

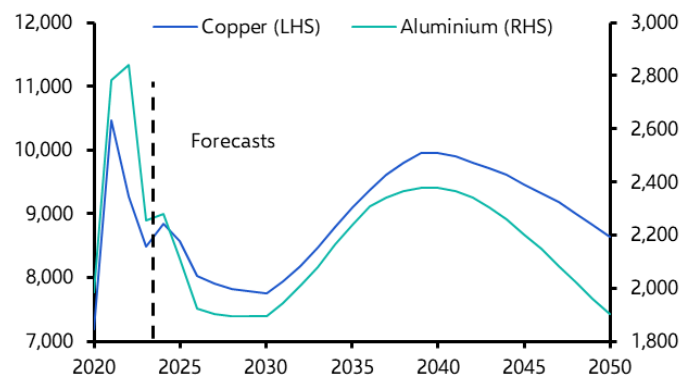


# COMMODITIES FOCUS

## Metals: China slowdown to offset green transition

- While the green transition and AI-related use will boost demand for industrial metals over the rest of this decade, we expect this to largely be offset by a substantial *contraction* in demand from China’s construction sector. Against this backdrop, and with supply proving resilient, we forecast copper and aluminium prices to fall in the coming years and be below consensus expectations during the 2020s.
- Much has been written about the positive impact on industrial metals demand from the green transition and, more recently, for use in datacentres from the scaling up of AI. Indeed, we recently concluded that [demand from green applications](#) for metals such as copper and aluminium could grow at double its historical rate over the coming years.
- That said, the green transition is not the only structural force in town and the scale of the coming drag on demand for industrial metals from the looming contraction in China’s construction sector appears to be underappreciated. Note that our *China Economics* team think that the correction in construction activity will be as large as a 50% decline from peak to trough.
- Plenty of analysis and commentary has focused on high-level indicators, such as housing sales and floor space started, which suggest that a substantial correction has already occurred. Importantly, however, we think that the contraction is only just getting underway and that most of the correction still lies ahead; in the second quarter construction activity was only 9% lower than the peak. Efforts by policymakers could ensure that the decline is spread out over many years, perhaps across the rest of this decade.
- The net impact of the positive effect from the green transition and the negative impact from a halving in China’s construction sector will vary from metal to metal. At one end of the spectrum, nickel demand is likely to continue growing at a healthy clip due to its limited connection to China’s property sector but intense use in electric vehicle batteries. At the other end, demand for zinc could fall sharply due to its limited use in green transition technologies, but heavy use in China’s construction sector.
- Overall, we forecast the real prices of copper and aluminium to fall back during the rest of the 2020s and to only rally sustainably from the following decade once the contraction in China’s property sector is no longer a headwind to overall demand growth, leaving supply increasingly constrained. (See Chart 1.)

Chart 1: Real Industrial Metals Prices (\$ per Tonne, 2023 Prices)



Sources: LSEG, Capital Economics



## Metals: China slowdown to offset green transition

In this *Commodities Focus*, we develop our medium-to-long-run forecasts for industrial metals demand and prices of copper and aluminium. We model a scenario that combines the collapse in China's construction activity that we expect, with the global increase in metals demand from the green transition. Finally, we conclude that analysts' expectations for soaring demand and prices this decade will be disappointed.

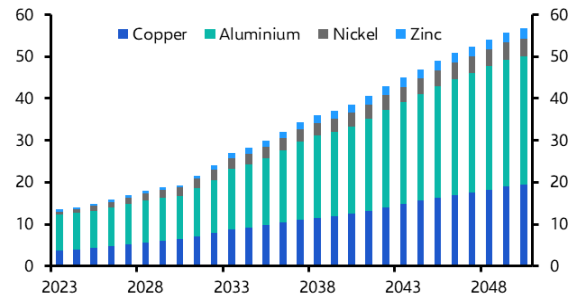
### Is the bull case lacking a dash of nuance?

**The bull case for industrial metals has been made repeatedly in recent years.** In essence, it goes as follows: demand for industrial metals is set to experience a structural increase due to the green transition, since these metals are used intensively in applications such as electric vehicles, renewable capacity and in the electricity grid. In addition, supply will struggle to keep pace, either due to historical underinvestment in new mine supply or due to lags involved with investing in new capacity.

