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SPECIAL REPORT

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China's Tug-Of-War: Will Copper Become A Casualty?

A Word From Chen Zhao

As I am currently traveling, today's *Special Report*, titled ***"China's Tug-Of-War: Will Copper Become A Casualty?"*** is written by Bassam Nawfal, our Chief Asset Allocation Strategist. Bassam takes a careful look at China's copper consumption trend and projects a bullish trend for copper prices.

I like this piece because it is based on solid, quantifiable and methodical research, and its conclusion is convincing. I trust you will find the piece very informative and insightful.

Best Regards,
Chen Zhao

In This Report

The Mantle Changes Hands 2

Past The Worst For The Old Economy... 3

...While Roots Of "Green" Copper Demand Take Hold 5

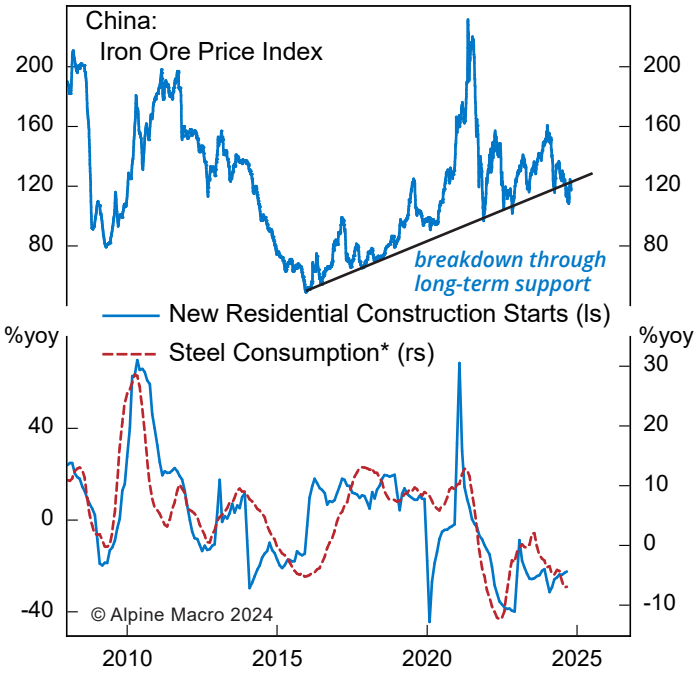
Technical Considerations For Copper... 8

Key Takeaways 8

The stimulus blitz unleashed last month by Chinese policymakers could prove to be a true "game changer" for the economy. In reality, there have been several false starts in the past, most notably the May easing package that was aimed at arresting the implosion in the property market. That effort failed, dragging iron ore below key long-term support (**Chart 1**).

This report explores whether the breakdown in this key commodity, closely tied to China's prospects, portends downside risks for copper. The outcome hinges on the tug-of-war between China's stuttering "old economy" and the growing momentum of the "green" transition.

Chart 1 Iron Ore: Canary In The Coal Mine For Copper?



*Inferred from domestic production, imports and exports
Source: MySteel, World Steel Association, Alpine Macro calculation

The Mantle Changes Hands

A natural starting point is to take stock of what is happening with Chinese copper consumption. Chart 2 highlights a few key observations:

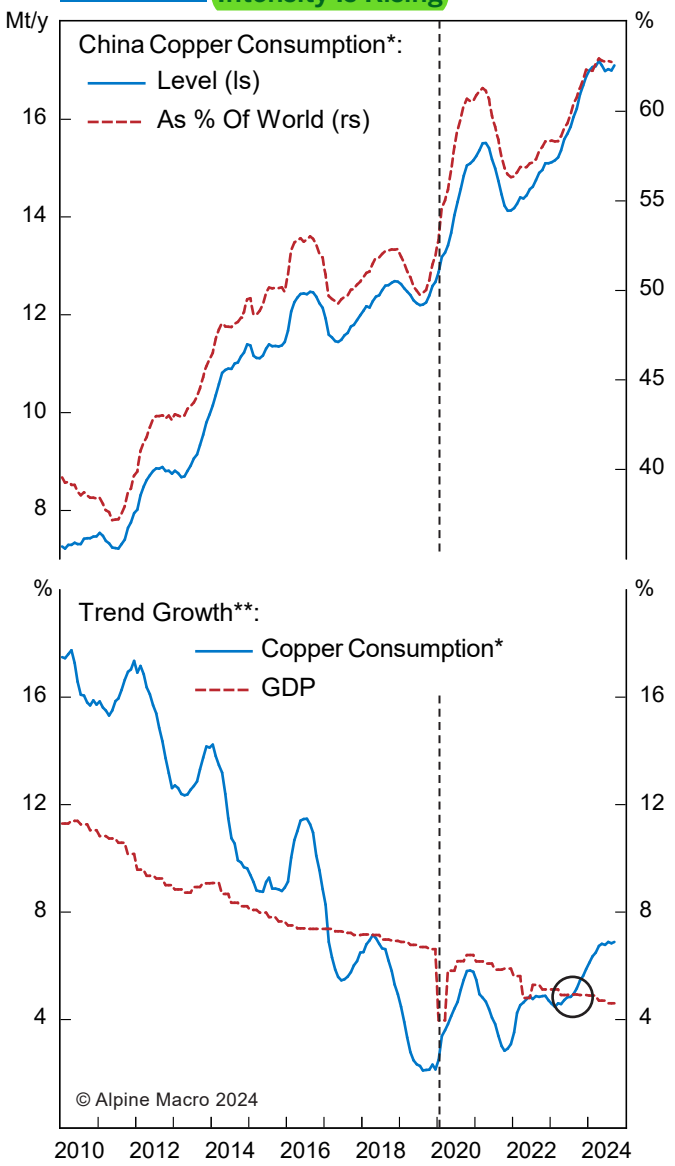
- Copper demand remains on a solid structural uptrend, with annual consumption now at 17 million tons – nearly double the level from a decade ago.
- Smoothing out the cyclical gyrations reveals that trend growth stopped declining in 2020. Interestingly, the current pace of 6.6% implies that the economy's usage intensity of the red metal is starting to rise again.
- Accelerating consumption has further intensified China's dominance in global demand, with its share climbing recently from 50% to nearly 65%.

