

Metal Matters

China's aluminium demand still resilient as policy points to a structurally tighter market during 15th FYP

CITI'S TAKE

We upgrade our aluminum 0-3mth pt price to \$2,950/t as the market increasingly pulls forward medium/long-term optimism, bringing current pricing closer to our 6-12mth target of US\$3,000/t and reflecting an ongoing re-pricing of structurally bullish expectations well in advance of anticipated physical deficits. We also discuss the implications of China's 15th Five-Year Plan for copper and aluminium supply-demand dynamics, review our solar-sector demand model, update our China aluminium end-use tracker (CAET) for September data, and examine the rise of tolling trade as a key mechanism in global aluminium flow realignment.

We are increasingly constructive on aluminum over the next 6-12 months, as the market continues to pull forward the medium- to long-term structural bullish case — The recent rally is consistent with this dynamic: stronger investor interest, supportive relative value flows, and macro catalysts have lifted prices despite a physical market that is likely to remain broadly balanced until 2027 and persisting near-term cyclical demand headwinds.

Our China Aluminium End-Use Tracker (CAET) shows that aggregate demand remains resilient (+5% ytd; +2.8% y/y in Sep-25) though the composition has become increasingly uneven — Construction remains a drag amid tighter project funding (-2.8% y/y), while energy transition segments including transport and power continue to post strong gains, anchoring overall aluminium demand.

China's solar sector remains a net positive contributor to aluminium demand growth (0.2~0.3% 2025-2026), although momentum has moderated — Export markets have become increasingly important, with module exports remaining resilient supported by China's expanding presence in Belt and Road economies (>70% China's modules exports) and rising overseas investment and contracting projects.

We discuss China's rising aluminium tolling activities, which reflect a structural shift in trade patterns as downstream exporters adjust to the post-VAT rebate removal regime — We expect this trend to underpin growth in China's primary aluminum imports and enable China to absorb a visible ex-China surplus through its downstream processing system. We expect this to reshape physical global aluminium flows.

China's 15th Five Year Plan Proposal outlines the framework for metals medium- to long-term supply and demand — Emphasised themes collectively point towards a more demand-intensive yet supply-disciplined cycle ahead - with copper smelting and alumina refining likely to face a de-facto capacity ceiling in the coming years.

Related research:

[Aluminium long-term outlook: sleepwalking into the biggest deficits in over 20 years](#)

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Aluminium repricing accelerates as market pulls forward medium- to long-term structural optimism

Aluminium has outperformed most base metals in recent weeks, with LME 3M prices surpassing USD 2,900/t. This strength reflects a combination of relative-value support versus copper, fundamental catalysts, and rising investor participation. The copper-to-aluminium price ratio had rebounded toward 4.0 (near its 2012–13 highs) before aluminum’s recent rally. While this ratio is often cited as an indicator of aluminum’s relative undervalue vs copper, historical data show little consistent predictive power. Even on a one-month horizon, the correlation between the ratio and aluminium returns remains statistically weak, suggesting that it serves more as a sentiment reference than reliable timing signal.

Still, the elevated ratio has helped reinforce the perception of aluminum’s relative value within the base-metals complex, supporting short-term positioning alongside an improving fundamental outlook. Recent supply disruptions at Century Aluminum’s Norðurál smelter in Iceland and a modest improvement in macro risk appetite (following the easing of China–US trade tensions) have further contributed to the bullish tone, as evidenced by strong speculative positioning in the LME market and record-high ShFE open interest.

The recent rally appears consistent with our earlier assumption that, even with a broadly balanced physical market, stronger investor interest and macro catalysts can pull forward price performance ahead of emergence of a fundamental deficit. While we forecast the global aluminium market remaining broadly balanced through 2025–26 and that a structural deficit emerges only from 2027 onwards, the latest price strength suggests that markets are increasingly already pricing for that tighter future physical outlook.