It seems that in each and every rally, metal bulls point to green transition demand as a key justification for rising prices which seems to fan the flames of each rally. This was certainly the case during the sharp increase in the copper price to almost \$11,000 per tonne in May, during which the headline-grabbing claim was made by [Pierre Andurand](#) that copper prices could skyrocket to \$40,000 per tonne in the next few years.

**For what it is worth, we think there is some merit to this thesis.** In this Focus – [How metals-hungry will the green transition be?](#) – we estimate that green transition demand for metals is likely to resemble a steady grind higher over the next few decades. (See Chart 2.)

**Chart 2: Capital Economics Green Transition Industrial Metals Demand Forecasts (Mn. Tonnes)**



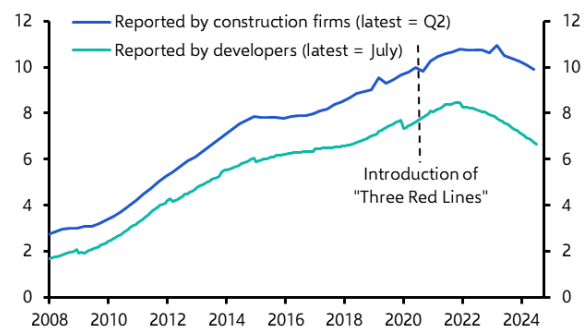
Source: Capital Economics

**However, we think that this argument alone is perhaps lacking some nuance.** After all, the green transition is not the only structural shift in town!

### The second half of the picture: trouble in China

**While the high-profile crisis in China's property sector in recent years has also rightfully garnered plenty of headlines, its impact, particularly on commodity markets, is only just getting underway.** Indeed, property construction has so far only fallen a little. (See Chart 3.)

**Chart 3: China Floor Space Under Construction (Bn. Sq. Metres, SA)**



Sources: CEIC, Capital Economics

Our *China Economics* team has done a deep-dive on the outlook for the property sector in this [Focus](#) and in other reports on our dedicated [key issues](#) page. But, in short, construction has remained fairly strong as developers have continued to crunch through the lengthy backlog of projects, the authorities have ramped up investment in social housing and broader construction activity has been buoyed by policymakers' use of infrastructure spending as a key channel of fiscal stimulus.

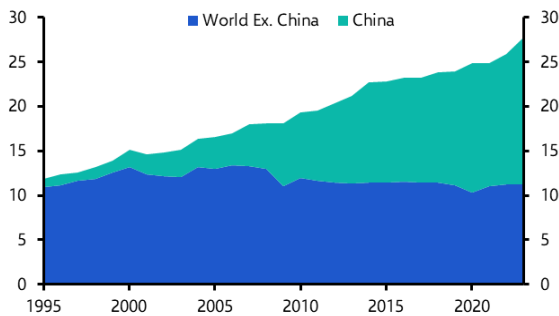


Ultimately, though, we think that a correction in property sector construction activity will occur this decade, and that a sustainable level of property construction is roughly half the level from the peak. We think a collapse of this scale will take place over the remainder of this decade, as policymakers favour a more drawn-out process in order for "new productive forces" to emerge in the meantime. The risk, though, is that the collapse happens much faster than that.

China sneezes, industrial metals catch a cold

At the risk of stating the obvious, China is a massive consumer of industrial metals. For example, it has accounted for essentially all the growth in demand for copper over the last few decades. (See Chart 4.) As a rough guide, across industrial metals, China typically accounts for ~60% of global consumption.

Chart 4: Refined Copper Consumption (Mn. Tonnes)



Sources: LSEG, Capital Economics

It is a difficult task to get a steer on exactly how much of each metal individual sectors within China consumes, as available data at that level of detail is scarce.

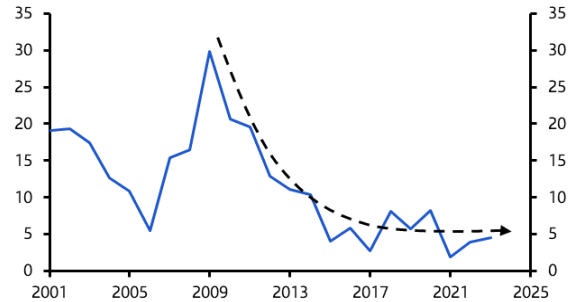
Therefore, our approach to estimating the sector shares of China's demand involved taking the sector shares at a global level and adjusting those according to the relative size of China's individual sectors to those at a global level. By doing this we estimated that construction accounts for around 30% of China's total demand, which is broadly in line with those quoted for copper and aluminium by "market sources".