Copper usage remains predominantly tied to traditional sectors that powered China's earlier stages of economic growth, namely construction, infrastructure, and manufacturing. This demand can be examined in two ways:

- The first, simpler approach is to link copper consumption to real estate trends. Completed floor space is a highly reliable proxy, as copper is extensively used during the final stages of construction for wiring, plumbing, and heating/cooling systems[1]. These two metrics tracked closely until 2014, after which completed constructions began to level off (Chart 3, top panel).

1 This is unlike iron ore and steel, whose consumption is much more sensitive to new construction.

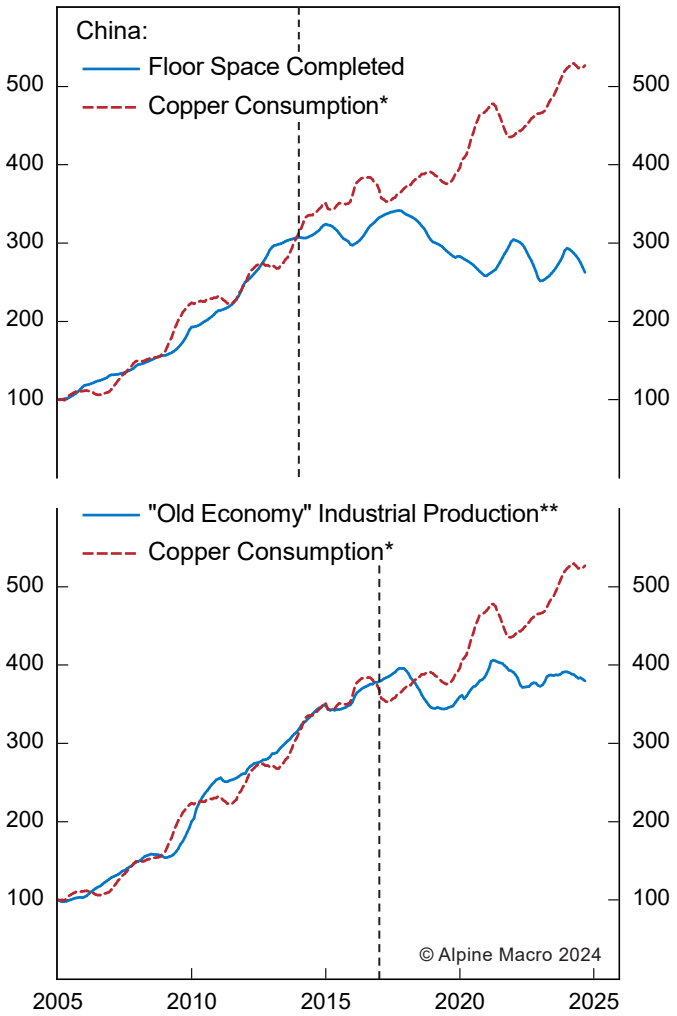
Chart 2 China's Copper Usage Intensity Is Rising



*Inferred from domestic refined production, refined imports/exports, and changes in refined inventories
**Calculated as the 5-year CAGR
Source: CEIC, China Nonferrous Metals Industry Association, Shanghai Futures Exchange, International Copper Study Group, Alpine Macro calculation

- The second, more comprehensive approach focuses on industrial sectors that are heavily dependent on copper. Our tailored index of "old economy" industrial activity moves in even greater lockstep with copper consumption,

Chart 3 Copper Consumption Has Decoupled From The "Old Economy"



*Inferred from domestic refined production, refined imports/exports, and changes in refined inventories
**Includes basic metals & fabricated metal products, chemicals & related products, building materials, cement equipment, and machine engines
Note: All series are rebased to Jan 2005=100; source: CEIC, China Nonferrous Metals Industry Association, Shanghai Futures Exchange, International Copper Study Group, Alpine Macro

before the tight relationship once again begins to loosen around 2017 (**Chart 3**, bottom panel).

These widening divergences clearly signal a secular saturation in legacy copper demand. Consequently, the baton of consumption *growth* has been handed over to the clean energy sector.

Past The Worst For The Old Economy...

Looking ahead, the pressing question is to what degree traditional sectors will weigh on copper demand.