Over the next 6–12 months, we expect aluminium prices to remain well supported, with the balance of risks skewed to the upside. A combination of macro and fundamental catalyst continues to shape shorter-term dynamics. On the macro side, US policy events may drive bouts of volatility, but the overall balances of risks remained favorable for aluminum. Should these catalysts evolve favorably, prices could see further strength as investors position for a broader manufacturing and associated cyclical demand recovery. Irrespective of near-term volatility, fundamentals are expected to continue improving gradually over the next 6–12 months, suggesting any short-term dips will most likely present attractive medium- to long-term buying opportunities. We now see aluminium trading around \$2,950/t over the next 0–3 months, with scope for rallies to test \$3,000/t before 2027, in a market that remains broadly balanced on paper until real physical deficits emerge later in the decade.

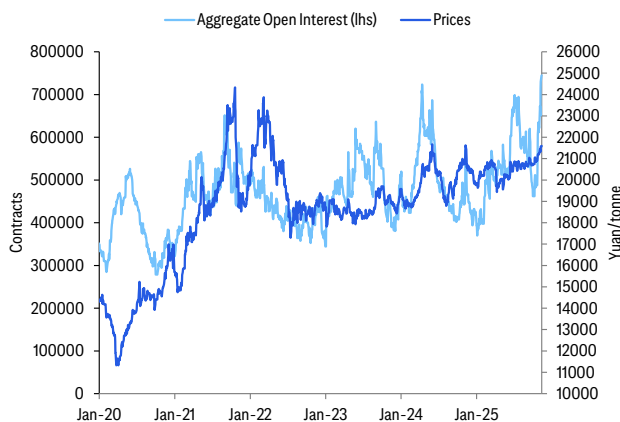
Figure 1. Citi’s revised aluminium price forecast

Base Metals	Unit	0–3 mth pt price	6–12 mth pt price	4Q25f	2025f	1Q26f	2Q26f	3Q26f	4Q26f	2026f	2027f
Aluminium <i>NEW</i>	\$/t	2950	3000	2685	2590	2850	2900	3000	3000	2940	3500
Aluminium (OLD)		2600	3000	2650	2590	2600	2650	2800	3000	2765	3500

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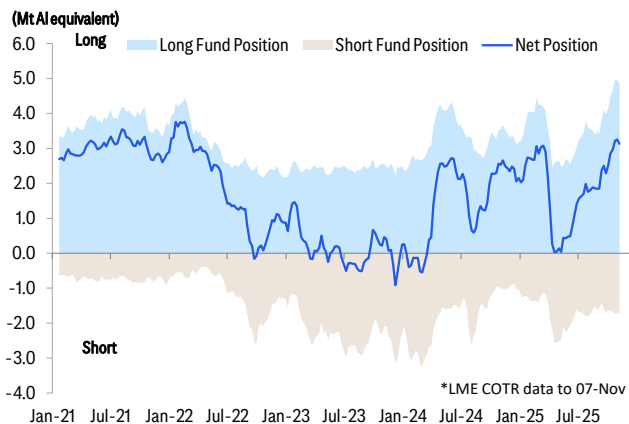
Source: Citi Research, Bloomberg

Figure 2. ShFE aluminium aggregate open interest has reached record highs as investor participation broadens



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Source: Citi Research, Bloomberg

Figure 3. LME speculative length has rebuilt to multi-year highs, implying firmer investor conviction in aluminium



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Source: Citi Research, Bloomberg

China Aluminium End-Use Tracker: Overall resilience, but construction remains a drag

China's aluminium end-use demand remained remarkably resilient, with year-to-date growth at +5.1% and September up +2.8% y/y, according to our China Aluminium End-Use Tracker (CAET). While aggregate consumption continues to outperform expectations, the composition of growth has become increasingly uneven. Traditional construction remains a drag, offset by persistent strength in transportation, electrical, and decarbonisation-related segments.

Construction demand weakened further in September, down -18% y/y, as project funding constraints weighed on activity. According to MySteel, the funding-availability for construction projects has fallen noticeably, suggesting limited capital inflows to active sites. This shortfall is linked to slower allocation of special-purpose local government bonds toward infrastructure, leaving many projects under-financed. With year-to-date GDP already running above the government's annual target, Beijing's urgency to stimulate growth through traditional infrastructure spending has eased, reflecting a reprioritization of fiscal resources rather than policy neglect of the sector.

