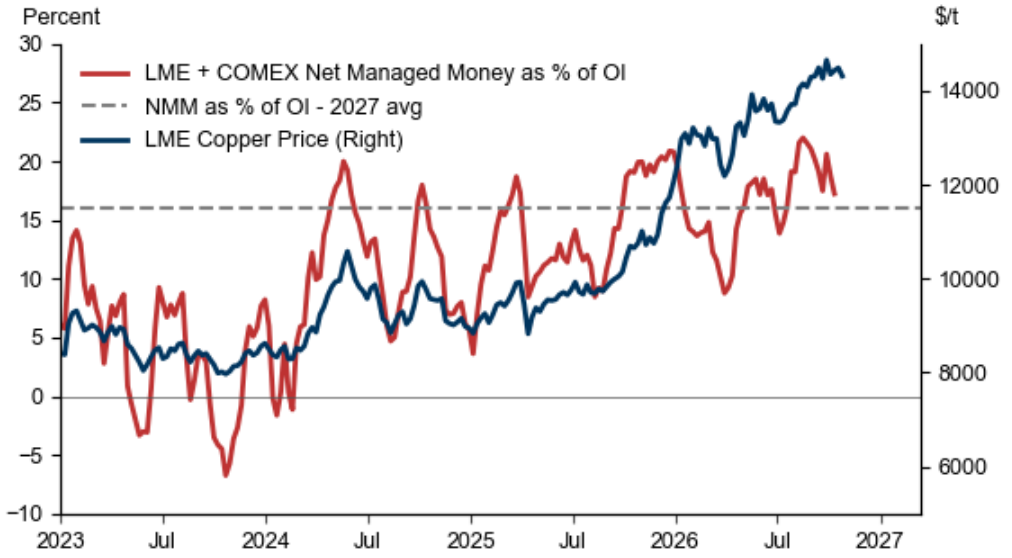


Source: Haver Analytics, Cochilco, Goldman Sachs Global Investment Research

Sustained investor interest supports a higher positioning assumption

Investor interest in copper has become increasingly tied to the AI and datacenter theme, with the correlation between copper investor length and AI-related equities rising sharply since late 2025, alongside broader investor demand for hard assets. Net managed money positioning has remained elevated between 16 and 22% of open interest since late July, well above its ~10% five-year average, including through the recent correction. We expect this investor interest to persist into 2027, with the three Fed cuts our economists forecast starting in H2 2027 providing a more supportive macro backdrop. We therefore assume positioning averages 16% of open interest next year, broadly in line with its year-to-date average, rather than reverting to neutral. This higher positioning assumption adds around $775/t to our 2027 average copper price forecast.

Exhibit 14: Investor Positioning Has Remained Elevated Through the Recent Copper Price Correction



Source: Bloomberg, Goldman Sachs Global Investment Research

Risks to our copper price forecast are skewed to the downside

Our copper price forecast faces two main risks: a less supportive macro backdrop that reduces investor positioning, and changes in US tariff policy that alter the pace of its copper stockbuilding.

1. **Macro and positioning.** A potentially more hawkish Fed path and higher yields pose downside risks to our price view. Persistent inflation—for example, following a further energy supply shock—could delay the expected easing and keep yields elevated, triggering a reduction in investor length. Copper's increased correlation with AI-related equities also leaves prices exposed to a broader reassessment of the theme. A sell-off could weigh on positioning even before any material change in physical copper demand. A return to neutral positioning would remove around $775/t of support from our 2027 average price forecast to around $14,600/t.
2. **US tariff policy.** Our base case assumes 400kt of US inventory overbuild in 2027, weighted towards the second half.
    - An advance announcement confirming a phased tariff from 2028 could encourage buyers to accelerate shipments before duties take effect, provided US premiums cover transportation, financing and storage costs. If overbuild increased to 800kt, we estimate our 2027 average price forecast would rise to around $16,350/t. This would partly bring forward imports from subsequent periods, implying slower arrivals after implementation.
    - Conversely, a clearer signal that refined copper tariffs will not be introduced could reduce precautionary stockbuilding. If overbuild fell to 200kt on lower tariff risk, we estimate our 2027 average price forecast would decline to around $14,900/t, as more metal remained available outside the US.