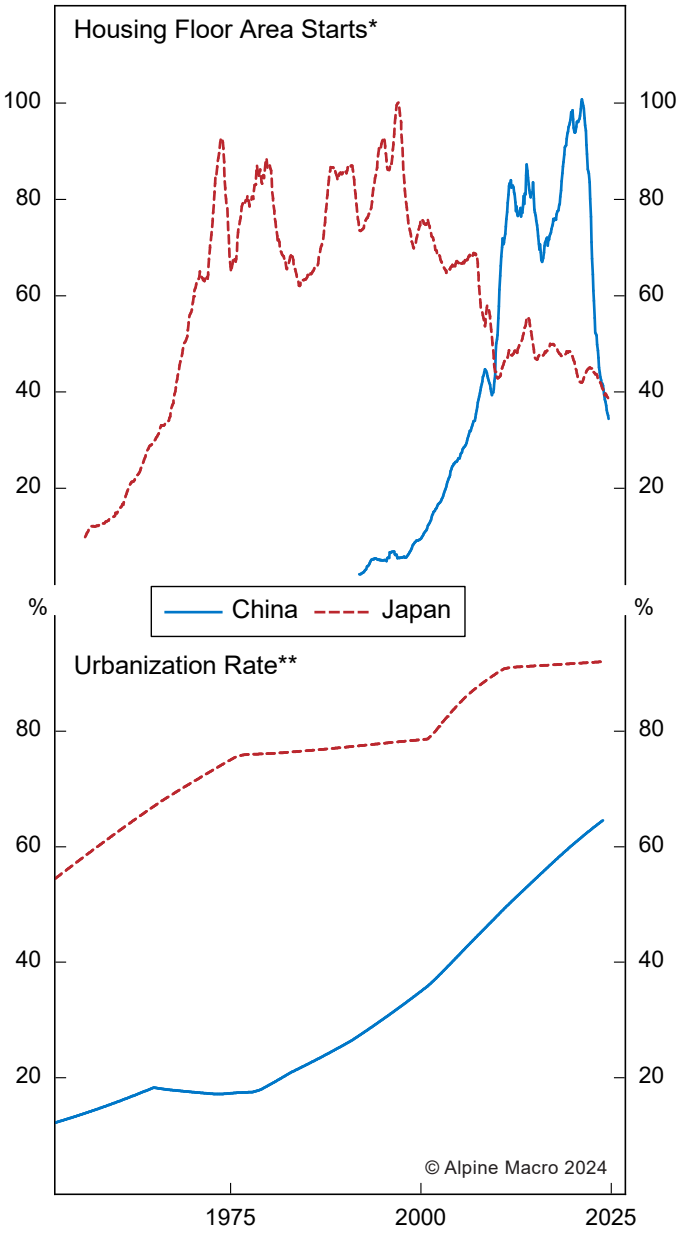
China's property market and infrastructure have obviously matured, making it unrealistic to expect another prolonged, large-scale construction boom. However, predictions of a severe downturn in these industries are overly pessimistic.

First, the massive downturn in Chinese housing activity has likely undershot the long-term equilibrium. With an urbanization rate still below 70% and a large wealth gap, it is premature to conclude that China's housing demand has been exhausted, particularly among low-income earners and rural households (**Chart 4**). Additionally, recent policy measures should play a meaningful role in absorbing the overhang in housing supply.

On this front, it is highly encouraging that sales of heavy construction equipment have bottomed and are starting to rise briskly (**Chart 5**). This suggests that the drag on copper consumption from the sector has largely played out.

Second, infrastructure spending should receive a fillip from the large issuance of "special purpose bonds". This type of funding is earmarked specifically for infrastructure projects to counter the slump in the residential sector. Although issuance has lagged far behind schedule, a powerful catch-up phase appears imminent now that policymakers have capitulated in the face of underwhelming

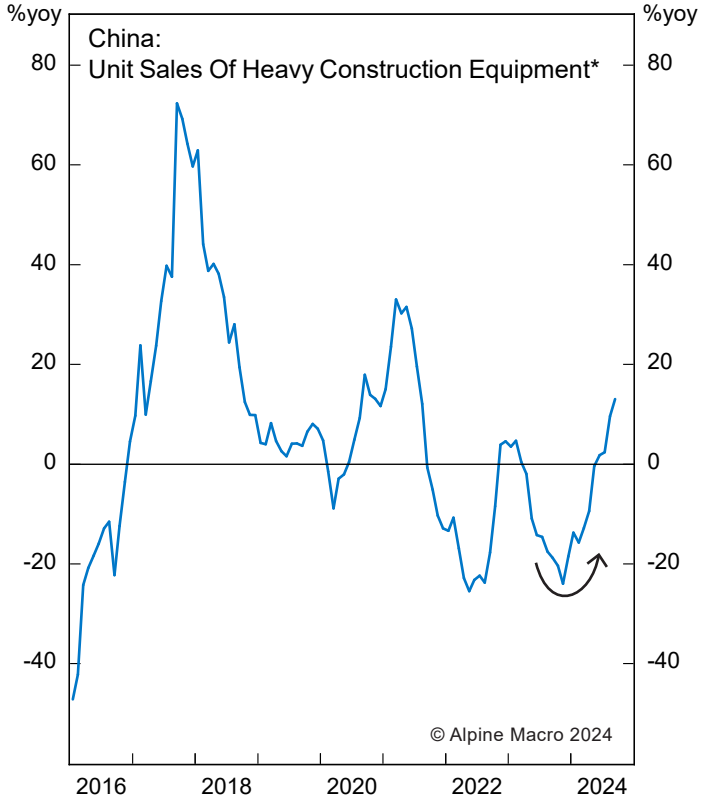
Chart 4 Structural Housing Demand Is Not Yet Exhausted...