By contrast, decarbonisation-related aluminium demand continued to post double-digit growth ~ 20% y/y in September—remaining a key driver of overall consumption. Growth in the transportation and electrical sectors also stayed firm, supported by electric-vehicle output, grid investment and renewable-equipment manufacturing. These trends highlight the ongoing structural reallocation of aluminium demand from traditional, capital-heavy construction toward energy-transition and technology-intensive industries, consistent with the 15th Five-Year Plan emphasis on high-quality, low-carbon growth.

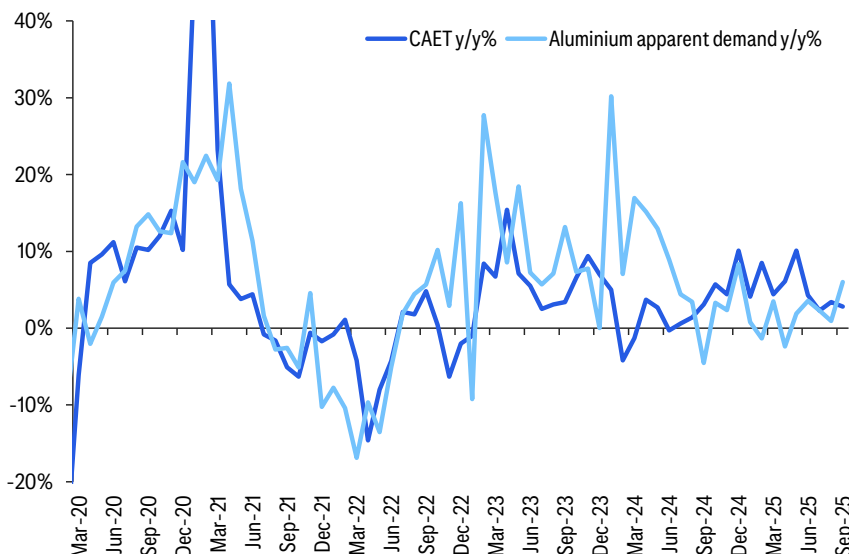
Figure 4. China aluminium monthly end use tracker – cyclical demand remains a drag while decarbonisation sectors continue to drive growth

	Sep-24	Oct-24	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25
China Aluminium End-Use Tracker (CAET) - % change y/y	3.1%	5.7%	4.4%	10.1%	4.1%	8.5%	4.4%	6.1%	10.1%	4.3%	2.3%	3.4%	2.8%
China Aluminium End-Use Tracker (CAET) - % change ytd	1.1%	1.5%	1.8%	2.5%	4.1%	6.3%	5.7%	5.8%	6.6%	6.2%	5.7%	5.4%	5.1%
Transportation	1.5%	12.8%	17.4%	20.9%	2.5%	37.9%	12.1%	16.3%	14.0%	18.6%	20.2%	19.6%	22.2%
Construction	-7.2%	-7.1%	-12.3%	1.5%	4.9%	-5.3%	-2.6%	-11.2%	-10.9%	-6.7%	-18.3%	-18.2%	-18.2%
Packaging	5.6%	5.0%	6.5%	10.7%	-3.6%	-3.6%	-2.4%	0.8%	-2.5%	-2.7%	2.2%	-3.4%	-2.8%
Foil stock	9.1%	9.1%	9.1%	9.1%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%	3.2%
Electrical	14.5%	17.3%	18.0%	20.5%	12.6%	25.6%	11.6%	49.9%	97.4%	-1.2%	-3.5%	4.0%	0.5%
Consumer durables	10.8%	9.3%	8.1%	16.0%	8.4%	8.4%	4.1%	-2.2%	0.5%	5.7%	6.7%	6.2%	-0.7%
Machinery & Equipment	3.2%	6.1%	1.9%	8.2%	-4.1%	-4.1%	1.1%	-1.5%	-0.6%	2.9%	3.2%	7.9%	3.1%
Other	5.4%	5.3%	5.4%	6.2%	5.9%	5.9%	7.7%	6.1%	5.8%	6.8%	5.7%	5.2%	6.5%
Cyclical	-3.8%	-1.5%	-3.6%	3.2%	0.0%	2.8%	-1.7%	-2.3%	-0.5%	1.3%	-2.2%	-1.6%	-2.8%
Decarbonisation	32.1%	34.5%	35.3%	29.7%	31.8%	59.3%	31.7%	42.7%	50.1%	14.5%	18.5%	21.1%	19.9%