Stagnating demand in China ...

Our projections show that China's demand growth will stagnate over the remainder of this decade. We have assumed that demand from the construction sector will fall from a peak in 2023 to half that level in 2030. Meanwhile, we have pencilled in that

demand from the other key end-use sectors will continue to grow at roughly the rate it fell to and stabilised at in the late-2010s. (See Chart 5.)

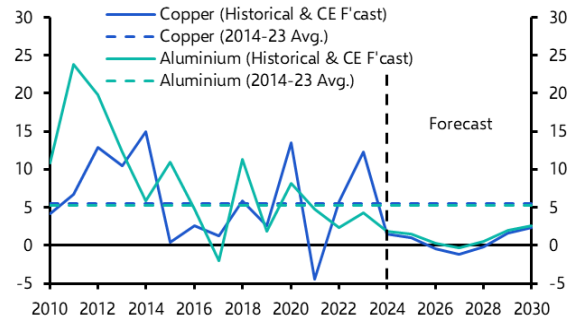
Chart 5: China Transport Sector Copper Demand (CE Est., % y/y, 3-yr MA)



Sources: LSEG, Capital Economics

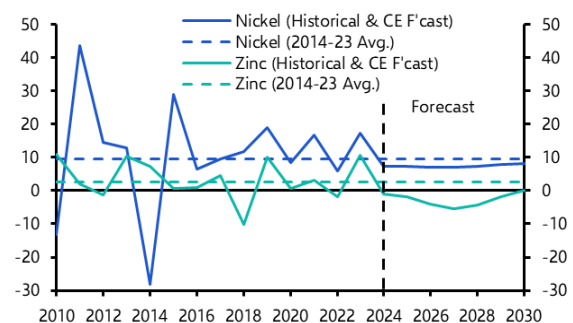
Charts 6 and 7 show, based on these assumptions, our projections for the growth in China's demand for copper, aluminium, nickel and zinc in the medium-run. The upshot is that demand growth is set to be significantly weaker in the second half of the decade than it was in the decade preceding it.

Chart 6: China Industrial Metals Demand (% y/y)



Sources: LSEG, Capital Economics

Chart 7: China Industrial Metals Demand (% y/y)



Sources: LSEG, Capital Economics

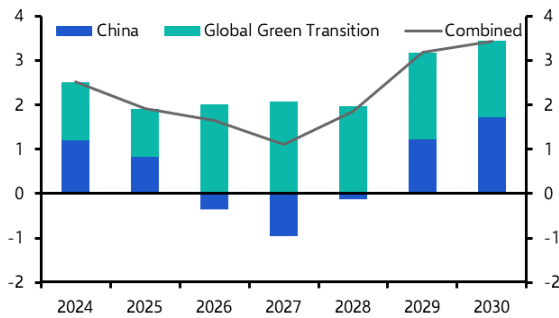
... will offset most of the green transition

The key question in all of this, though, is what the net impact of the green transition and China's structural slowdown will be.



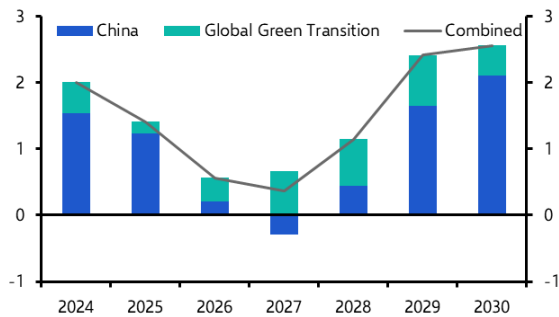
Putting our existing forecasts for green transition demand together with these medium-run projections for China's demand points to, for the examples of copper and aluminium, weaker combined demand growth than the historical average. (See Charts 8 & 9.) For context, global demand growth for copper and aluminium has averaged ~3.0% and ~4.5%, respectively, over the last two decades.