*Shown as a 12-month moving sum and rebased to peak=100 (China's peak=2021M4, Japan's peak=1997M1); source: Chinese National Bureau of Statistics, Japanese Ministry of Land, Infrastructure, Transport & Tourism, OECD
**Source: World Bank

growth. The link between this bond issuance and infrastructure capex implies a stabilization in spending at the very least (**Chart 6**).

Chart 5 ...And Construction Activity Has Bottomed Out

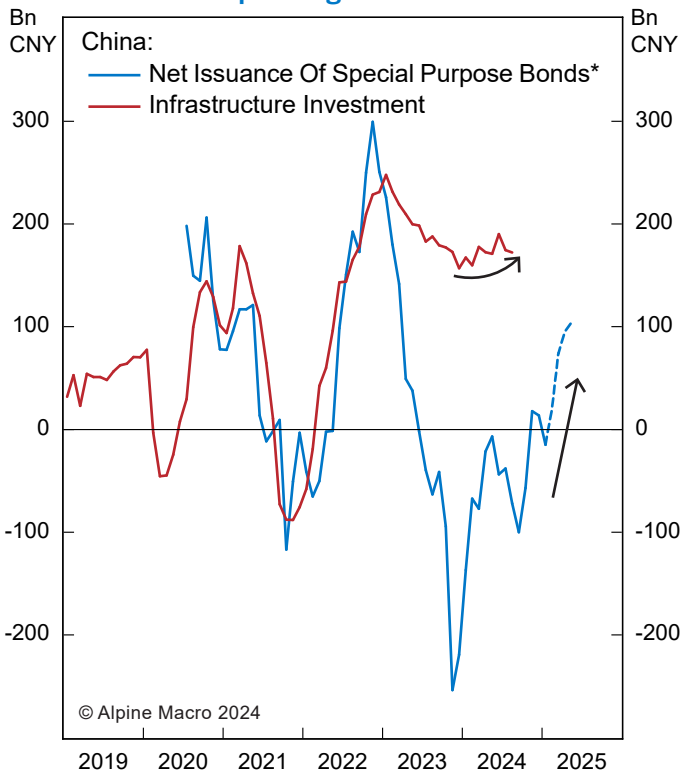


*Median of excavators, cranes, loaders and large-sized tractors; shown as a 6-month moving average

Finally, capital goods manufacturing is poised for a cyclical upturn. Corporate bond credit origination, which typical leads inflection points in this copper-reliant segment, began recovering late last year (**Chart 7**). This trend is bound to gain further momentum, supported by an anticipated improvement in business sentiment stemming from the recent policy easing.

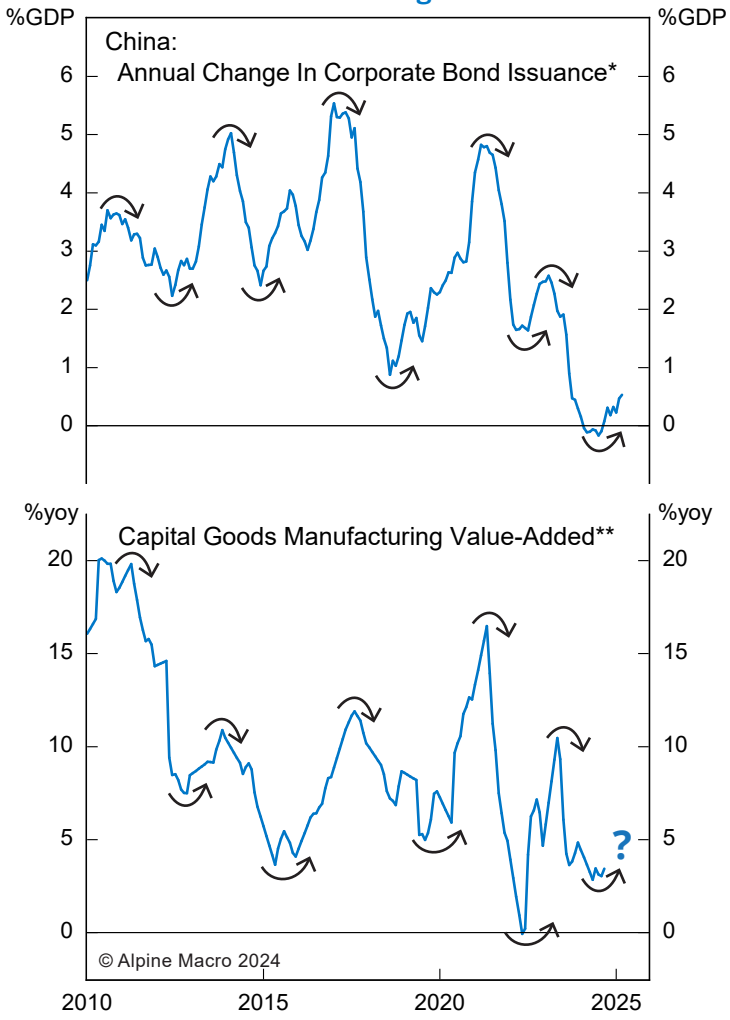
The bottom line is that construction and traditional industrial activity have moved beyond their peak vulnerabilities. Their contribution to copper consumption growth may remain in the low single digits, but outright demand destruction is improbable.