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Source: Citi Research, NBS, SMM, Msteel, CRU

Figure 5. China aluminium demand shows continued resilience, with our bottom-up tracker broadly matching apparent consumption trends



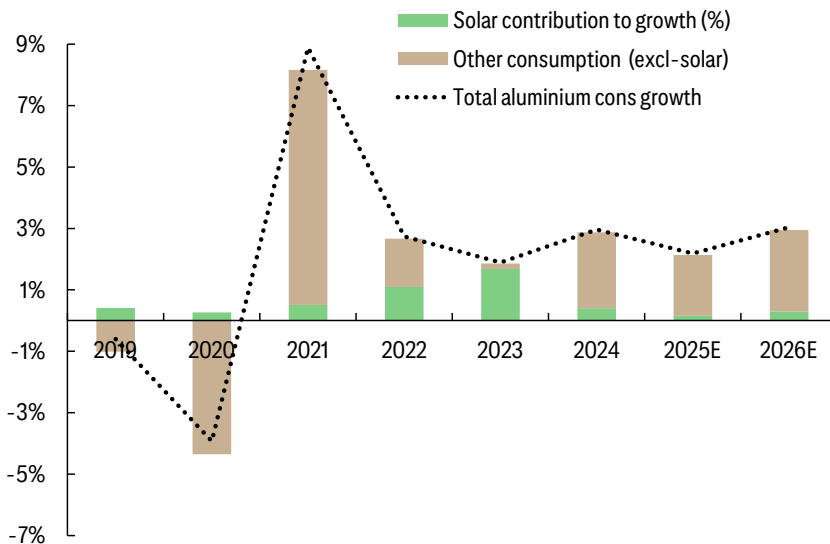
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Source: Citi Research, SMM, NBS, Mysteel, Bloomberg

China's policy framework points to a normalisation of solar momentum, with solid external demand support

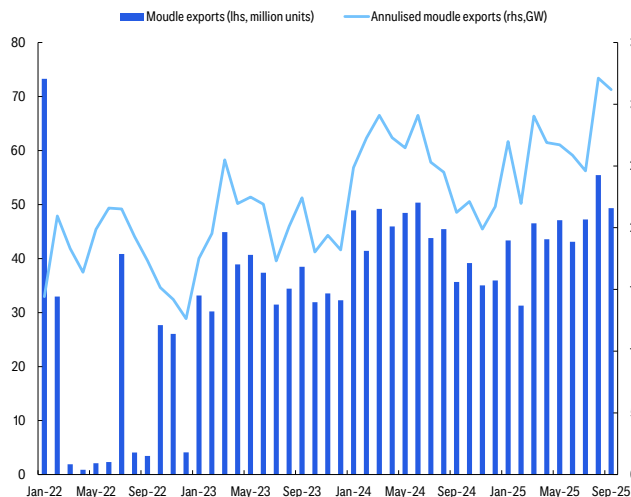
Our latest model update shows that the solar segment will continue to make a net positive contribution of around 0.2–0.3% to total aluminium demand growth in 2025–2026, down from 1.7% in 2023. Domestic installations have slowed sharply after policy-related front-loading earlier this year, while exports have remained resilient, sustaining overall demand across the solar value chain. This pattern is consistent with the view outlined in our [3Q25 Outlook](#) (p. 129) — ‘China solar installation slows, but module export keeps demand afloat’ — and the latest three months of customs data have validated this assumption.

