

New threat from mineral supply crisis

Increasingly anticipated but unprecedented market imbalances raise the spectre of more direct government interference in the mining industry.

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The rapid onset of battery-storage applications, greater use of renewable energy sources and widespread adoption of electrified transport is critical to a changed view of market outcomes for the mining industry in the decade ahead.

By many accounts, the mid 2020s will mark the beginning of an indefinitely lengthy period of metal shortages as these technology changes unfold, as global populations grow and demands for improved living standards are met.

A mismatch between demand and supply is the norm in metal markets. Copper metal use has differed from production by less than 1% in only nine of the past 50 years. Similarly, zinc market imbalances of less than 1% have occurred in only 14 years in the past five decades.

Metal imbalances such as these, cushioned by historically accumulated inventories, have proven transitory. Even the enormous rise in metal demand from China in the 2000s was met without panic, albeit with the aid of significantly higher prices.

Mineral economists have worried from time to time about longer-term resource depletion but markets have always worked their magic to avert the most dire predictions about the adequacy of metal supplies.

Presently imagined shortages go well beyond historical instances of cyclicity. Nor are they necessarily the consequence of resource limitations.

On the supply side, fewer and smaller exploration successes have restricted the pipeline of development projects. Nearly two decades of uninspiring exploration outcomes will have confirmed in the minds of investors the merit of withholding funding even as historically high rates of exploration expenditure are needed.

Even after a discovery, lengthy project gestation periods are deterring investor interest. Capital market pressures are encouraging companies to limit the size of their development ambitions to speed the onset of cash flows.



Economic and social policy aims driving changing patterns of metal demand may result in a less hands-off view about where metal supplies should flow

Solutions to what many see as an impending climate catastrophe may prove beyond reach if the global mining industry cannot overcome these constraints to meet the implied metal needs.

This predicament has led one interdisciplinary group of scientists, engineers and economists to propose a new resource governance

model "to avert the crisis that is looming in the sphere of geological mineral exploration, recycling and the governance of supply chains" over the next 20-30 years .

Ali et al have suggested an international process through a covenant or treaty, along the lines of global initiatives to counter climate change, possibly with involvement of a United Nations agency to oversee effective resource planning.

These authors have proposed six measures that include agreed production targets, coordinated mineral exploration efforts and modifying metallurgical processes to improve rates of extraction.

The proposals might be so culturally alien for an independently-minded industry as to render them unlikely, whether needed or not. In any event, the call for change raises the prospect of a radical transformation to the way the industry conducts itself if it fails to meet a broadening array of social and economic objectives.

Another group, headed by noted US mineral economist John Tilton, has taken issue with this interventionist approach . Concentrating more on the role of prices and less on physical availability, Tilton et al contend that long-run shortages should show up as persistent increases in real prices, which slowly choke off demand.

In this and other writings, Tilton does not discount the possibility of shortages entirely but the absence of rising real prices is evidence, on his reckoning, they are not on the horizon.

Being rooted in his longstanding analysis of how markets cope with gradually evolving resource depletion, the Tilton approach may not adequately address the peculiarities of the looming mid-2020s events.

On one point, though, Tilton et al are worth a hearing. The now commonplace depiction of metal demand outstripping supplies by a large margin in the decades ahead is an idealised analytical tool. It cannot happen in practice. Higher prices will drive usage rates down, if supplies do not respond, to restore balance.

The Tilton group emphasises the interaction of demand, production costs and changes in processing technology in framing the price response. The key consideration for them is the extent to which technological change can outweigh the effects on production costs of a rapid or unexpected increase in demand. The peak in real aluminium prices, they point out to sustain their argument, occurred in the early 1900s.

The Tilton paper identifies lithium, the most prominent of the new battery metals, as one of the least

prone to a further price impact. Other metals, even some with less compelling demand outlooks, will display stronger price outcomes because improved processing technology will impact less. In some cases, migrating from being a low-cost by-product to being the primary mining target will place the strongest upward pressure on prices.

Sustainable price leaps for a possibly large number of metals would come at a cost. Almost certainly, some potential users of these metals would be financially penalised. Some will be unable to source sufficient supplies.

In the past, selection of these 'losers' was left to the market. The broader economic and social policy aims driving changing patterns of metal demand may result in a less hands-off view about where metal supplies should flow.

Constraints imposed on widely endorsed policy objectives by inadequate metal supplies would, at least, create tensions between policymakers and the industry. The social licence of miners to operate will risk being redefined in ways the industry has yet to encounter.

Benefitting conspicuously from metal shortages while everyone else is forced to cope with the costs, and highly cherished policies are delayed, will do little for the social standing of miners.

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