Chart 6 Support Coming For Infrastructure Spending...



*Shown in annual value change and advanced by 5 months; dashed line denotes Alpine Macro forecasts

Chart 7 ...As Well As Capital Goods Manufacturing



*Advanced by 9 months
**Proxied by an average of general purpose machinery, special purpose machinery, and electrical machinery; shown as a 3-month moving average

...While Roots Of "Green" Copper Demand Take Hold

Can the "greening" of China's economy sustainably lift copper demand to more than offset any moderate slowing in traditional industrial sectors? We believe the odds are favorable.

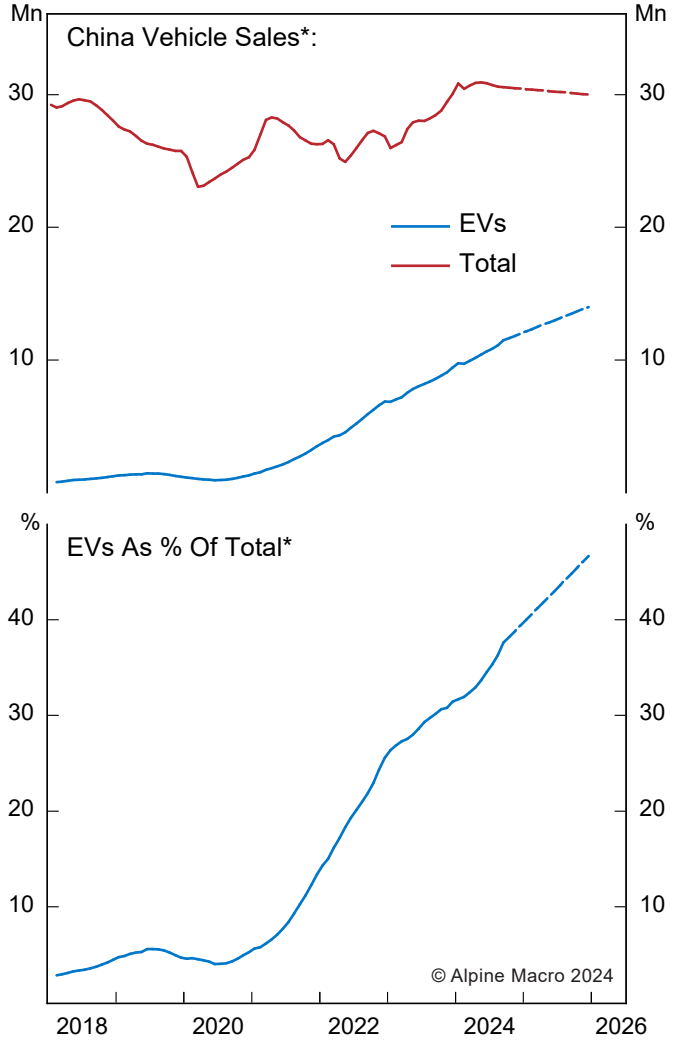
The need for copper and other industrial metals in the clean energy transition is primarily driven by three sectors: electric vehicles (EVs)[2], renewable energy generation, and power infrastructure. Delving into each of these components is necessary to assess their collective impact on copper consumption.

EVs are the most widely publicized driver of copper demand, given the metal's considerable use in batteries, wiring and chargers. Of course, China's EV production has skyrocketed on the back of hyper-competitive prices and generous government incentives[3] meant to spur domestic sales. Since

2 EV is a catch-all term that refers to fully or partially electrified vehicles, including battery electric vehicles (BEVs), hybrids (HEVs), plug-in hybrids (PHEVs) and fuel cell vehicles (FCEVs).

3 These include large tax exemptions running through 2025 and a "cash-for-clunkers" program.

Chart 8 EV Industry Is A Freight Train



*Calculated as a 12-month moving sum
Note: Dashed lines denote Alpine Macro forecasts;
source: China Association of Automobile Manufacturers

2020, its global market share has risen from less than half to about two-thirds today. Based on this trajectory and the latest IEA projections for global sales, China is on track to produce 14 million EVs in the coming year (**Chart 8**).

By our estimates,[4] this equates to approximately 650 thousand tons of copper demand, after accounting for the displacement of conventional vehicle demand. That represents nearly 4% of China's current consumption, with the *marginal* demand contribution at about 10%.