Chart 8: CE Forecast Growth in Combined Copper Demand (y/y, %-pts cont.)



Source: Capital Economics

Chart 9: CE Forecast Growth in Combined Aluminium Demand (y/y, %-pts cont.)



Source: Capital Economics

**The impact will not be uniform across industrial metals, of course.** At one end of the spectrum, nickel demand will likely fare the best due its use in batteries and the ongoing consumer adoption of electric vehicles. Demand for zinc, at the other end of the spectrum, is likely to fare the worst due to its intense use in China's construction sector and limited application in green transition technologies. Meanwhile, the fate of copper and aluminium demand lie somewhere in the middle of those.

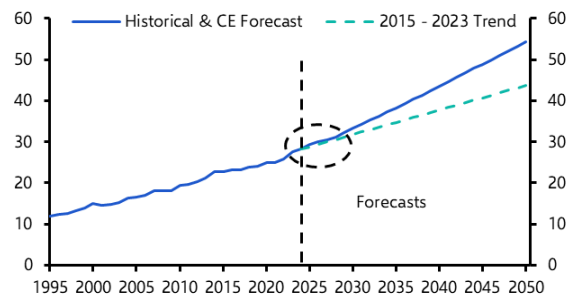
**Stepping from the medium to the long run**

**These forces won't offset one another forever though. Once China's property sector construction activity normalises by around 2030 and the green transition becomes the sole structural force at play,**

**we expect that demand growth will take a significant step up.**

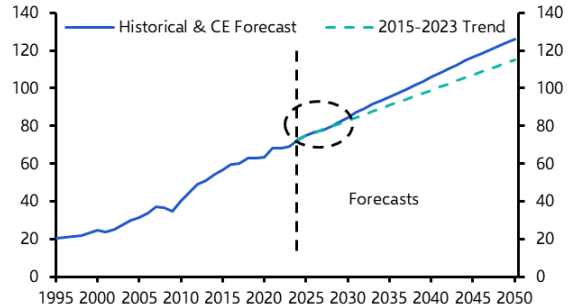
In other words, we forecast demand to grow at a similar pace to historical average growth over the remainder of this decade, before growing markedly above historical trends in the following decades. (See Charts 10 & 11.) (More information on our long-run methodology can be found in Box A.)

Chart 10: Long-Run Copper Demand (Mn. Tonnes)



Sources: LSEG, Capital Economics

Chart 11: Long-Run Aluminium Demand (Mn. Tonnes)



Sources: LSEG, Capital Economics

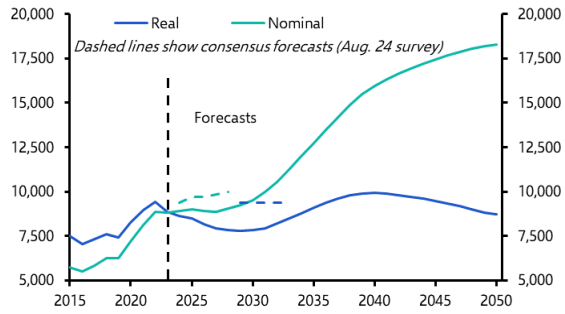
**Roaring 20s 30s**

In summary, our results suggest that these two forces will largely offset each other, so that demand grows broadly in line with trend, over the remainder of this decade. But, once the slowdown in China's property sector has played out, we expect that from the 2030s the long-awaited structural increase in demand growth will take place.

Our sense is that this is later than what is expected by investors in commodity markets. So, assuming that supply growth remains resilient, we suspect prices will ultimately be lower than consensus expectations in the second half of this decade. (See Charts 12 & 13 for our long-run real and nominal price forecasts for copper and aluminium.) It is only from the following decade that we forecast prices to rally substantially.