Figure 6. China solar sector remains a net positive contributor to aluminium demand growth, with export market strength deepening amid China's overseas/Belt and Road penetration



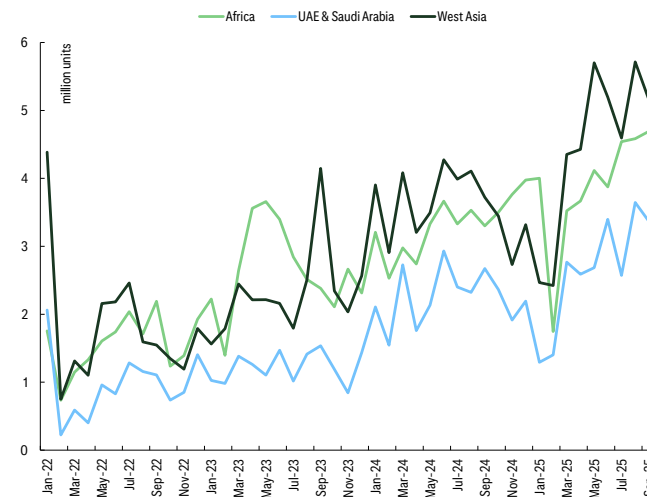
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Source: Citi Research, CRU, SMM, Bloomberg

Figure 7. China solar module exports remain resilient, sustaining >300GW (annualised) in 2025 amid a domestic installations slowdown



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Source: Citi Research, China Customs

Figure 8. Module exports to emerging markets show steady growth as China diversifies solar demand beyond traditional destinations

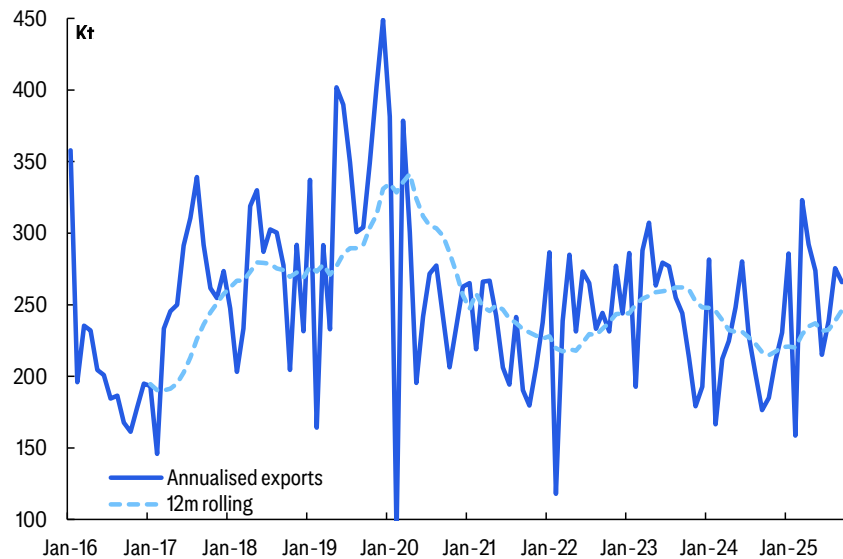


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Source: Citi Research, China Customs

External demand has become the key stabilizer, driven by Belt and Road (BRI) investment and power-infrastructure projects execution. More than 70% of China's solar-module exports now go to BRI economies, with steady gains across Africa, West Asia, Latin America, and the Middle East. Data from China's Ministry of Commerce (MOFCOM) show that outward direct investment (ODI) in power, gas and water supply continues to rise, and that project-execution values in BRI countries consistently outperform total overseas averages. These projects create

strong pull-through effects for exports of solar modules and related equipment – including inverters, transformers, aluminium frames and mounting systems – as well as other power-infrastructure products. In practice, external markets are offsetting weaker domestic activity and keeping metals consumption in the solar chain on a stable, positive trajectory.

Figure 9. Aluminium frame (for solar modules) exports remain solid as China deepens its participation in the global solar value chain (>250kt annualised for 2025)

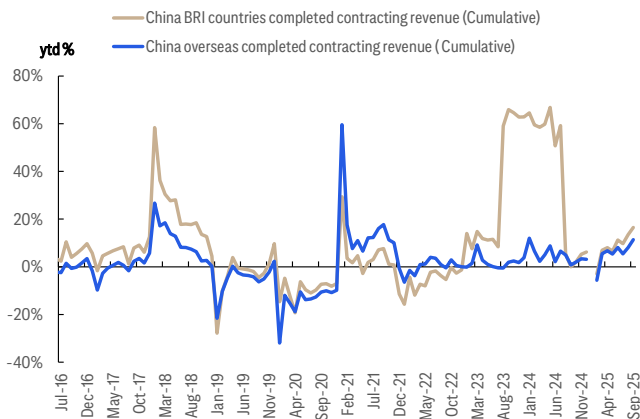


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Source: Citi Research, China Customs