The expansion of solar and wind power generation also taps heavily into copper, which is essential for wiring, cabling, heat exchange, turbines, and transformers. Aggressive investment and support policies have enabled China to consistently build twice as much solar and wind capacity as the rest of the world combined. Nevertheless, recent overbuilding and looming grid constraints point to a more measured pace going forward. Even when factoring in this expected slowdown, China should add at least 250 GW of solar and wind capacity next year (**Chart 9**).

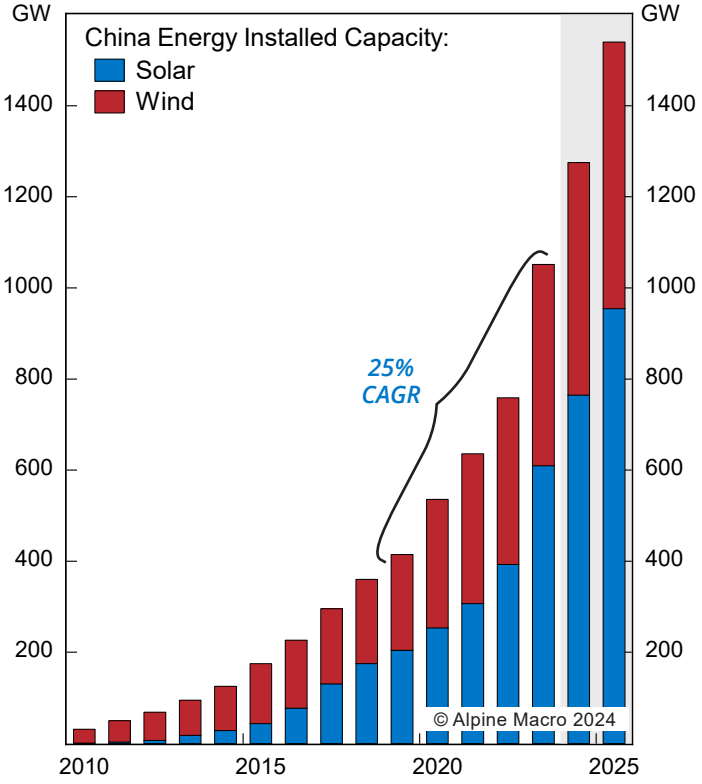
Using this figure, we estimate[5] required copper consumption to be 1.25 million tons. In other words, about 7.5% of current demand and about 18% of incremental consumption.

As for grid infrastructure upgrades, they will have the most pronounced impact on new copper demand. The record-breaking expansion of renewable energy capacity is exerting immense pressure on the grid:

4 Under current production methods, battery electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs) require approximately 83 kg and 60 kg of copper, respectively. Considering anticipated technological advancements and the projected production mix of BEVs and PHEVs, we conservatively estimate that an average electric vehicle will require around 70 kg of copper. In comparison, a conventional car requires 23 kg of copper. Therefore, the incremental demand for EV-related copper consumption is approximately 47 kg.

5 On average, each gigawatt of newly installed solar capacity consumes about 5,000 tons of copper. As for wind, onshore and offshore require 3,500 and 9,500 tons of copper, respectively. There is a 10:1 ratio between onshore and offshore wind capacity, based on trends in installation.