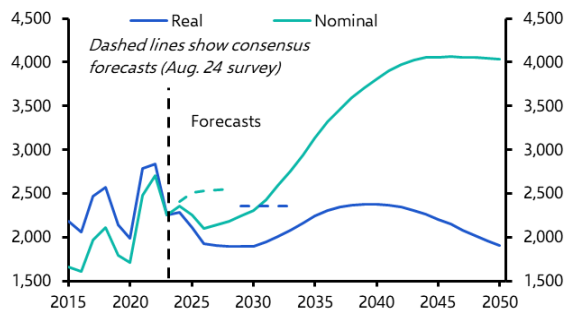


**Chart 12: Copper Price (\$ per Tonne, Annual Avg.)**



Sources: LSEG, Consensus Economics, Capital Economics

**Chart 13: Aluminium Price (\$ per Tonne, Annual Avg.)**



Sources: LSEG, Consensus Economics, Capital Economics



**Box 1 – A crash course in long-run forecasting**

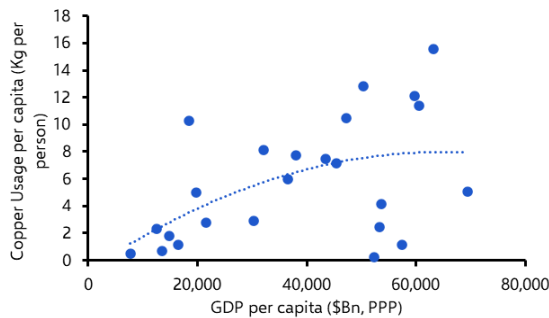
Generally, there are two approaches to forecasting commodity demand in the medium and long run. The first option is to take a view on demand growth in each sector, as we have done for our medium-run forecasts for China’s demand. The second option, and the approach that we have adopted for the remainder of our forecasts for long-run commodities demand is to assess how consumption of an individual commodity will evolve in line with future income levels. The latter approach is advantageous as not only can we draw on historical relationships, but we can also utilise our long-run macroeconomic forecasts.

The relationship at a country level between income levels and metals consumption is typically non-linear. In other words, for every increase in GDP per capita, metals consumption per capita also increases but at a declining rate.

We specify the following relationship across a sample of 25 countries as seen in Chart 14:

$$\text{consumption per capita} = a + b * GDPPC - c * GDPPC^2$$

**Chart 14: GDP Per Capita & Copper Usage Per Capita (2022)**

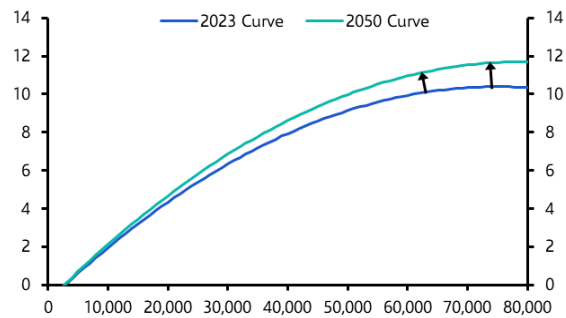


Sources: Refinitiv, Capital Economics

We use the estimated relationship to produce consumption forecasts at a regional level. We then make two adjustments. First, we use a scaling factor

to adjust the constant “a” in the equation, to reflect differing starting points. Second, to reflect an assumption that consumption will be more metals intensive in 2050 than it is today, since electric vehicles and sources of power generation are more metals intensive, we assume that the coefficient “b” is slightly larger in 2050 than it has in the past. This resembles the curve shifting outwards. (See Chart 15.)

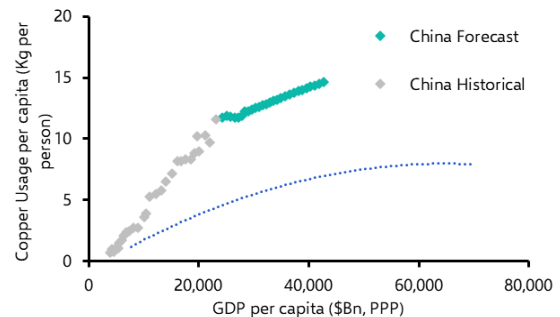
**Chart 15: GDP Per Capita & Copper Usage Per Capita (2022)**



Sources: Refinitiv, Capital Economics

Note, we treat China slightly differently, blending the medium-run forecasts provided by the sector forecasts established in this Focus over the rest of this decade and adopting the long-run methodology from thereon. (See Chart 16.)

**Chart 16: GDP Per Capita & Copper Usage Per Capita (2022)**



Sources: Refinitiv, Capital Economics



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