Policy guidance reinforces solar manufacturing as a supported segment under China's power-equipment strategy. The Power-Equipment Industry Work Plan (2025–2026) (see [4Q25 Outlook](#), p.19) explicitly calls for 'actively expanding international markets; participating in the global energy transition and low-carbon initiatives; strengthening cooperation in green and new infrastructure; and deepening whole-value-chain collaboration with emerging-market countries in wind, solar and energy storage'. This echoes the 15th Five-Year Plan objective of 'high-quality Belt and Road cooperation' and underlines continued policy support for export-driven solar growth. As a result, while domestic solar momentum has normalised, policy-driven external demand remains solid, underpinning aluminium and copper consumption across the renewable-energy and power-equipment supply chain.

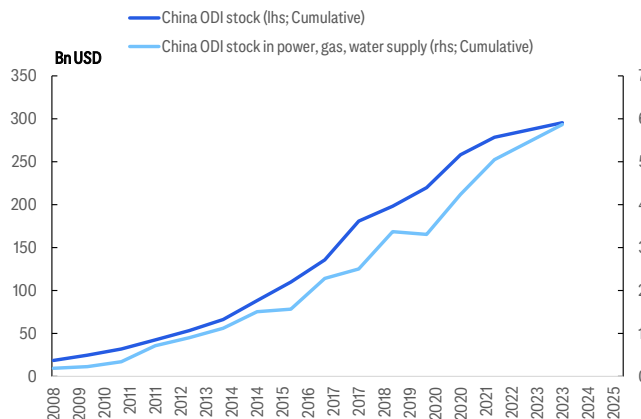
Figure 10. Overseas project execution remains robust, with BRI countries outpacing overall investment growth



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Source: Citi Research, MOFCOM, Wind

Figure 11. China's expanding ODI - particularly in power related supply - continues to reinforce downstream equipment and solar exports



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Source: Citi Research, MOFCOM, Wind

Rising tolling activity reinforces China's role as aluminium balancer

We have observed a notable increase in aluminium tolling activity in China this year, signalling a growing shift in trade structure along the aluminium value chain. This development is broadly consistent with what we highlighted last year following China's removal of VAT rebates on semis exports - namely greater downstream shift toward tolling arrangements could keep China's semis exports relatively resilient despite the change in tax ([Metal Matters - China export tax rebate removal for copper and aluminium semis bigger impacts on LME/ShFE price ratio than global balance](#)).

Tolling business broadly refers to processing trade, in which enterprises do not fully own the material but instead earn processing fees by converting imported inputs (e.g. unwrought aluminium) into semi-fabricated products. Within China's Customs classification, processing trade with imported materials (进料加工) and processing trade with supplied materials (来料加工) fall squarely under this definition. We also assume that outward processing trade (出料加工) is part of the broader tolling business framework when assessing China's aluminium trade flows. Together, these modes define what we refer to as China's tolling-based aluminium processing system.

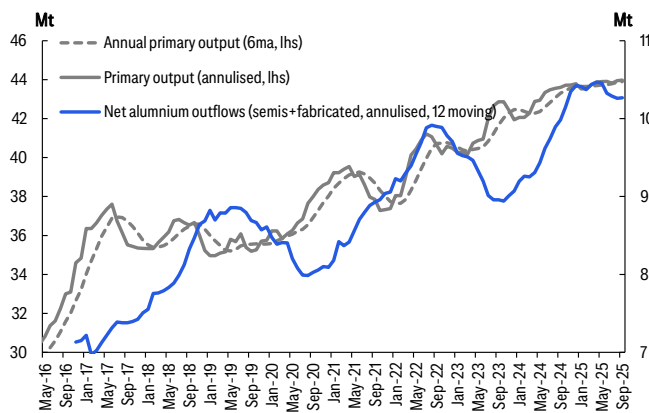
According to China Customs data, tolling-related imports accounted for roughly 34% of total primary aluminium imports in the first three quarters of 2025, equivalent to around 660 kt. The share is significant given China's overall import recovery and reflects the increasing use of tolling channels to sustain fabrication activity amid changing export-tax conditions.