Chart 9 Renewables' Capacity Expansion Will Not Slow Much

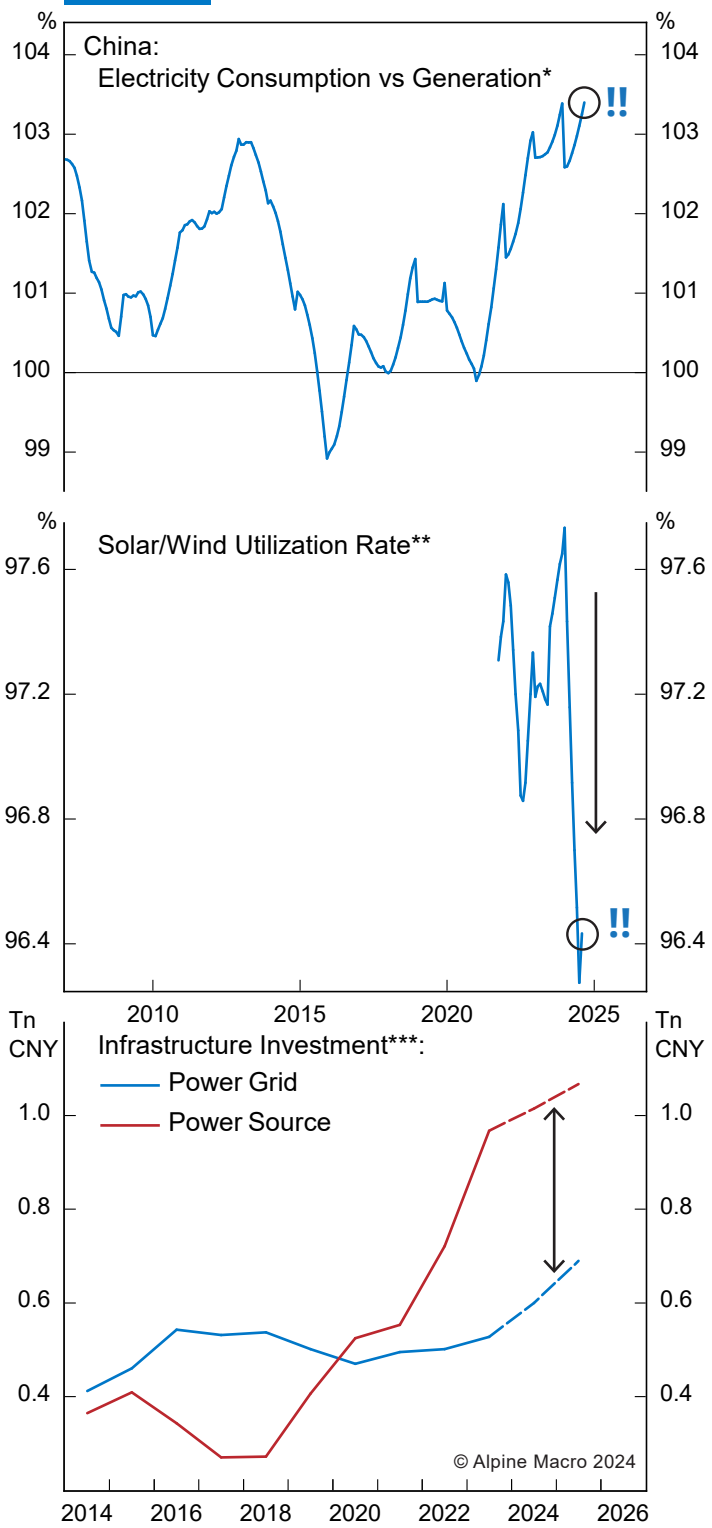


Note: Shading denotes estimates; source: Energy Insitute, Alpine Macro calculation

- Electricity consumption is outstripping grid supply at a multi-year high, signaling an increasing dependence on either emergency energy storage systems or imports to meet demand (**Chart 10**, top panel).
- Solar and wind energy utilization rates have dropped sharply this year due to regional power imbalances and the lack of long-distance transmission links (**Chart 10**, middle panel).

The growing mismatch between power production and distribution will need to be urgently addressed. We expect the large shortfall in grid investment relative to new power projects to narrow, with infrastructure spending set to rise to roughly RMB 700 billion next year (**Chart 10**, bottom panel).

Chart 10 A Surge In Grid Investment Looms



*Shown as a 12-month moving average
**Shown as a 6-month moving average
***Dashed lines denote forecasts based on government announcements and Alpine Macro assumptions

This investment should translate[6] into a whopping 3.8 million tons of copper demand, accounting for 23% of current consumption and 45% of new demand.

Table 1 summarizes our findings. Essentially, clean energy segments make up a third of current copper consumption but *over two-thirds of marginal demand.* The latter underscores a nearly seamless hand-off from the traditional industrial and construction sectors, whose woes will become increasingly irrelevant for future copper demand growth. Powerful tailwinds from the green transition, particularly grid investments, should ensure that copper consumption continues to rise beyond the economy's trend growth over the coming year.

Technical Considerations For Copper

The central message is that Chinese cyclical copper demand is expected to remain resilient. In fact, the risks are tilted to the upside depending on how forceful policymakers get with their reflationary efforts.

This bullish driver for copper is further aided by a markedly improved technical backdrop:

- China's warehouse stocks of copper have rapidly declined in recent months, normalizing back to within their seasonal range (Chart 11, top panel).

Table 1 China "Green" Transition Copper Demand: 2025 Projection

	Volume (million tons)	Share of Current Consumption* (%)	Marginal Demand Contribution** (%)
EV	1.0	3.9	10.0
Renewable Energy	1.3	7.4	18.4
Grid Investment	3.8	22.9	45.2
Total	***6.1***	***34.2***	***73.6***

*Based on the current total annual consumption of 16.9 million tons
**Based on the trend growth rate in Chinese copper demand of 6.6%

- The premium for physical delivery of refined copper into China has rebounded after briefly turning negative in early summer (Chart 11, middle panel).

Both developments reflect buoyed domestic demand and reinforce our earlier analysis.

From a multi-year perspective, copper prices have held above their rising support line, with key resistance approaching near $10,250 (Chart 11, bottom panel). A breakout above this level could herald the start of a new structural bull market, which we advised clients to prepare for in June last year[7].

Key Takeaways

- China's legacy copper demand reached secular saturation by the end of the last decade.
- Cyclically, "old economy" industries are past their peak vulnerabilities and should not trigger outright demand destruction for copper.