The rise of tolling trade partly reflects policy adjustments made in November 2024, when VAT rebates on certain aluminium semis exports were removed. Under ordinary trade (一般贸易), exporters purchasing input materials domestically must pay 13% VAT on procurement and could previously recover it upon export under a 'levy-first, refund-later' regime. With the rebate cancellation, that input VAT can no longer be refunded, materially raising the effective tax burden. In contrast, processing (tolling) trade benefits from dual exemptions on import duty

and import VAT for primary aluminium inputs, and VAT is levied only on the processing margin. This difference has encouraged many downstream producers to shift towards tolling arrangements, maintaining export competitiveness even as policy support under ordinary trade has diminished.

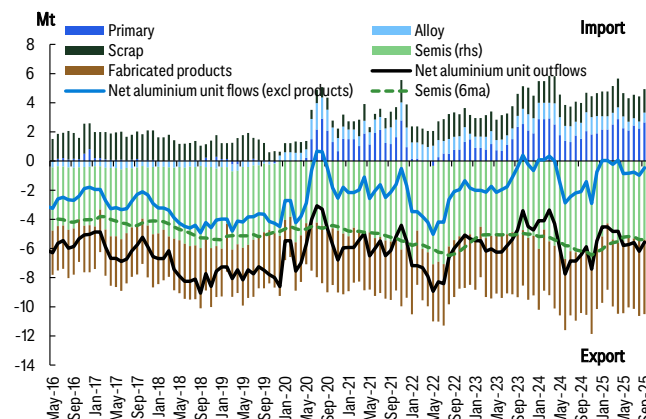
We expect tolling activity to support continued growth in China’s primary aluminium imports. Based on our latest model, China’s primary aluminium imports are estimated at 2.4 million tonnes in 2025, rising to 2.6 Mt in 2026 and 2.9 Mt in 2027, and likely to exceed 3 Mt from 2028 onward. The increasing share of tolling-related trade provides an additional channel for absorbing imported metal units and sustaining downstream fabrication and exports. In this way, China effectively absorbs visible ex-China primary surpluses through its downstream processing system, altering the distribution of headline aluminium balances without necessarily implying a fundamental tightening in global supply.

Figure 12. Rising aluminium outflows amid stagnant primary output highlighting growing reliance on import units



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Source: Citi Research, China Customs

Figure 13. Rising aluminium exports are increasingly balanced by higher imports of primary metal and alloys



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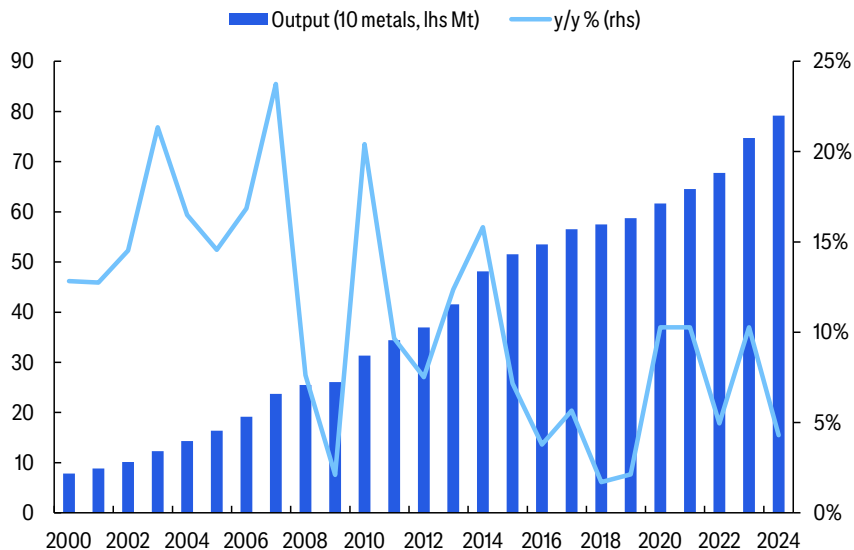
China’s 15th Five-Year Plan will anchor a more demand-intensive yet supply-disciplined metal cycle

Following the Fourth Plenum at the end of October, China released the [Proposal for Formulating the 15th Five Year Plan](#). At this stage, the document provides only high-level guidance rather than detailed sectoral directives. Nevertheless, even within this broad framework, several themes emerge that are highly relevant for the medium- to-long-term outlook of China’s metals sector.

On the policy side, the Proposal calls for the ‘comprehensive rectification of ‘involution-type’ competition and the removal of barriers to building a ‘unified national market’ (全国统一大市场). While framed at a high level, this emphasis aligns closely with the direction of specific metals high quality growth guidelines for copper and aluminium ([Metal Matters - China’s high-quality development plans: maintain hard cap on aluminum capacity while being more restrictive on copper](#)), and the [Work Plan for Stabilising Growth in the Nonferrous Metals Industry \(2025-2026\)](#) - each of which stress tighter capacity discipline and need to curb low efficiency, repetitive investment.

In our view, the inclusion of these themes in the Proposal provides a high-level policy anchor, reinforcing the direction of these industry policy documents and strengthening the basis for more stringent capacity discipline execution in selected segments over the coming years.

Figure 14. The official workplan only points to avg. output growth of the ten major nonferrous metals at ~1.5%; compared to the double-digits expansion during early 2000s, this represents a structurally lower supply growth trajectory



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Source: Citi Research, MySteel, CNIA

In metals, we believe China is likely to establish a de-facto capacity ceiling in copper smelting and alumina refining during the 15th Five-Year period. This view reflects increasingly stringent project approval, energy-efficiency, and environmental and resources constraints, alongside the policy preference for capital optimisation over capacity growth.

Instead, the government aims to redirect future capital toward high-quality growth areas that align with its strategic priorities. In practice, this represents stronger supply-side discipline, as investment optimisation replaces blind expansion. At the same time, many of the sectors receiving policy support (renewable power, grid equipment, datacentre infrastructure, and advanced manufacturing) are highly metal-intensive, reinforcing structural demand for copper and aluminium.

China's 15th Five-Year Plan Proposal also highlights several prioritised sectors that are set to reinforce structural metals demand, particularly in aluminium and copper. One key passage calls for 'accelerating innovation in AI and data-related technologies, and strengthening the efficient supply of computing power, algorithms and data.' This language directly points to continued expansion of China's datacentre and digital-infrastructure footprint.

It implies sustained growth in electricity demand and, by extension, strong underlying consumption of power-related metals such as aluminium (for server racks, cooling, and structural components) and copper (for cabling and conductors). Another emphasised growth theme is the 'low-altitude economy' (低

空经济), which refers to China's efforts to develop aerospace, drone, and urban air-mobility applications. This segment remains fragmented but is inherently aluminium intensive, given its reliance on lightweight, high-strength materials.

In parallel, the Proposal underscores the need to 'accelerate the construction of a new-type energy system' and to 'pursue a diversified energy mix featuring wind, solar, hydro and nuclear, while improving grid integration and transmission capacity' (加快建设新型能源体系, 坚持风光水核等多能并举, 提升新能源消纳和外送能力). This reinforces the long-term electrification trend that underpins both copper and aluminium demand across China's power-equipment and power infrastructure sectors. The policy focus on enhancing grid flexibility, transmission, and storage efficiency points to continued investment in power networks — a core structural driver for copper — while supporting broader deployment of aluminium in conductors, cables, and renewable installations.

Beyond the domestic dimension, the Proposal's reference to 'high-quality Belt and Road cooperation' (高质量共建 '一带一路') signals an external push to integrate green and digital infrastructure into China's international strategy. While details are limited in the Proposal, the linkage becomes clearer when viewed alongside the 2025–2026 Power Equipment Industry Work Plan released in September 2025, which explicitly calls for developing the overseas market. Together, these policies imply rising overseas demand for Chinese power equipment — including transformers, cabling systems, and solar modules — thereby extending copper and aluminium demand growth beyond the domestic market.

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