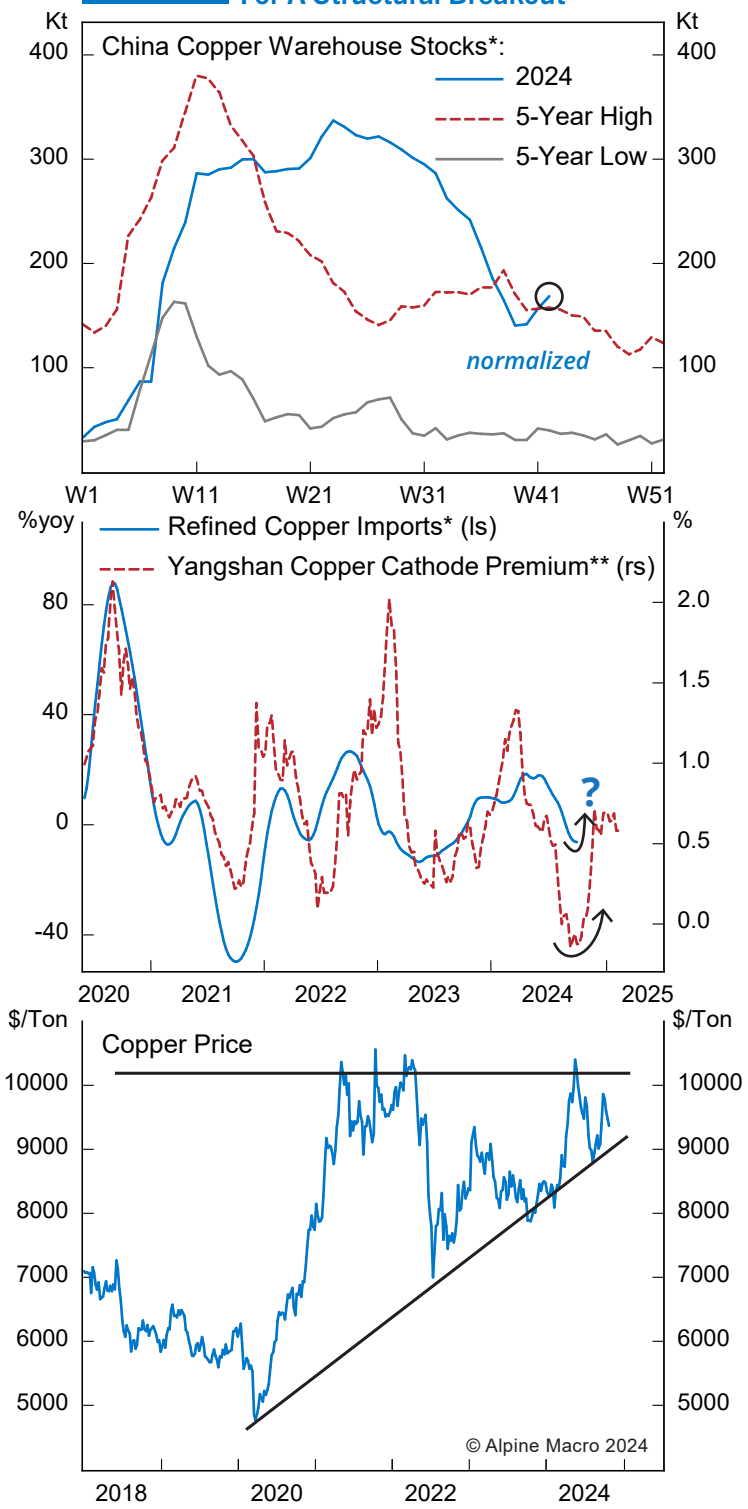
6 It is conservatively estimated that every RMB 1 billion in grid investment results in 8,000 tons of copper demand. However, we adjust this figure to 5,600 tons to reflect that renewable energy constitutes 70% of all new power generation.

7 Alpine Macro *Global Strategy Special Report* "Copper: Entering A 2000s Redux?" (June 19, 2023).

- The "green" transition now accounts for over two-thirds of new Chinese copper demand, reducing the metal's sensitivity to challenges in the construction sector.
- All indications point to clean energy tailwinds keeping Chinese copper consumption growth above underlying economic growth in the coming year.
- Chinese policy reflation and improved technicals are culminating in a potential breakout in copper prices, which could herald a new structural bull market.

Bassam Nawfal
Chief Asset Allocation Strategist

Chart 11 Copper Setting Up For A Structural Breakout



*Shown as a 3-month moving average
**Expressed as a percentage of the LME copper spot price; advanced by 4 months
Source: Shanghai Futures Exchange

Investment Recommendations

Tactical Investment Positions (3 - 6 months)

Recommendations	Open Date	Open Levels	Stop	Closing Date	Closing Levels	P&L Since Inception
Long U.S. Regional Banks (ETF: KRE)	12/04/2023	48.12	53	-	-	24.1%
Long Gold (ETF: GLD)	04/01/2024	207.82	Rolling -5%	-	-	21.9%
Long U.S. Financials (ETF: IYF)	08/19/2024	101.30	-	-	-	6.2%
Long Russell 2000 (ETF: IWM)	08/19/2024	215.20	-	-	-	2.1%
Long Copper	09/30/2024	4.55	-	-	-	-4.1%
Long 10-Year German Bunds/ Short 10-Year JGBs	10/07/2024	2.3%/0.93%	-	-	-	-0.1%
Long Emerging Market Equities (ETF: EEM)	10/07/2024	47.36	-	-	-	-4.7%
Long China A-Shares (ETF: ASHR)[1]	10/09/2024	30.00	-10%	-	-	-7.3%
Short Brent Oil[2]	10/22/2024	76.00	-	-	-	0.1%

Note: P&L is calculated using daily closing prices.
[1] We are adding a stop to our Long China A-Shares (ETF: ASHR) trade at -10%.
[2] Our stop sell for Brent Oil was triggered on 10/22/2024.